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TALK IS CHEAP:

HOW G20 GOVERNMENTS ARE FINANCING CLIMATE DISASTER

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Cover Image: Flames at a Chevron refinery in Richmond. Refineries received billions of dollars in public finance from G20 countries between 2013 and 2015.

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Oil Change International is a research, communications, and advocacy organization focused on exposing the true costs of fossil fuels and facilitating the coming transition towards clean energy. For more information, visit www.priceofoil.org

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WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature. For more information, visit wwf.panda.org/

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EXECUTIVE SUMMARY

The best available science shows an urgent need to keep global temperature increases below 1.5°C to avoid severe disruptions to people and ecosystems.[1] Recent analysis shows that burning the reserves in already operating oil and gas fields alone, even if coal mining is completely phased out, would take the world beyond 1.5°C of warming. The potential carbon emissions from all fossil fuels in the world's already operating fields and mines would take us well beyond 2°C.[2]

Despite this reality, the same governments that have signed on to the Paris Agreement on climate change – which agrees to hold global warming to well below 2°C and to strive to limit warming to 1.5°C – continue to provide sweetheart loans, guarantees, and other forms of preferential financing to fossil fuel projects that could cause the world to blow past those climate targets.

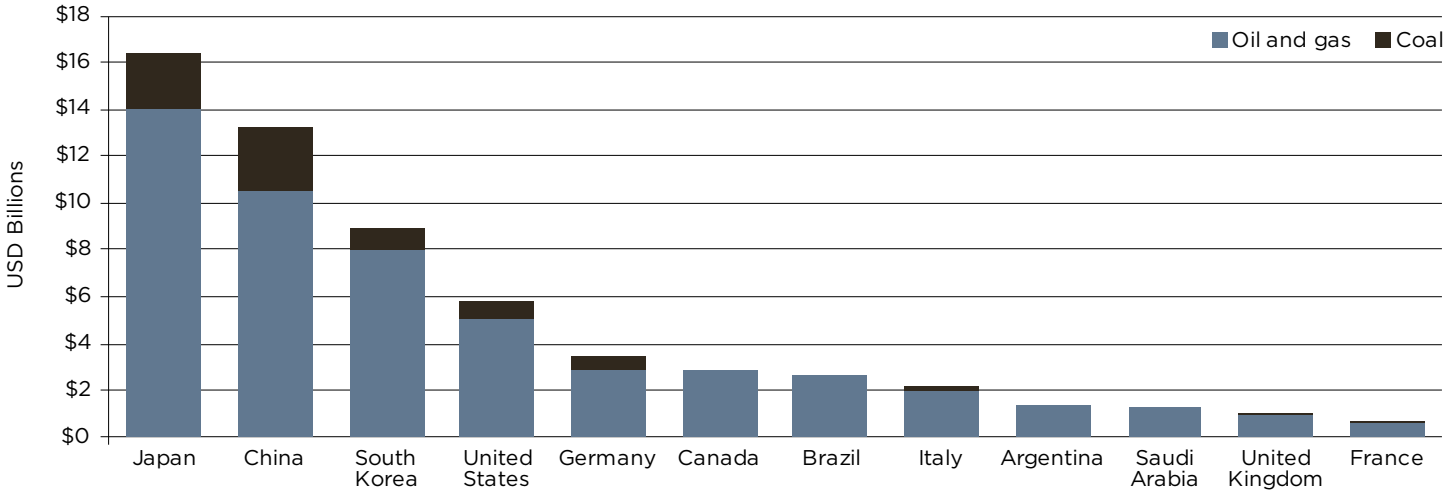
This analysis shows that **G20 governments are providing nearly 4 times more public finance to fossil fuels than to clean energy.** With the United States indicating that it intends to pull out of the Paris Agreement, other governments must provide leadership in the clean energy transition: the remaining G20 governments will need to step up. Governments simply cannot be climate leaders while continuing to finance fossil fuels at current rates.

Governments must begin to shift trillions of dollars in investment from polluting infrastructure to low-emission, climate-resilient activities – a massive financial shift from 'brown' to 'green' – to stay within climate limits. They should start with their own public finance. Yet this analysis shows that recent trends are in the opposite direction. Public finance for fossil fuels far outstrips public finance for clean energy sources – a trend that will have to rapidly reverse in order to avoid the worst impacts of climate change.

As this report finds, public energy financing in G20 countries and at the major multilateral development banks (not including national-level subsidies or investments by majority government-owned banks and state-owned enterprises) adds up to **$122.9 billion annually** averaged from 2013 to 2015 – or roughly 7 percent of the total estimated $1.8 trillion in annual global investment in energy.[3]

Of all public finance for energy provided by G20 institutions and the multilateral development banks between 2013 and 2015, over **$71.8 billion annually** – or 58 percent – supported fossil fuel production (see Figure ES 1), while just **$18.7 billion annually** – or 15 percent– supported clean energy (including renewable sources such as wind, solar, geothermal, and small hydro). Just over 26 percent of finance went to energy infrastructure categorized as neither clean nor fossil fuel – for example, large hydro dams or transmission infrastructure with no clearly associated energy source (see Figure ES-2).[4]

Figure ES-1: Annual Average of Public Finance for Fossil Fuels by Top 12 G20 Countries, 2013-2015



Source: Oil Change International Shift the Subsidies Database. Note: For all figures, data does not include majority government-owned banks that function commercially or quasi-commercially, which are particularly relevant for India and China.

© Open cut coal mine, Hunter Valley, Australia – similar to a number of Australian open cut mines benefitting from public finance from Japan.
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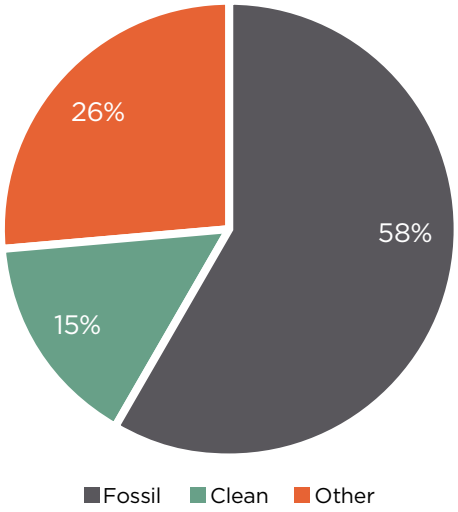
1 Carl-Friedrich Schleussner, et al. "Differential climate impacts for policy-relevant limits to global warming: the case of 1.5 °C and 2 °C," Earth System Dynamics, 7, 327-351, April 21, 2016. http://www.earth-syst-dynam.net/7/327/2016/
2 Greg Muttitt, "The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production," Oil Change International, September 2016. http://priceofoil.org/2016/09/22/the-skys-limit-report/
3 International Energy Agency, "World Energy Investment 2016," September 2016. https://www.iea.org/Textbase/npsum/WEI2016SUM.pdf
4 Percentages do not sum to 100% due to rounding.

Figure ES-2: Public Finance for Energy from G20 Countries by Energy Type, 2013-2015



Source: Oil Change International Shift the Subsidies Database.

Of all public finance for energy from G20 institutions and the multilateral development banks between 2013 and 2015:

- Half – 50 percent – supported oil and gas production ($62 billion annually).
- Looking at all fossil fuel finance, G20 public finance institutions and the multilateral development banks together supplied over 6 times more finance to oil and gas than to coal.
- G20 public finance for fossil fuel exploration - exploration for new reserves of oil, gas, and coal - averaged $13.5 billion annually. This finance is particularly egregious, given that most already-discovered reserves must remain unburned to avoid the worst impacts of climate change.
- G20 export credit agencies provided considerably higher levels of support to fossil fuel production between 2013 and 2015 ($38.3 billion annually) relative to all other sources of G20 bilateral public finance for fossil fuels between 2013 and 2015 ($24.7 billion annually). On top of this, multilateral development banks such as the World Bank provided $8.7 billion annually in fossil fuel finance over this same period.
- Among G20 export credit agencies, support for oil and gas is nearly 6 times as large as support for coal, while among multilateral development banks, support for oil and gas is more than 12 times as large as support for coal.

Some have argued that gas should be promoted as a climate solution: in their 2016 Communiqué, G20 leaders called natural gas "a less emission-intensive fossil fuel," and pledged to "promote natural gas extraction, transportation, and processing in a manner that minimizes environmental impacts."[5] But this does not line up with G20 leaders' climate rhetoric around the Paris Agreement. Promoting exploration and extraction of more oil and gas is incompatible with climate limits and the Paris Agreement, given that reserves in already operating oil and gas fields alone, even without coal production, would take the world beyond 1.5°C.

When it comes to public finance for fossil fuels, some countries stand out:

- **Japan** is the largest provider of public finance for fossil fuels – for both oil and gas, and coal – with **$16.5 billion annually** in support between 2013 and 2015 compared to **$2.7 billion annually** in support for clean energy.
- Despite recent reductions in domestic coal consumption and its increased international profile as a climate leader, **China** is the second-largest provider of fossil fuel finance among the G20. According to this analysis, China provided **$13.5 billion annually** in public finance for fossil fuels from 2013 to 2015 compared to **less than $85 million annually** in clean energy finance.
- **South Korea** is the third-largest provider of public finance for fossil fuels, providing **$8.9 billion annually** between 2013 and 2015 compared to just **$92 million annually** in clean energy finance.
- The **United States** is in a distant fourth place on fossil fuel finance, providing **$6 billion annually** from 2013 to 2015 compared to **$1.3 billion annually** for clean energy. U.S.-based companies also received **$17.5 billion** in total fossil fuel finance from other G20 countries over the same period, showing a nearly 1 to 1 return on investment.

When it comes the mismatch between climate rhetoric and public finance for fossil fuels, some countries have been worse than others.

Germany – which positions itself as an ardent climate leader on the global stage, and has often led in providing climate finance – supplied **$3.5 billion annually** in public finance for fossil fuels between 2013 and 2015 compared to **$2.4 billion annually** for clean energy. In 2016, the German government said that the multilateral development banks "should clearly commit themselves to ending the financing of fossil fuel projects,"[6] yet Germany has not taken concrete steps to limit oil and gas finance from its own development finance institutions.

Italy, as part of its G7 presidency in 2017, pushed for an agenda to better align multilateral development bank finance with the goals of the Paris Agreement. Yet Italy provided **$2.1 billion annually** in public finance for fossil fuels compared to just **$123 million annually** for clean energy.

Canada is another country that plays an outsized role in public finance for fossil fuels, particularly when compared to the size of Canada's economy. Canada supplied **$3 billion annually** in public finance for oil, gas, and coal between 2013 and 2015 compared to just **$171 million annually** for clean energy.

Some countries supply higher levels of clean energy finance relative to their fossil fuel finance: France, Mexico, and Australia all provided levels of clean energy finance that were nearly equal to, or which exceeded, their fossil fuel finance between 2013 and 2015. (However, in the case of Australia, the vast majority of this clean energy finance is not international, but comes from a pair of dedicated domestic clean energy financing institutions: the Australian Renewable

5 "G20 Leaders' Communique - Hangzhou Summit," G20 2016 - China, September 6, 2016. http://www.g20chn.org/English/Dynamic/201609/t20160906_3396.html
6 Clean Energy Wire, "No funding of fossil fuel projects," December 2, 2016. https://www.cleanenergywire.org/news/germany-ends-coal-funding-wb-gabriel-defends-renewables-support/no-funding-fossil-fuel-projects

Energy Agency and Clean Energy Finance Corporation.)

Policies recently adopted by public finance institutions to curb public finance for coal-fired power plants have corresponded with a reduction in public finance for these projects. If G20 governments are serious about climate action, they need to move quickly to shift public finance away from fossil fuels and toward climate solutions – not only restricting finance for coal, but also for oil and gas.

G20 governments should:

- Commit to ending all public fossil fuel financing by 2020, including financing for fossil fuel exploration and related infrastructure;
- In the case of developed G20 countries, provide adequate finance to enable developing countries to achieve an expeditious shift to renewable energy – in line with developed countries' historical responsibility;
- Increase the transparency of financing at all public finance institutions;
- Expand support for truly clean technologies such as solar and wind.

If G20 leaders are serious about meeting climate goals, they must undertake rapid and ambitious efforts to shift public finance from 'brown' to 'green' activities. This is a significant step they can take even without the cooperation of Donald Trump.

The Maersk Venturer drillship. Public finance institutions provided tens of billions of dollars between 2013 and 2015 to support offshore drilling.
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photo: Thomas A

GLOSSARY

Public finance: includes the provision of grants, equity, loans, guarantees, and insurance by majority government-owned financial institutions for domestic and international energy production. Public finance is provided through institutions such as national and multilateral development banks, export credit agencies, and domestic banks that are majority state-owned. The transparency of investment data for public finance institutions varies. Assessing the portion of total financing that constitutes a subsidy requires detailed information on the financing terms as well as the portion of finance that is based directly on public resources (rather than raised on capital markets) or that depends on the institutions' government-linked credit rating. Few of the institutions assessed allow public access to this information. Therefore, we report the total value of public finance from majority government-owned financial institutions for fossil fuel production separately from 'national subsidy' estimates. For the purpose of this report, 100 percent of the support provided to fossil fuel production through domestic and international financing is considered when a government holds more than 50 percent of the shares in the bank or financial institution.

Finance-Related Terms

Development finance institutions (DFIs): Many countries have bilateral finance institutions with mandates to support development nationally or internationally, including national development banks and aid agencies.

Export credit agencies (ECAs): ECAs provide government-backed loans, credits, and guarantees for the international operations of corporations from their home country. ECAs provide public financial backing for risky projects, including energy projects, that might otherwise never get off the ground. Most G20 countries have at least one ECA, which is usually an official or quasi-official branch of government.

G20: The Group of 20 (G20) is a forum for 20 major economies to discuss issues of global concern, founded with an emphasis on financial stability. Members include Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union. Between them, these countries represent more than 80 percent of global GDP and are responsible for over three quarters of global greenhouse gas emissions.

Government agencies providing energy finance: Some government departments also provide public finance for energy projects. This report covers a limited set of these transactions, which make up only a small fraction of the total (well under 10 percent of total finance).

Multilateral development banks (MDBs): These institutions provide assistance to governments and the private sector. MDB shareholders, or owners, are its member governments. All MDBs are backed by large sums of public money from member governments, which allow them to provide finance to governments and the private

Gas-fired power plant at night. G20 governments provided tens of billions of dollars in public finance to natural gas infrastructure between 2013 and 2015.
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sector at lower interest rates and on better terms (e.g. longer tenors) than could be obtained from commercial lenders.

State-owned banks: Some countries have banks that operate more like privately held banking institutions, but are owned wholly or in part by the national government. This category also includes some private institutions that function as quasi-public finance institutions, particularly in the case of domestic infrastructure banks. While data has been collected for some of these institutions, it has not been included in the total amounts of public finance in this report (See Box 4).

State-owned enterprises (SOEs): A state-owned enterprise is an entity created by a government to carry out commercial activities on its behalf. These institutions generally do not provide project finance and are therefore not included in the data totals for this report, but SOEs are heavily involved in energy production and benefit from government support. Examples of SOEs involved in fossil fuel production include state-owned oil and gas companies, state-owned coal mining companies, and state-owned utilities. (See Box 5.)

Climate-Related Terms

Carbon lock-in: Once certain carbon-intensive development pathways are chosen and capital-intensive investments are made, fossil fuel dependence and the carbon emissions that come with it can become 'locked in,' making a transition to lower-carbon development pathways difficult and increasing the risk of exceeding climate limits.[7]

Fossil fuel production: production in the oil, gas, and coal sectors. This includes access, exploration and appraisal, development, extraction, preparation, transport, plant construction and operation, distribution, and decommissioning.

Stranded assets: In the context of climate policy, stranded assets are fuel energy and generation resources that, at some time prior to the end of their economic life (as assumed at the investment decision point), are no longer able to earn an economic return (i.e. meet the company's internal rate of return) as a result of changes in the market and regulatory environment associated with the transition to a low-carbon economy.[8]

Unburnable carbon: Fossil fuels that cannot be burnt if global warming is to be kept below 2°C. According to the Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA), three quarters of existing proven fossil fuel reserves must be left in the ground to meet the internationally agreed goal of holding a global average temperature rise to no more than 2°C.[9]

7 Pete Erickson, "Carbon lock-in from fossil fuel supply infrastructure," Stockholm Environment Institute, 2015. www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-DB-2015-Carbon-lock-in-supply-side.pdf
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INTRODUCTION

The best available science clearly shows that human-driven climate change is an urgent crisis, and that we must keep global temperature increases below 1.5°C to avoid severe disruptions to people and ecosystems.[10]

In December 2015, as part of the Paris Agreement on climate change, governments agreed to hold global warming to well below 2°C and to strive to limit warming to 1.5°C. The agreement also included the objective of "[m]aking finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development."[11]

Public finance institutions – those institutions controlled by or backed by governments, such as export credit agencies and development finance institutions – have a crucial role to play in catalyzing this shift. While the U.S. has since indicated it intends to pull out of the Paris Agreement, other governments – and many subnational governments in the U.S. – have indicated their intention to stick to its terms.

Public finance is a significant and important slice of total global energy investment. This report finds that the Group of 20 (G20) countries and largely G20-controlled multilateral development banks (MDBs) provided $122.9 billion of the estimated $1.8 trillion in annual global investment in energy between 2013 and 2015.[12] This public finance plays an outsized role in shaping global energy systems, given that concessional finance can help crowd in private finance and can also have important signaling effects for the broader investment community.[13] If there is any hope of meeting the Paris Agreement's globally agreed objectives of limiting global warming, public finance will have to reflect – if not lead – the investment trend away from fossil fuels and toward clean energy.

To meet the aims of the Paris Agreement, the world must transition to energy sources that produce near-zero emissions, and rapidly decrease reliance on fossil fuels. Recent analysis indicates that the potential carbon emissions from fossil fuels in the world's already operating fields and mines would take us beyond 2°C of warming. And the reserves in already operating oil and gas fields alone, even if coal mining is completely phased out, would take the world beyond 1.5°C.[14]

There are many other benefits to shifting away from fossil fuels beyond stabilizing the climate. Environmental degradation and health hazards – such as air pollution from criteria air contaminants, or depleted water resources exacerbated by high levels of water use by thermal power plants – have resulted in recent policy decisions to cancel over 100 coal-fired power plants in China (many of which were already under construction).[15] In May, China suspended new coal-fired power plant construction in 29 provinces.[16] Similarly, India has announced plans to shut down 37 gigawatts of coal-fired plants due to air pollution and water stress issues.[17]

Around the world, the costs of renewable energy are rapidly declining. As of May 2017, new solar power tariffs in India were 18 percent lower than the average price for coal electricity.[18] Together, the rapidly declining costs of renewable energy and increasing constraints on greenhouse gas emissions mean that new, long-lived fossil fuel infrastructure projects may well be forced to stop operating before the end of their project lifetimes, resulting in stranded assets. These market forces argue for government caution in providing financial backing for fossil fuel projects.

Recent evidence also indicates that renewable energy and energy efficiency have the potential to create far more jobs per unit of investment than fossil fuels.[19] This suggests that justifying government support for fossil fuels on the basis of job creation is misguided. Support for alternatives could create more employment.

Finally, in many cases, distributed renewable energy also offers more opportunity to increase access to energy for the poor, despite government claims to the contrary that are used to legitimize public finance for fossil fuel infrastructure (see Box 1).

While a subset of public finance institutions have established varying degrees of restrictions on finance for coal-fired power plants, they are not yet doing nearly enough to put the world on track to meet the Paris Agreement's objectives of limiting climate change. Applying a 'climate test' is one way that these institutions could directly assess whether energy investments align with climate goals. That would involve using the latest climate science to evaluate "all proposed energy supply and demand policies and projects in light of the globally

10 Carl-Friedrich Schleussner et al., "Differential climate impacts for policy-relevant limits to global warming: the case of 1.5 °C and 2 °C," Earth Systems Dynamics, April 2016, pp. 327-351. http://www.earth-syst-dynam.net/7/327/2016/
11 UNFCCC, "The Paris Agreement," December 2015. http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf
12 International Energy Agency, "World Energy Investment 2016," September 2016. https://www.iea.org/Textbase/npsum/WEI2016SUM.pdf
13 Concessional finance is finance that is more generous than finance at market terms – for example, soft loans with more forgiving interest rates or tenors than could otherwise be secured on the market.
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Box 1: Clean Renewables, Not Fossil Fuels, Are Needed to Improve Energy Access

Since most of the world's energy-poor population lives in rural areas, fossil fuel projects do little to improve access to electricity.[20] Distributed (mini- or off-grid) renewable energy projects usually reach the communities that lack electricity much faster and more affordably than large centralized power plants. These plants often serve wealthy urban populations and industries that are already connected to the grid and can afford more expensive electricity infrastructure investments.[21] A scenario prepared by the International Energy Agency (IEA) to consider pathways to universal energy access by 2030 showed that nearly half of all new connections might come from distributed renewable energy.[22] Distribution, rather than generation, is the bigger problem because about 80 percent of people who lack access to energy live in rural areas far from the grid. Adding more centralized fossil fuel power to the grid will not solve the issue.[23] In Sub-Saharan Africa, for example, oil and gas are being promoted as a means to connect the continent's 600 million people who currently lack access to electricity, despite evidence that many of these projects do little to alleviate energy poverty.[24] Public finance has supported mini- and off-grid solar, wind, and pico-hydro projects, such as Nova Lumos' home solar kits in Nigeria,[25] but much more support is needed.

Despite the climate and social impacts of fossil fuel projects, governments often defend their continued support for fossil fuels on the basis of providing energy access for the poor.[26] However, a 2016 analysis of finance from multilateral development banks found that just 5 percent of their fossil fuel finance was explicitly aimed at enhancing energy access for communities and households that currently lack it.[27] Moreover, MDB support for beyond-the-grid solutions – distributed renewable energy technologies that IEA scenarios suggest might play a key role in achieving universal energy access by 2030 – was less than 1 percent of total MDB energy finance over that same period. Likewise, the World Bank Group's (WBG) Independent Evaluation Group found that, between 2000 and 2014, WBG support for off-grid electrification was "low and sporadic," with limited support for countries with low levels of energy access.[28]

agreed goal of limiting global warming to 1.5˚C."[29]

As this report illustrates, public finance for fossil fuels still greatly outweighs public finance for renewable energy, undermining efforts to scale up climate finance and accelerate the clean energy transition. This report attempts to present a detailed (but not comprehensive) picture of public finance for energy – clean, fossil fuel, and otherwise. It catalogues and interprets public finance for energy across G20 countries[30] and the multilateral development banks with a special focus on public finance for fossil fuels: oil, gas, and coal.

While public financing of coal projects has been the subject of some previous analysis,[31,32,33] the full extent of public financing for fossil fuel production, including oil, gas, and coal – and how those figures compare to public financing for clean energy – has received less attention.

"Empty Promises," a 2015 report exploring subsidies to fossil fuel production, catalogued public finance for oil, gas, and coal in 2013 and 2014 among the public finance institutions of G20 countries as well as MDBs.[34] "Empty Promises" also looked at national-level subsidies and state-owned enterprise investment in fossil fuel production, and its public finance data included several majority government-owned banks. This report digs deeper into the public finance component by adding data for 2015 and by looking at the full spread of public finance for energy – clean, fossil, and otherwise – across a wide range of G20 institutions and the MDBs.

Notably, in contrast to the "Empty Promises" report, this analysis excludes state-owned enterprise investment and finance from majority government-owned banks (such as Royal Bank of Scotland). While these types of institutions are important sources of government-backed energy finance, it is difficult to disentangle which investments they make on commercial or market terms, and which investments are primarily policy-driven. The scope of this analysis, including which types of institutions are included and excluded, is described in further detail in the "Methodology and Data Sources" section.

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29 Climate Test, "It's Time for a New Climate Test," http://www.climatetest.org/
30 G20 members include Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States and the European Union. We include all of those countries in this analysis, excepting those European Union countries that are not standalone members of the G20.
31 Elizabeth Bast, Sebastien Godinot, Stephen Kretzmann, and Jake Schmidt, "Under the Rug: How Governments and International Institutions are Hiding Billions in Support to the Coal Industry," Oil Change International, Natural Resources Defense Council, and World Wide Fund for Nature, June 2015. https://www.nrdc.org/sites/default/files/int_15060201a.pdf
32 Han Chen, Alex Doukas, Sebastien Godinot, Jake Schmidt, and Sara Lyn Vollmer, "Swept Under the Rug: How G7 Nations Conceal Public Financing for Coal Around the World," Natural Resources Defense Council, Oil Change International, World Wide Fund for Nature, KIKO Network, JACSES, Friends of the Earth Japan, May 2016. https://www.nrdc.org/sites/default/files/swept-under-rug-coal-financing-report.pdf
33 Han Chen, Alex Doukas, Jake Schmidt, and Sarah Lyn Vollmer, "Carbon Trap: How International Coal Finance Undermines the Paris Agreement," Natural Resources Defense Council and Oil Change International, November 2016. https://www.nrdc.org/sites/default/files/carbon-trap-international-coal-finance-report.pdf
34 Elizabeth Bast, Alex Doukas, Sam Pickard, Laurie van der Burg, and Shelagh Whitley, "Empty promises: G20 subsidies to oil, gas and coal production," Oil Change International and Overseas Development Institute, November 2015. https://www.odi.org/publications/10058-empty-promises-g20-subsidies-oil-gas-and-coal-production

PUBLIC FINANCE SUPPORTS THE RECKLESS EXPANSION OF THE FOSSIL FUEL INDUSTRY[35]

Public finance for fossil fuel production undermines climate action in three important ways:

- **Lowering the cost of carbon emissions, thus undermining carbon pricing:** To the extent that it functions as a subsidy to fossil fuel production, public finance for fossil fuels provides an incentive to emit carbon, encouraging higher levels of fossil fuel production and consumption. In this way, government spending to support fossil fuel production acts as a negative carbon price, pulling in the opposite direction of climate policy and sending confusing market signals.

- **Driving high carbon lock-in:** High carbon lock-in – aided by public finance for fossil fuels – makes the transition to clean energy more difficult and costly.

- **Making uneconomical dirty energy economical:** Public finance subsidizes unburnable carbon, enabling production of 'zombie energy' – that is, energy that would otherwise be uneconomical to produce.

Each of these mechanisms is described further below:

Concessional fossil fuel finance lowers the cost of carbon emissions, thus undermining carbon pricing. Recognizing the cost of carbon emissions to the environment, public health, and the climate, governments are working on pricing carbon so that the market internalizes this cost and investment decisions are made accordingly. Public finance for the production of fossil fuels effectively acts as a negative price on carbon emissions. Instead of addressing the externalities of fossil fuel production and consumption as a price on carbon would, a negative carbon price further distorts the true costs of fossil fuels by making them less expensive and less risky. This encourages inefficiently high levels of investment in fossil fuel production and, correspondingly, inefficiently high levels of their extraction. The increased level of oil, gas, and coal production driven by public finance undermines the competitiveness and attractiveness to investors of renewable energy and energy efficiency alternatives, inducing demand for fossil fuels through artificially low prices to end users.

Carbon lock-in is exacerbated by public finance. Government support for fossil fuel production through public finance also makes shifting away from carbon-intensive energy systems more difficult and expensive. Recent analysis indicates that if energy investments continue to favor emissions-intensive infrastructure through 2020, the shift to a low-carbon energy system will cost 4 times as much through 2035 as it otherwise would, making the political economy of a clean energy transition more difficult.[36, 37] As investment flows into the capital-intensive, long-lived infrastructure that characterizes high-carbon energy systems, fossil fuel dependence and the associated carbon emissions may become 'locked in' for decades to come, increasing the risk of exceeding climate limits.[38]

Public finance and other forms of government support are often particularly important for the very large, long-lived projects that anchor the fossil fuel system and most increase the risk of high carbon lock-in. Once capital-intensive investments are made, producers have a strong incentive to continue production to recoup

35 This section is adapted from the following report on fossil fuel production subsidies: Ivetta Gerasimchuk, Andrea Bassi, Carlos Dominguez Ordonez, Alexander Doukas, Laura Merrill, Shelagh Whitley, "Zombie Energy: Climate benefits of ending subsidies to fossil fuel production," International Institute for Sustainable Development, Global Subsidies Initiative, and Overseas Development Institute, 2017. https://www.iisd.org/sites/default/files/publications/zombie-energy-climate-benefits-ending-subsidies-fossil-fuel-production.pdf
36 Peter Erickson, "Carbon lock-in from fossil fuel supply infrastructure," Stockholm Environment Institute, 2015. https://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-DB-2015-Carbon-lock-in-supply-side.pdf
37 International Energy Agency, "Redrawing the Energy-Climate Map," June 2013. http://www.worldenergyoutlook.org/media/weowebsite/2013/energyclimatemap/RedrawingEnergyClimateMap.pdf
38 Peter Erickson, "Carbon lock-in from fossil fuel supply infrastructure," Stockholm Environment Institute, 2015. https://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-DB-2015-Carbon-lock-in-supply-side.pdf

investment costs; once developed, a field or a plant is likely to continue operating as long as the income from production covers the ongoing operating costs – even if returns from that production are negligible. Policies that restrict public finance for fossil fuels will help avoid lock-in to these investments in the first place and, therefore, will help maintain a chance of transforming energy systems in a way that is consistent with keeping global temperature rise to well below 2˚C.

Public finance for fossil fuels results in unburnable carbon and 'zombie energy.'[39] To stay below the 2°C or 1.5°C warming limits, respectively 68 percent or 85 percent of fossil fuel reserves must remain in the ground.[40] More recent analysis indicates that developed reserves of oil, gas, and coal – that is, reserves that are already producing or that have steel in the ground – are sufficient to take the world well beyond a carbon budget that would keep warming below 2°C. Developed reserves of oil and gas alone would be enough to overshoot a 50 percent chance of limiting warming to below 1.5°C.[41] Yet governments and companies continue to pour hundreds of billions of dollars into efforts to discover and develop new reserves and build fossil fuel-producing infrastructure.

Public finance has given artificial life to fossil fuel production that *would not be viable without subsidies or other government support.* Using the financial community's terminology, these extraction projects driven by government support are 'zombies.' Government support for fossil fuel production also increases the risk of stranding assets. Stranded assets in the context of fossil fuels are fuel energy and generation resources that, as a result of regulatory changes linked to the transition to a low-carbon economy, are no longer able to earn an economic return at some time prior to the end of their economic life.[42]

At the same time, renewable energy presents more opportunities for public finance than ever before, further weakening the case for continued public support for fossil fuels (see Box 2.) Instead of spending public resources to prop up domestic industries that are facing headwinds due to carbon constraints and rapidly declining costs of competing renewable alternatives, governments can consider ways to nurture a domestic economy that stands to benefit, rather than lose, from the energy transition.

Box 2: Renewable Energy Has Become "Unstoppable" – Presenting Real Opportunities for Public Investment

Huge gains in clean power production and electric vehicles are driving a renewable energy boom. A May 2017 *Financial Times* story highlighted the fact that global renewable power generation capacity rose by 9 percent in 2016, equating to a fourfold increase from the start of this century. And for the second year in a row, renewable energy accounted for more than half of new power generation capacity added worldwide. Sales of plug-in electric vehicles were 42 percent higher in 2016 compared to 2015, growing 8 times faster than the overall market. One of the game changers has been the cost of lithium batteries, which has halved since 2014.[43]

Estimates from the International Renewable Energy Agency's (IRENA) "Renewable Energy and Jobs – Annual Review 2016" show that renewable energy employed 8.1 million people worldwide in 2015, which is a 5 percent increase from the previous year.[44] Meanwhile, analysis of U.S. Department of Energy jobs data shows that clean energy jobs in the U.S. outnumber all fossil fuel jobs by more than 2.5 to 1; they outnumber all jobs in coal and gas by 5 to 1.[45] It is clear from these numbers that government investments in the booming clean energy sector can do more to support jobs than the billions currently wasted on fossil fuels.

Further, there is a growing opinion among analysts that renewables can now compete with fossil fuels without subsidies – which is notable given the subsidies that fossil fuels continue to receive. "Renewables have reached a tipping point globally," Simon Virley, head of power and utilities at the accountancy firm KPMG told the *Financial Times*. "A subsidy-free future is now in reach for a number of technologies and geographies."[46] But a level playing field – made possible by an increase in public support for renewable energy in the near-term – would help get us there more quickly and efficiently.

39 Ivetta Gerasimchuk, Andrea Bassi, Carlos Dominguez Ordonez, Alexander Doukas, Laura Merrill, and Shelagh Whitley, "Zombie Energy: Climate benefits of ending subsidies to fossil fuel production," International Institute for Sustainable Development, Global Subsidies Initiative, and Overseas Development Institute, 2017. http://www.iisd.org/library/zombie-energy-climate-benefits-ending-subsidies-fossil-fuel-production
40 Greg Muttitt, "The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production," Oil Change International, September 2016. http://priceofoil.org/2016/09/22/the-skys-limit-report/
41 Ibid.
42 Carbon Tracker Initiative and the Grantham Institute, "Unburnable Carbon 2013: Wasted capital and stranded assets," 2013. http://www.carbontracker.org/wp-content/uploads/2014/09/Unburnable-Carbon-2-Web-Version.pdf
43 Pilita Clark, "The Big Green Bang: How renewable energy became unstoppable." Financial Times, May 18, 2017. https://www.ft.com/content/44ed7e90-3960-11e7-ac89-b01cc67cfeec
44 International Renewable Energy Agency, "Renewable Energy and Jobs – Annual Review 2016," 2016. http://www.irena.org/menu/index.aspx?CatID=141&PriMenuID=36&SubcatID=2729&mnu=Subcat
45 Sierra Club, "Clean Energy Jobs Overwhelm Coal, Oil & Gas in 41 States and D.C," 2017. https://www.scribd.com/document/343243328/Sierra-Club-Clean-Energy-Jobs-Report-Final-1
46 Pilita Clark, "The Big Green Bang: How renewable energy became unstoppable." Financial Times, May 18, 2017. https://www.ft.com/content/44ed7e90-3960-11e7-ac89-b01cc67cfeec

METHODOLOGY AND DATA SOURCES

This report reviews and analyzes how G20 member state governments provide support for energy projects via public finance institutions. These institutions include bilateral public finance institutions such as national development banks and other development finance institutions, overseas aid agencies, export credit agencies, as well as key multilateral development banks.

Types of Finance and Valuation

These bilateral and multilateral institutions provide public finance in the form of grants, loans, equity, insurance, and guarantees both domestically and internationally. Investments by public finance institutions are backed by their respective governments through direct investment using public funds and through creditworthiness. Even where public funds are not deployed directly from government budgets, the high credit ratings of publicly owned financial institutions, and their willingness to invest in the sector linked to government objectives, can reduce the risk to parallel private investors. Public finance also sends a signal to investors as to which energy sources the government is in fact prioritizing, regardless of high-level policy commitments. This often drives private investment in fossil fuel production that would not occur otherwise, regardless of the loan terms. This leverage effect is the fundamental rationale for public investment in a number of sectors (i.e. to act or invest in areas where the private sector is reluctant to do so).

We consider public finance that is concessional or involves risk borne by the state to be a subsidy to energy production. The World Trade Organization definition of a subsidy includes "direct transfer of funds" (e.g. grants, loans, and equity infusion) or "potential direct transfers of funds or liabilities" (e.g. guarantees).[47] There are many types of public finance, including those that entail direct public flows to beneficiaries (such as grants and loans), and those that facilitate private (or sometimes even other public) flows to beneficiaries, such as guarantees and insurance. This analysis covers all of these forms of public finance. It does *not* consider subsidies to fossil fuel production at the national level in state budgets, which previous analysis has indicated may provide an additional $80 billion per year in support to fossil fuel production from G20 governments.[48]

Unfortunately, the transparency of investment data for public finance institutions varies greatly. Few of the institutions assessed in this report allow public access to detailed investment information, and therefore we report the gross value of public finance from majority government-owned financial institutions for fossil fuel production (not only the concessional value or subsidy component). Over 80 percent of the finance assessed in this report was provided in the form of loans, with the remainder split between other instruments. This high percentage of loans is especially relevant given the potential for default.

Additionally, the public finance figures identified in this report are likely to be significant underestimates. Majority government-owned banks, many of which are in some aspects policy-driven, are not included in this report (see Box 4). Crucially, the datasets used for this analysis also omit most finance delivered through financial intermediaries (because the volume of finance for specific energy activities ultimately delivered through those intermediaries is often unclear). For the same reason, the datasets omit significant volumes of MDB development policy finance, which can account for as much as 30 to 40 percent of their lending in a given year.

47 WTO, "Agreement on Subsidies and Countervailing Measures." https://www.wto.org/english/docs_e/legal_e/24-scm_01_e.htm
48 Elizabeth Bast, Alex Doukas, Sam Pickard, Laurie van der Burg, and Shelagh Whitley, "Empty promises: G20 subsidies to oil, gas and coal production," Oil Change International and Overseas Development Institute, November 2015. https://www.odi.org/publications/10058-empty-promises-g20-subsidies-oil-gas-and-coal-production

Table 1: Classification of Public Finance Institutions

Type of Institution	Typical Mandate / Stated Objective
Multilateral development bank	Promote development, reduce poverty.
Bilateral development finance / aid	Promote development, reduce poverty – but may have secondary objectives based on national policy priorities (in the case of national development banks, their mandate may also include support for domestic industry).
Export credit agency	Promote the export of goods and services.
Majority state-owned bank	Mixed, depending on institution – often commercial and profit-driven; sometimes policy-driven (not included in this analysis - see Box 4).

Institutions Covered in this Analysis

This report covers bilateral public finance institutions controlled by G20 governments, including development finance institutions, national development banks, and export credit agencies, as well as several MDBs.

Not all of the public finance institutions assessed in this report function the same way. For example, some countries have institutions that deal solely with export credits, while others have multiple export credit agencies, and some have development finance institutions that also provide export credits. The boundaries across institutions are often not cut and dry, but we have made efforts to disaggregate data across the sections of this report where possible to provide a clear sense of the financing trends in each category of institution.

A list of how we have classified each institution is available in Annex 1. A description of these institution categories, and their typical mandates and functions, is included above in Table 1.

State-owned enterprise investments and public finance provided directly by governments through their budgets are not included in this analysis. MDBs considered in this analysis include the World Bank Group, Inter-American Development Bank (IADB), European Investment Bank (EIB), European Bank for Reconstruction and Development (EBRD), Asian Development Bank (ADB), and African Development Bank (AfDB). Other important multilateral institutions in which G20 governments participate are not covered in this report, but may be covered in future analyses and are important providers of public finance. Institutions not covered include the Development Bank of Latin America (CAF), Asian Infrastructure Investment Bank, New Development Bank, Islamic Development Bank, the sub-regional MDBs, and other non-MDB multilateral financial institutions, such as the European Commission, Nordic Investment Bank, and OPEC Fund for International Development, among others.[49]

Shift the Subsidies Database

This report utilizes data from Oil Change International's Shift the Subsidies database, which tracks energy finance from public finance institutions, but not the value of the private finance mobilized. In addition to reviewing information made publicly available by majority government-owned financial institutions and other public sources of information, this database draws information from the Infrastructure Journal (IJ) Global database, as well as data from resources developed by Boston University's Global Economic Governance Initiative's China Global Energy Database, AboveGround, Bank Information Center, and CEE Bankwatch Network.

The Shift the Subsidies database classifies each finance entry as fossil fuel, clean or other (see Box 3) based on the description of the project and project documents.

Box 3: Energy Financing Classification

Fossil Fuel. In this analysis, fossil fuels include any oil, gas, or coal projects, or projects supporting the development or transmission of fossil fuel power.

Clean Energy. Clean energy includes energy that is both low carbon and has negligible impacts on the environment and on human populations if implemented with appropriate safeguards. Some energy efficiency and some renewable energy – energy coming from naturally replenished resources such as sunlight, wind, rain, tides, and geothermal heat – is included as clean energy.

Other. The development of some 'renewable' sources – notably large hydropower, biofuels, and biomass – can have significant impacts on the environment and on human populations that make it difficult to consider them truly 'clean.' These energy sources, along with nuclear power, incineration, and other forms of power that are not fossil fuels but also not clean, are included in the 'other' category. See more at: http://www.shiftthesubsidies.org/#methodology.

49 These institutions were not included primarily due to a lack of data in the datasets used for this analysis.

ANALYSIS OF ENERGY FINANCING FROM G20 COUNTRIES

TOTAL PUBLIC FINANCING BY COUNTRY

Public finance for all energy sources from G20 countries, including major multilateral development banks with significant voting shares held by the G20, totaled $122.9 billion annually between 2013 and 2015. Only 15 percent of this went to clean energy, while 58 percent went to fossil fuels. The vast majority of the fossil fuel finance – and half of all public energy finance – went to oil and gas projects, which received $62 billion dollars annually over this period (see Figures 1 and 2 for details).

Fossil Fuel Finance

Total public finance to fossil fuels – including finance for oil, gas, and coal from bilateral and multilateral sources – averaged $71.8 billion annually from 2013 to 2015, for a total of $215.3 billion over the three-year period. The largest amounts of fossil fuel finance come from Japan and China, which averaged $16.5 and $13.5 billion in annual fossil fuel financing respectively. South Korea provided $8.9 billion annually followed by the United States with $6 billion in annual fossil fuel finance. Another $8.7 billion in fossil fuel finance was provided annually by multilateral development banks. Of the total $71.8 billion in annual fossil fuel finance, around one sixth went to coal while the remainder – 84 percent – went to oil and gas. For comparison, fossil fuel finance was 4 times greater than clean energy finance.

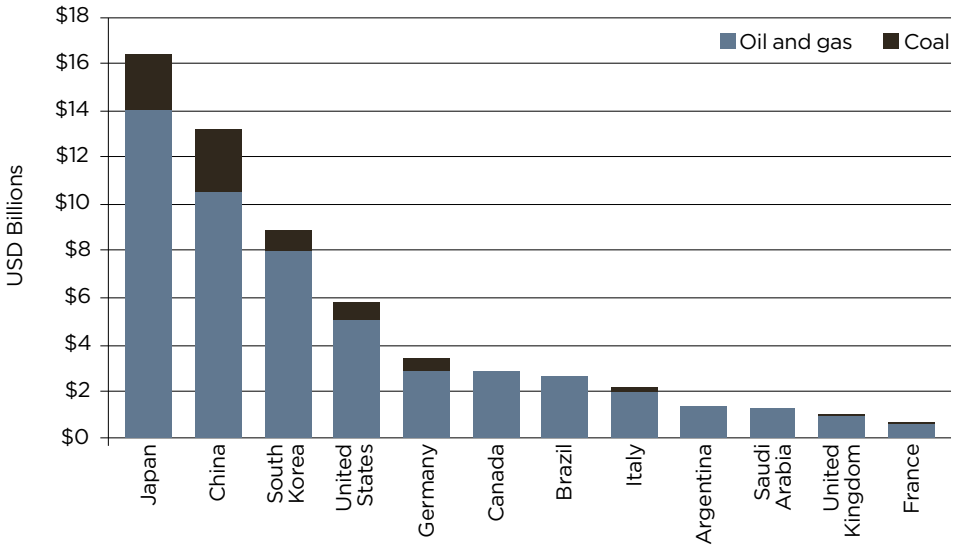
In every G20 country except for India and Russia, public finance for oil and gas far outweighs public finance for coal. Japan and China provide the largest amounts of both oil and gas finance as well as coal finance (see Figure 1). South Korea, the U.S., Germany, and Canada also lead G20 governments in providing high amounts of oil and gas finance. In the case of Canada, this analysis covers a period that mostly precedes the current Trudeau government.

But trends in Canada's public finance through 2016 appear largely consistent with these findings, with billions of dollars in new support for oil and gas flowing from Canadian public finance institutions.

Public finance for fossil fuels represents a huge drain on public funds, redirecting billions towards wealthy oil and gas companies. Bilateral oil and gas financing across G20 countries (excluding multilateral development bank finance) alone averaged $54 billion annually from 2013 to 2015.

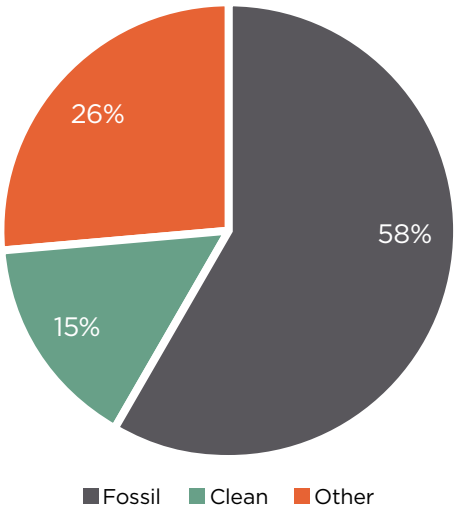
G20 public finance for fossil fuel exploration - exploration for new reserves of oil, gas, and coal - averaged $13.5 billion annually between 2013 and 2015. This finance is particularly egregious, given that most already-discovered reserves must remain unburned to avoid the worst impacts of climate change, as described in the Introduction. Japan provided the most exploration finance, averaging $3.4 billion

Figure 1: Annual Average of Public Finance for Fossil Fuels by Top 12 G20 Countries, 2013-2015



Source: Oil Change International Shift the Subsidies Database. Note: For all figures, data does not include majority government-owned banks that function commercially or quasi-commercially, which are particularly relevant for India and China.

Figure 2: Total Public Finance for Energy from G20 Countries by Energy Type, 2013-2015



Source: Oil Change International Shift the Subsidies Database.

annually, followed by Korea with $1.6 billion annually, the United States and China each with $1.4 billion annually, Brazil with $1.2 billion annually, and Canada with $1.1 billion annually.

Clean Energy Finance

Public finance for clean energy accounted for just 15 percent of total G20 and MDB public finance for energy between 2013 and 2015, averaging $18.7 billion annually. Japan and Germany were the leading bilateral sources of this finance, averaging $2.7 billion and $2.4 billion annually, respectively, over this period. The U.S. and Brazil followed with $1.3 billion and $1.2 billion in respective annual clean energy finance.

Other Energy Finance

Finance for 'other' energy activities (explained in the methodology for this report) – including transmission and distribution activities with no clearly associated energy source, large hydro, and a number of other categories that are not clearly 'clean,' low-impact, or fossil fuel – made up 26 percent of G20 country and MDB public finance for energy between 2013 and 2015, an average of $32.4 billion annually. The bulk of this finance supported electricity transmission and distribution projects or large hydro.

Table 2: Annual Average of Total Public Energy Finance by G20 Countries and Multilateral Development Banks, 2013-2015

Country or Institution	Clean	Fossil Fuel	Other	Total Annual Average
Finance from Countries	**USD Millions**	**USD Millions**	**USD Millions**	**USD Millions**
Argentina	$0	$1,423	$0	$1,423
Australia	$524	$152	$54	$730
Brazil	$1,165	$2,985	$770	$4,919
Canada	$171	$2,953	$2,270	$5,394
China	$85	$13,532	$1,468	$15,084
France	$650	$609	$820	$2,079
Germany	$2,357	$3,461	$206	$6,024
India	$19	$422	$107	$547
Indonesia	$21	$19	$59	$99
Italy	$123	$2,149	$792	$3,063
Japan	$2,657	$16,466	$1,774	$20,896
Korea	$92	$8,907	$275	$9,274
Mexico	$235	$288	$0	$523
Russian Federation	$0	$1,092	$136	$1,228
Saudi Arabia	$13	$1,276	$4,483	$5,772
South Africa	$229	$352	$12	$593
Turkey	(No data)	(No data)	(No data)	(No data)
United Kingdom	$172	$972	$110	$1,253
United States	$1,271	$6,008	$3,195	$10,474
Finance from Multilateral Development Banks				
African Development Bank	$132	$166	$914	$1,211
Asian Development Bank	$935	$674	$2,535	$4,144
European Bank for Reconstruction and Development	$919	$1,012	$945	$2,877
European Investment Bank	$4,011	$3,485	$6,957	$14,454
Inter-American Development Bank	$532	$151	$705	$1,388
World Bank Group	$2,428	$3,228	$3,797	$9,453
Grand Total	**$18,739**	**$71,781**	**$32,382**	**$122,902**

Source: Oil Change International Shift the Subsidies Database.

EXPORT CREDIT AGENCIES

Export credit agencies (ECAs) provide government-backed loans, credits, and guarantees for the international operations of corporations from their home country. ECAs provide public financial backing for risky projects, including coal mines and power plants. Officially, ECAs are supposed to be complementary to the functioning of markets. This means that ECAs support many fossil fuel transactions that would not be economically feasible otherwise. Without ECA backing, those fossil fuel projects would never get off the ground. Most members of the Organization for Economic Cooperation and Development (OECD) and G20 have at least one ECA, which is usually an official or quasi-official branch of government. Most export credit agencies do not have development mandates; their primary purpose is to help domestic companies export goods and services.

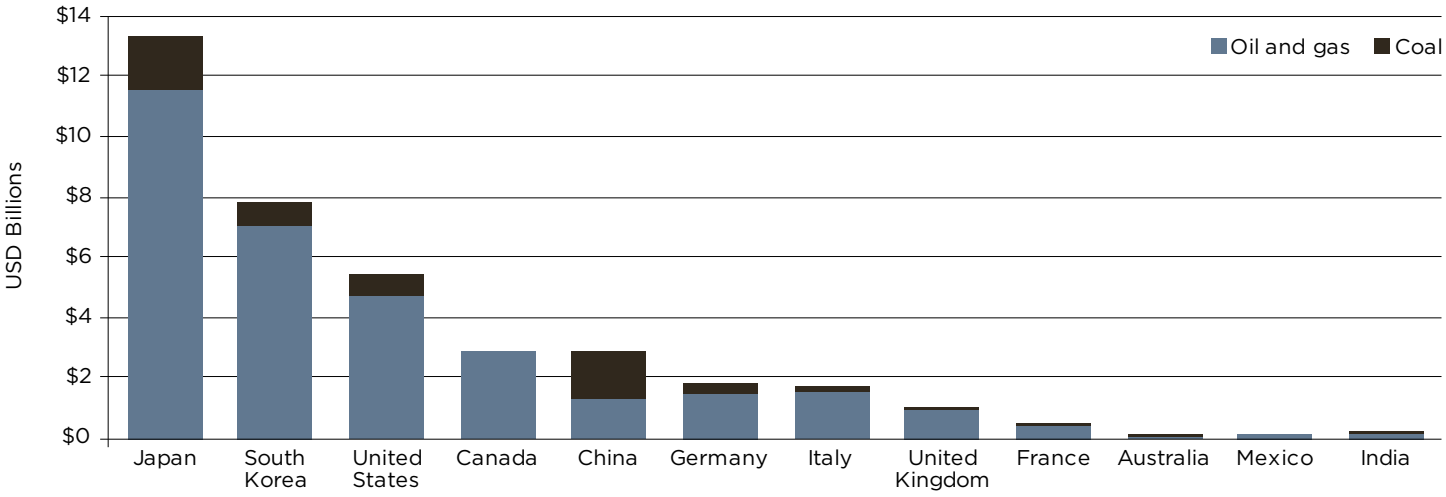
Export credit agencies were responsible for 35 percent of total G20 public energy support from 2013 to 2015 – 88 percent of which went to fossil fuels (see Figure 6).

ECA Support for Oil and Gas Dwarfs All Other Financing

Export credit agencies in G20 countries provided $32.3 billion annually in support to oil and gas projects on average between 2013 and 2015 – nearly 6 times the amount provided for coal projects (see Figures 3 and 4). Many of the largest providers of oil and gas finance are the same as for coal finance, but with much larger pots of money involved. In addition, some countries, such as Canada, provide little or no support for coal but are major contributors to oil and gas projects.

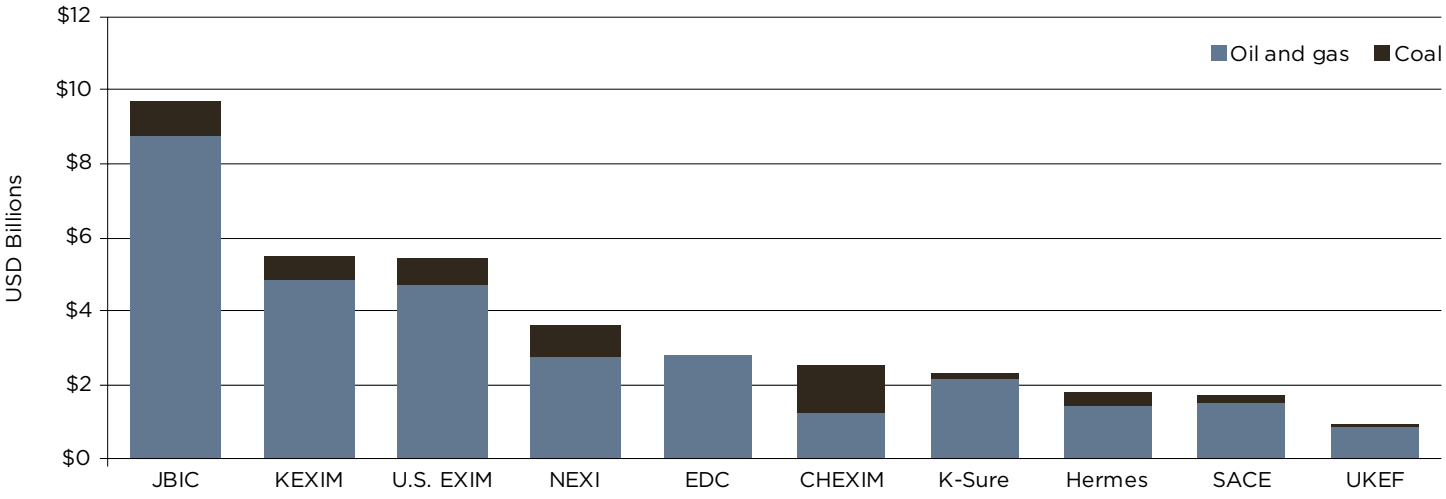
Of OECD countries, Japan is the largest supporter of oil and gas projects: its two export credit agencies, the Japan Bank for International Cooperation (JBIC) and Nippon Export and Investment Insurance (NEXI), provide a staggering total of $11.6 billion annually – over a third of all the ECA financing for oil and gas analyzed in this report. Coming in second among ECAs, South Korea's export credit agencies – the Export-Import Bank of Korea (KEXIM) and the Korea Trade Insurance Corporation (K-Sure) – also provide vast amounts of oil and gas finance at $7 billion annually. Export Development Canada (EDC) is also worth noting. EDC provided $2.9 billion

Figure 3: Largest ECA Financiers of Fossil Fuels by Country, Annual Average, 2013-2015



Source: Oil Change International Shift the Subsidies Database.

Figure 4: Top 10 ECA Financiers of Fossil Fuels by Institution, Annual Average, 2013-2015



Source: Oil Change International Shift the Subsidies Database.

annually to oil and gas projects, but the true figure could be double that amount because EDC only reports a financing range (e.g. $100 million to $200 million) for their projects, and our dataset uses the lowest end of the range to provide a conservative estimate. Other ECAs providing billions or hundreds of millions of dollars to prop up the oil and gas industry hail from the United States, Italy, Germany, China, the United Kingdom, and France.

Nineteen percent of all ECA fossil fuel finance went to support exploration activities. Of ECA oil and gas finance, nearly 23 percent went toward exploration. UK Export Finance (UKEF) directed over 44 percent of its oil and gas finance to exploration-related activities, while Canada directed 37 percent toward exploration. The U.S. Export-Import Bank (U.S. EXIM) also provided a high proportion of its oil and gas finance to exploration – just under 30 percent.

Some agencies, such as Mexico's Banco Nacional de Comercio Exterior (Bancomext), are increasing their support for oil and gas projects over time. It is notable that China also financed billions of dollars of oil and gas projects in 2016 (amounts not included in this report, which only assesses data from 2013 to 2015). The projects include the Export-Import Bank of China's (CHEXIM) $12 billion support for the Yamal liquefied natural gas (LNG) project, which is cofinanced with the China Development Bank.[50]

50 BU Global Economic Governance Initiative (GEGI), "China's Global Energy Finance: Energy Source - Gas/LNG," 2016, (last visited May 18, 2017). http://www.bu.edu/cgef/#/2016/EnergySource/GasLNG OECD country export credit agencies, such as Germany's Euler Hermes, also supported Yamal LNG

The Deepsea Delta oil platform in the North Sea. Offshore oil and gas activities benefitted from billions of dollars in public finance from G20 countries between 2013 and 2015. *©Erik Christensen License: https://creativecommons.org/licenses/by-sa/3.0/deed.en*

Japan and China Lead in ECA Coal Financing

Export credit agencies from G20 countries were responsible for $5.6 billion in annual support for coal projects between 2013 and 2015, or 57 percent of all public finance for coal identified in this analysis. Seventy-seven percent of this ECA financing for coal projects supported coal-fired power plants.

A few country actors are responsible for the majority of this financing, with Japan and China in particular standing out along with South Korea and the United States. Japan, through NEXI and JBIC, provided nearly a third of the export credit support for coal projects over this time period, for an annual average of over $1.7 billion.

China, through the China Export and Credit Insurance Corporation (Sinosure) and CHEXIM, provided the second-highest amount of export credit financing for coal at $1.5 billion annually between 2013 and 2015. This financing is especially important because China is not part of the OECD and, therefore, is not bound by the OECD's newly implemented restrictions on coal financing.

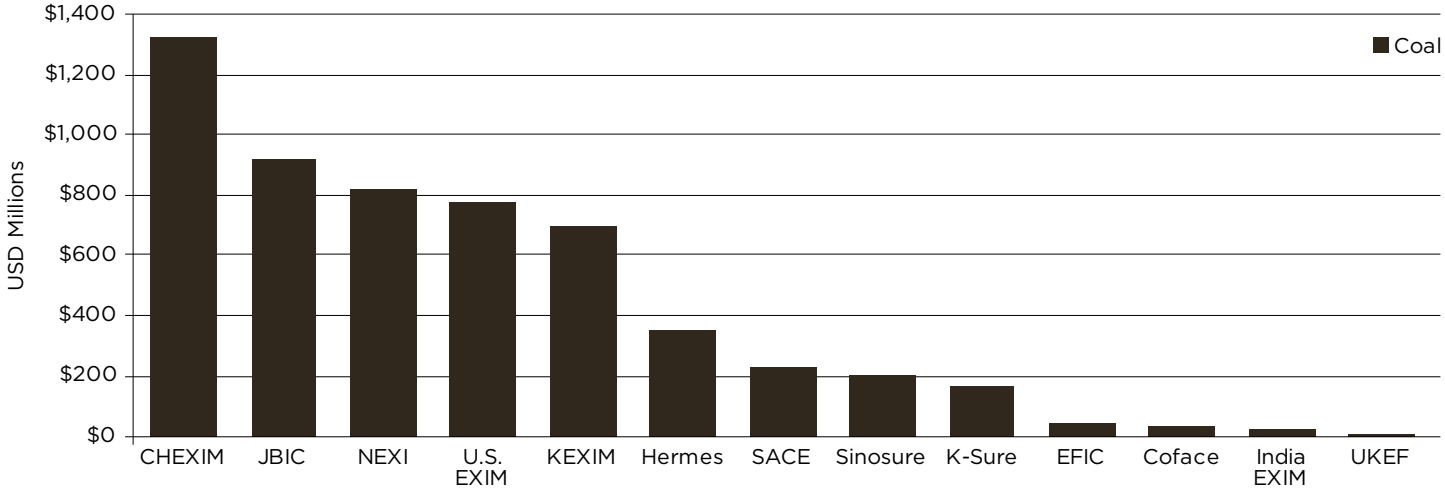
In 2016 alone, the Export-Import Bank of China provided over $5.5 billion for coal projects,[51] though this figure is not included in the totals for this analysis since its scope is from 2013 through 2015.

Two South Korean export credit agencies, KEXIM and K-Sure, provided $864 million annually for coal projects between 2013 and 2015 – a level of support that is lower in absolute value but very high relative to the size of South Korea's economy. Alongside Japan and South Korea, it is notable that many of the top providers of export credits for coal are high-income countries. Other top offenders in descending order of support provided are U.S. EXIM, Germany's Euler Hermes (Hermes), Italy's Servizi Assicurativi del Commercio Estero (SACE), and France's Compagnie Francaise d'Assurance pour le Commerce Exterieur (Coface) (see Figure 5). Also noteworthy with regards to lower middle-income countries is the Export-Import Bank of India. For India and other countries embarking on large-scale development of electricity infrastructure, coal financing may increase as these institutions remain outside of the OECD coal restrictions.

Many export credit agencies appear to be ramping down their support of coal projects. U.S. EXIM[52] and Germany's Hermes provided very little support to coal projects in 2015, while others greatly reduced their support. For example, the Australian Export Finance and Insurance Corporation's (EFIC) 2015 coal financing was a small fraction of its 2013 support – although the Australian government is discussing providing large amounts of domestic public finance to prop up the massive Adani Carmichael coal mine. While JBIC's and NEXI's combined coal support in 2015 was less than a quarter of what it was in 2013, Japan seems to have shifted much of this financing to its aid agency and development finance institution. The Japan International Cooperation Agency (JICA) provided 28 times more coal support in 2015 compared to 2013.

This financing should further decrease with the implementation of the OECD restrictions on some coal plant financing, which went into effect on January 1, 2017.[53] Unfortunately, loopholes in these restrictions mean that this financing will remain significant, especially for Japan.

Figure 5: Largest G20 ECA Financiers of Coal by Institution, Annual Average, 2013-2015

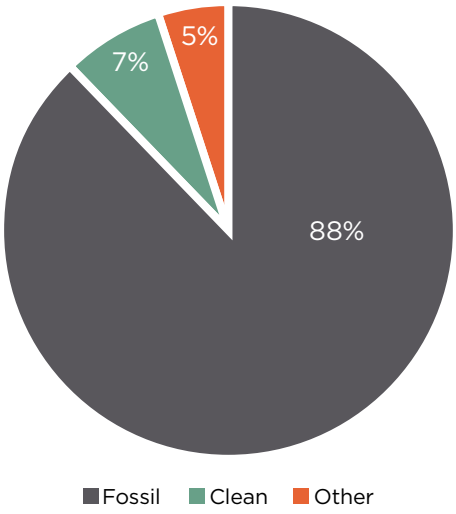


Source: Oil Change International Shift the Subsidies Database.

51 BU Global Economic Governance Initiative (GEGI), "China's Global Energy Finance: ExIm Bank," 2016, (last visited May 18, 2017). http://www.bu.edu/cgef/#/2016/Lender/Ex-Im-Bank
52 The Trump administration in the U.S. has prioritized the exploitation of fossil fuels, especially coal, so U.S. EXIM under Trump may once again begin supporting coal-fired power projects.
53 OECD, "Sector Understanding on Export Credit for Coal-Fired Electricity Generation Projects," TAD/PG(2015)9/FINAL, November 27, 2015. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/PG(2015)9/FINAL&docLanguage=En

Open cut coal mine, Hunter Valley, Australia – similar to a number of Australian open cut mines benefitting from public finance from Japan.
©Max Phillips (Jeremy Buckingham MLC) License: https://creativecommons.org/licenses/by/2.0/

Figure 6: Total G20 ECA Energy Finance by Type, 2013-2015



Source: Oil Change International Shift the Subsidies Database.

The restrictions only apply to financing that is subject to the OECD's "Arrangement on Officially Supported Export Credits."[54] All financing that falls outside the Arrangement will not be subject to any restrictions. In addition, support for mining, coal-related infrastructure, and exploration may continue because only power plant financing is covered. Even for power plants, financing for the 'most efficient' coal power plants – called ultra-supercritical – is still allowed even though there is very little difference in the emissions from an 'efficient' coal plant and an 'inefficient' coal plant. Even the most efficient coal plants are incompatible with the Paris Agreement.[55] (See section on Policies Limiting Public Finance for Coal.)

In order to align with global climate goals, OECD restrictions should cover all coal plants no matter their efficiency, as well as coal mining and related infrastructure (i.e. coal ports, rail built primarily or expressly for coal, etc.). Additionally, the scope of financial transactions should be expanded to cover 'non-Arrangement' transactions. While this is not an issue for the United States or France, for example, where all transactions are done under Arrangement rules, it is a serious issue for Japan, where only a small fraction of export credits fall under the Arrangement.

ECA Clean Energy Financing Trails Far Behind Fossil Fuel Financing

Among G20 countries, ECA support for clean energy – at about $3 billion annually between 2013 and 2015 – is miniscule compared to the $37.9 billion in annual ECA support for fossil fuels. Coal receives nearly double the support of clean energy sources such as solar, wind, and small hydroelectricity projects, while oil and gas receive more than 10 times as much financing as clean energy. The plurality of clean energy support ($3 billion in total) went toward wind power projects.

For the most part, ECA support for clean energy is growing, but it would need to grow exponentially in order to catch up with fossil fuel support. The top supporters of clean energy – JBIC and Hermes – increased their support between 2013 and 2015. Even with increases of 50 or 100 percent, however, the numbers would still be too small to compete with ECA support for fossil fuels. In addition, three ECAs – SACE, KEXIM, and NEXI – all supported clean energy in 2015 after failing to do so in 2013 and 2014, but at very low levels.

54 The Arrangement on Officially Supported Export Credits is an agreement among most OECD Member Governments that establishes the most generous export credit terms and conditions that the participants to the Arrangement can offer in order to provide a level playing field. OECD, "Arrangement on Officially Supported Export Credits," TAD/PG(2017)1, January 31, 2017. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=tad/pg(2017)1.
55 Lindee Wong, David de Jager and Pieter van Breevoort, "The incompatibility of high-efficient coal technology with 2°C scenarios," Ecofys, 2016. http://www.ecofys.com/files/files/ecofys-2016-incompatibility-of-hele-coal-w-2c-scenarios.pdf.

DEVELOPMENT FINANCE INSTITUTIONS

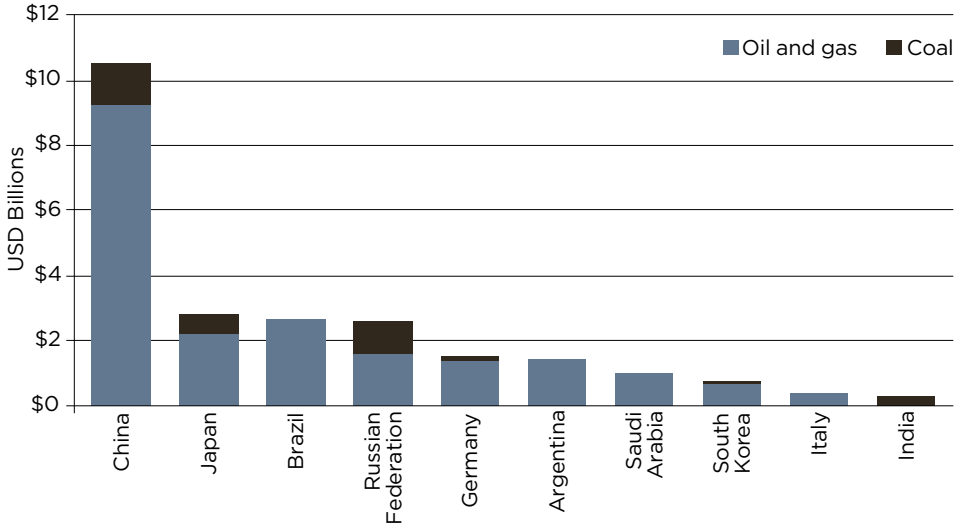
Development finance institutions (DFIs) provide support to the private sector in order to encourage investment in developing countries. Unlike ECAs, DFIs have development mandates. Examples of DFIs include the Overseas Private Investment Corporation (OPIC) in the U.S., Kreditanstalt fur Wiederaufbau (KfW) in Germany, and the Japan International Cooperation Agency. DFIs also include national development banks that provide public finance both domestically and abroad, such as the China Development Bank (CDB). The data provided in this section since figures are to the right does not include energy financing provided through financial intermediaries, which channel a large portion of DFI support. Due to the severe lack of transparency of financial intermediaries, it is difficult to track which sub-projects end up being financed, though research demonstrates that substantial sums go toward financing fossil fuels.[56]

For the data included in this analysis, DFIs provided 38 percent of total G20 public energy financing from 2013 to 2015, or $139.8 billion.

DFI Oil and Gas Support Skyrockets as Coal Finance Slowly Declines

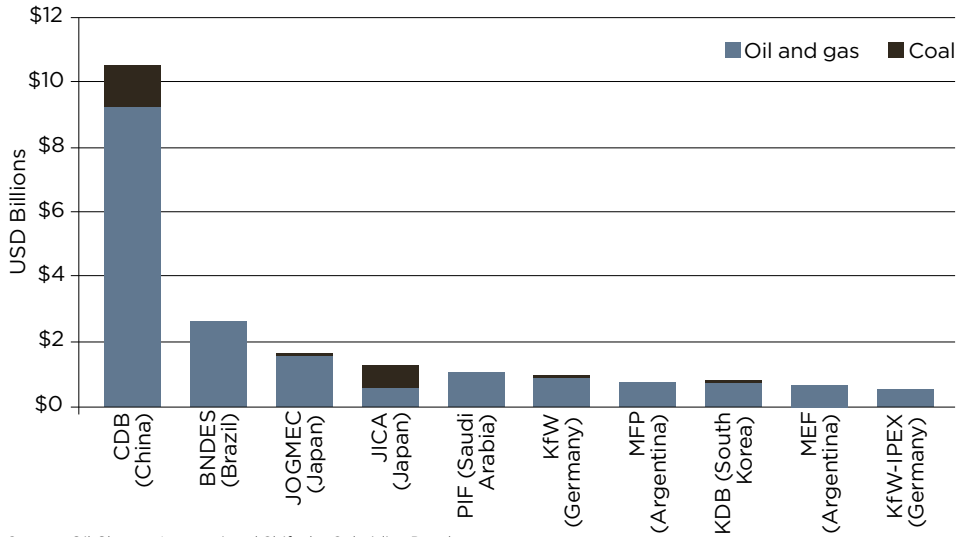
While DFI financing of coal projects is declining, these institutions do not appear to have similar concerns about oil and gas projects. Despite the climate, environmental, and social impacts associated with these projects, DFI support for oil and gas continues unabated (see Figures 7 and 8). About 22 percent of the total oil and gas support was for exploration. The China Development Bank blew every other G20 institution away with $9.2 billion in average annual support for oil and gas projects between 2013 and 2015 – about 44 percent of the total DFI oil and gas financing. CDB is increasing this support: though the data is not included in this analysis, Boston University's Global Economic Governance Initiative shows that, in 2016, CBD's financing for oil and gas projects globally was almost equal to the total amount it provided to all energy projects in the previous three years combined.[57]

Figure 7: Largest G20 DFI Financiers of Fossil Fuels by Country, Annual Average, 2013-2015



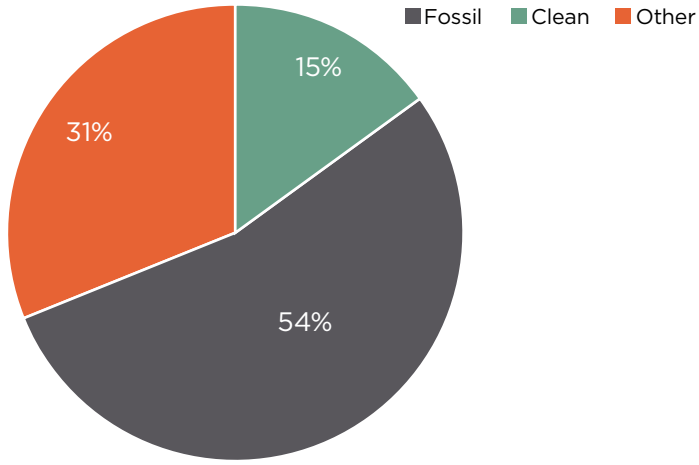
Source: Oil Change International Shift the Subsidies Database.

Figure 8: Largest G20 DFI Financiers of Fossil Fuels by Institution, Annual Average, 2013-2015



Source: Oil Change International Shift the Subsidies Database.

Figure 9: Total G20 DFI Energy Finance by Type, 2013-2015



Source: Oil Change International Shift the Subsidies Database.

56 See e.g., Inclusive Development International, "Outsourcing Development: Lifting the Veil on the World Bank Group's Lending through Financial Intermediaries," 2016. http://www.inclusivedevelopment.net/what/campaigns/outsourcing-development/

57 BU GEGI, "China's Global Energy Finance: Energy Source - Oil," 2016. http://www.bu.edu/cgef/#/2016/EnergySource/Oil (last visited 18 May 2017); BU GEGI, "China's Global Energy Finance: Energy Source - Gas/LNG," 2016. http://www.bu.edu/cgef/#/2016/EnergySource/GasLNG (last visited 18 May 2017). The China Export-Import Bank and CDB provided $12 billion in cofinancing for the Yamal LNG project; the exact amount that CDB provided is unclear.

Extraction wells dot the landscape in Wyoming. Public finance institutions bankrolled billions of dollars in extreme extraction such as fracking between 2013 and 2015. ©EcoFlight

Japan Oil, Gas and Metals National Corporation is the largest developed country financier of oil and gas projects, providing nearly $1.6 billion annually on top of JICA's $604 million in annual finance for oil and gas. Argentina and Brazil also provided significant volumes of finance for oil and gas through their development finance institutions, primarily for domestic oil and gas activity. Among developed countries, German DFIs[58] were also significant financiers of oil and gas projects, with KfW and KfW-IPEX Bank combining for $1.4 billion annually. Italy's Cassa Depositi e Prestiti (CDP) and the United States' OPIC followed, with roughly $1 billion annually each in oil and gas support, while the Korea Development Bank (KDB) and Korea Finance Corporation (before merging with KDB) combined for $970 million annually. Both Italy's CDP and Japan's JICA decreased their oil and gas support in 2015 compared with 2014, but U.S. OPIC provided over 14 times as much support to oil and gas projects in 2015 as in 2014. Therefore, it is hard to decipher an overall trend in oil and gas financing from DFIs. When 2016 and 2017 data is available, it may shed light on whether Japan's and Italy's reductions and OPIC's increase in oil and gas finance continue.

While the support that DFIs provide for coal is significant, support for oil and gas is nearly 6 times higher. With no restrictions of any kind in place for DFIs, with the exception of the Brazilian Development Bank (BNDES), it is most likely that this support will only continue to grow, particularly given the more limited appetite for capital-intensive oil and gas investment shown by private sector financial institutions in recent years.

DFI Support for Coal: JICA Remains a Large Coal Financier

While DFIs are not the most significant sources of public finance for the coal industry, they still contributed $3.6 billion annually on average to the sector between 2013 and 2015. Concerns about impacts on the environment and local communities, as well as on the climate, have caused many DFIs to shift financing away from coal projects, but others continue to maintain substantial coal portfolios.

China, Russia, and Japan are the worst offenders. China and Russia each provided over $1 billion annually in bilateral development finance to coal projects. JICA provided close to $650 million in annual support of coal projects. To make matters worse, JICA's coal financing is moving in the wrong direction. JICA's support for coal was almost 7 times greater in 2014 than in 2013 and then nearly 4 times greater in 2015 than in 2014. This explosive growth shows that JICA is ignoring many of the concerns that are causing other DFIs to curb their coal support and, instead, is doubling down on it. Some other DFIs have continued to support coal projects. In 2013 and 2014, Germany's Kreditanstalt fur Wiederaufbau (KfW) and KfW IPEX-Bank provided over $430 million dollars total for coal projects abroad despite the green image they like to portray at home. Unlike JICA, that amount has been decreasing, dropping by about two-thirds from 2013 to 2014. In 2015, Germany's DFIs did not provide any support for coal, but it remains to be seen whether that trend continued into 2016 and 2017.

DFI Clean Energy Financing Trails Fossil Fuel Financing

Development finance institutions' support for clean energy projects also pales in comparison to their oil and gas support at only about $6.8 billion annually on average between 2013 and 2015, compared to $24.7 billion in annual fossil fuel finance (see Figure 9). At the same time, clean energy projects received nearly double the amount of support of coal projects. Wind received the greatest amount of support with $3.4 billion annually. While some DFIs, such as the Brazilian Development Bank and KfW, have been increasing their support for renewable energy, no clear trend exists across the DFIs. In fact, some DFIs, such as Italy's CDP, did not provide any support to clean energy projects between 2013 and 2015. Others, including the China Development Bank and the Development Bank of Japan, reduced their support over that period.

58 This figure includes German Investment & Development Corporation, KfW IPEX-Bank, and Kreditanstalt fur Wiederaufbau (KfW).

An Incomplete Picture

Some significant sources of government-supported energy finance are excluded from this analysis, but still have major implications for global energy investment. In particular, majority government-owned banks and investment from state-owned enterprises are two very important sources of public or quasi-public energy finance, but are not included in this analysis. These types of institutions account for hundreds of billions of dollars per year in energy finance. They are excluded from this analysis primarily because it is difficult to disentangle which decisions are being made on a commercial or market-driven basis, and which decisions are driven by policy or government priorities. Finance from majority government-owned banks is discussed further in Box 4, while state-owned enterprise investment is discussed in Box 5.

Box 4: Majority Government-Owned Banks Are an Important – and Possibly Growing – Source of Energy Finance

Majority government-owned banks vary widely in terms of their operations and governance structures. Some (such as the Royal Bank of Scotland, majority-owned by the UK government) function nearly identically to commercial banks but happen to be majority-owned by a government. Others function much more as policy banks, making them more like a national development bank than a commercial bank. Because of this mixed approach, **these institutions have not been included in this analysis nor in the aggregate numbers presented in this report.**

Often, the bulk of the energy finance from these institutions is channeled to domestic activities rather than internationally, in contrast to the other types of institutions studied in this analysis.

Among G20 countries, China and India have large banking systems where majority government-owned banks are common, while Russia has three large government-owned banks that are very active in the energy sector. In the UK, Royal Bank of Scotland, which is majority state-owned but functions as a commercial bank, is also a significant provider of energy finance. To a lesser but still significant degree, Turkey, Saudi Arabia, and Mexico also have majority government-owned banks providing significant levels of public finance for energy. Indonesia also has a number of such banks active in the energy sector.

For some G20 countries, the energy finance activity of majority government-owned banks far outweighs energy finance from dedicated public finance institutions. For example, if India's majority government-owned banks had been included in this report, India's total fossil fuel finance between 2013 and 2015 would have increased more than tenfold to $13.6 billion, with more than half of that going to coal. Including these institutions would have put India's recent levels of support for coal nearly on par with countries that have a better-known reputation as providers of global coal finance, such as China and Japan.

For Russia, including majority government-owned banks would have more than tripled Russia's fossil fuel finance total – from $3.3 billion between 2013 and 2015 to $10.1 billion over the same period. China, the UK, Mexico, Turkey, Saudi Arabia, and Indonesia also have significant majority government-owned banks that finance energy activities. Taken together, 69 percent of energy finance from G20 majority government-owned banks went to fossil fuels between 2013 and 2015.

Box 5: State-Owned Enterprises and Their Role as Energy Finance Providers

A state-owned enterprise (SOE) is an entity created by a government to carry out commercial activities on its behalf. Examples of SOEs involved in fossil fuel production include state-owned oil and gas companies, state-owned coal mining companies, and state-owned utilities. State-owned enterprise investment, while not considered in this report, is an additional important source of government-backed finance for energy, including fossil fuels. A recent analysis of investments by G20-government controlled state-owned enterprises across 2013 and 2014 found that their investments in oil, gas, and coal production averaged **$286 billion per year** – or nearly 4 times the amount of annual public finance for fossil fuels uncovered in this report.[59] As with state-owned banks, state-owned enterprises vary considerably in their operation, with some functioning on a commercial or near-commercial basis, and others being driven more by policy.

In either case, because governments exert majority control over these institutions, SOEs have the potential to become an important tool to accelerate the transition to an emission-free energy future. However, they are currently investing hundreds of billions of dollars per year in fossil fuel production that is taking us further away from meeting internationally agreed climate goals. Active policy planning is required to shrink and close these SOEs in the fossil fuel sector.

59 Elizabeth Bast, Alex Doukas, Sam Pickard, Laurie van der Burg, and Shelagh Whitley, "Empty promises: G20 subsidies to oil, gas and coal production," Oil Change International and Overseas Development Institute, November 2015. https://www.odi.org/publications/10058-empty-promises-g20-subsidies-oil-gas-and-coal-production

MULTILATERAL DEVELOPMENT BANKS

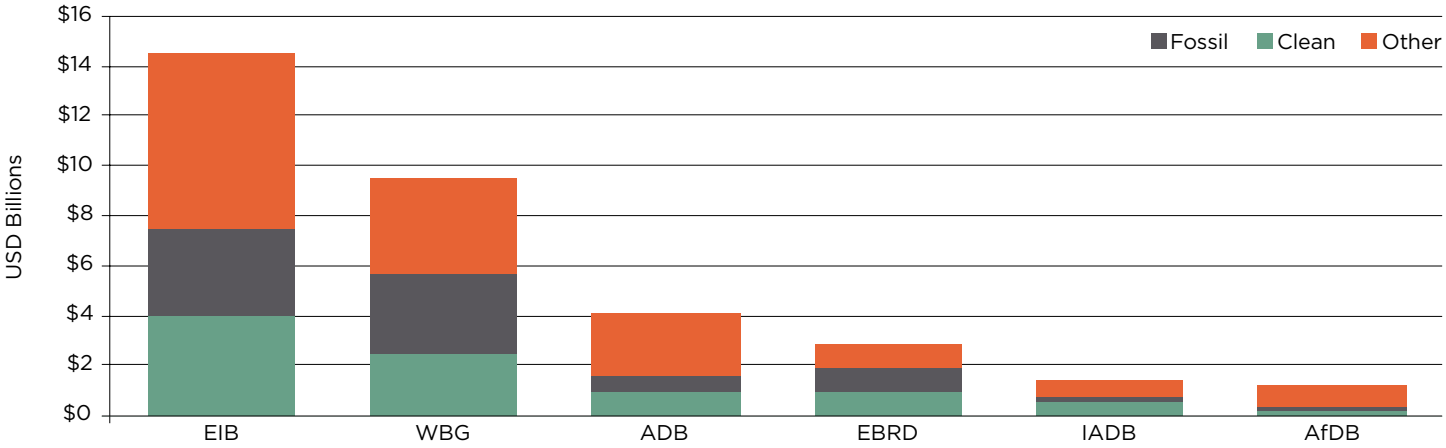
The multilateral development banks share a mandate to support development outcomes. For the MDBs, the globally agreed upon climate and development objectives laid out in the Paris Agreement and the Sustainable Development Goals have become important targets that should, in principle, guide MDB investment. The data in this section predates the Paris Agreement, but it provides insight into how existing MDB investment flows will have to shift in order to better align with the Paris Agreement's objectives and to deliver on MDB commitments.

This analysis considers most of the regional MDBs with a significant operating history: the World Bank Group, Inter-American Development Bank, Asian Development Bank, African Development Bank, European Bank for Reconstruction and Development, and European Investment Bank. It does not include newly formed institutions, such as the New Development Bank or the Asian Infrastructure Investment Bank, due to their limited operations to date.

While the quality of the project finance data for the MDBs is better than the overall quality of project data for bilateral institutions, there are very large gaps that are extremely important to note in interpreting the results of this analysis. The data largely excludes development policy finance – budget support for entire sectors or broad programs – which can make up as much as 30 to 40 percent of total lending at some MDBs in a given year. The data also excludes almost all financing delivered through financial intermediaries.[60] The volume of lending via financial intermediaries is significant and growing. For example, the International Finance Corporation, the World Bank Group's private sector lending arm, had a financial intermediary portfolio of $20.4 billion at the end of the fiscal year 2016. In both cases, these data points are excluded because the lack of specificity in publicly disclosed information makes it impossible to reliably classify the finance according to energy source or category to the degree required for this analysis. The data includes all energy projects funded by the MDBs' own resources, i.e. public finance, and excludes the figures for private finance mobilized.

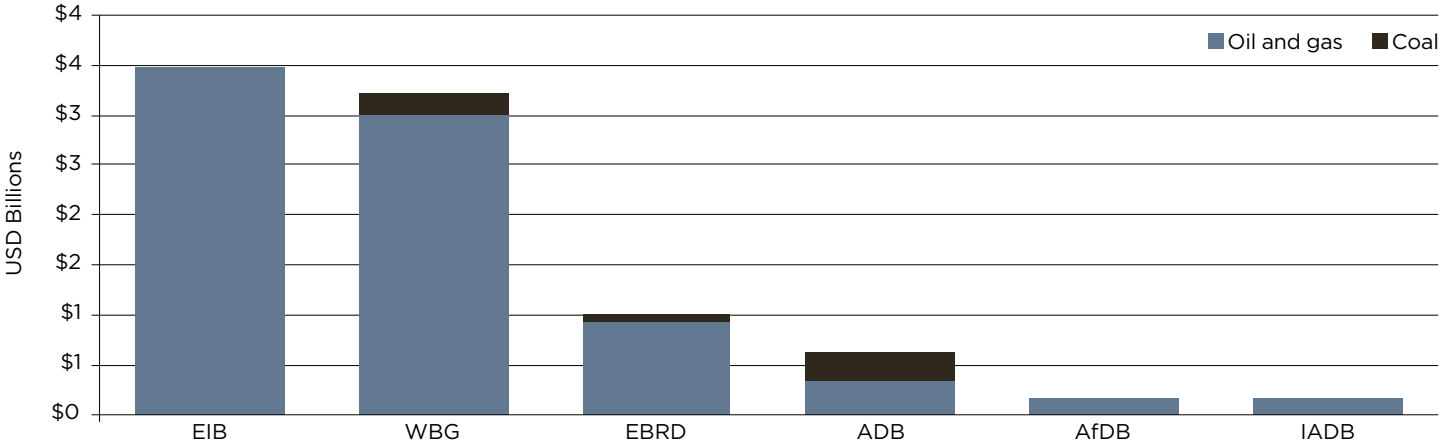
Figure 9 illustrates the total amount of energy finance provided by MDBs from 2013 through 2015, broken down by MDB and type of energy, while Figure 10 highlights MDB fossil fuel finance.

Figure 10: Annual Average of Total Energy Finance by Multilateral Development Bank, 2013-2015



Source: Oil Change International Shift the Subsidies Database.

Figure 11: Annual Average of Fossil Fuel Finance by Multilateral Development Bank, 2013-2015



Source: Oil Change International Shift the Subsidies Database.

60 A recent report found that the World Bank provided $5 billion in policy loans from 2007 to 2016 in support of fossil fuels. Heike Mainhardt, "World Bank Development Policy Props up Fossil Fuels and Exacerbates Climate Change: Findings from Peru, Indonesia, Egypt, and Mozambique," Bank Information Center, January 2017. http://www.bankinformationcenter.org/world-bank-breaks-climate-pledges-by-financing-new-fossil-fuel-subsidies-undermining-forest-protection-and-exacerbating-climate-change/

MDB Energy Finance Trends: Still Funding More Fossil Fuels Than Clean Energy

Since 2013, the largest provider of fossil fuel finance among the MDBs in absolute dollar terms has been the European Investment Bank, followed closely by the World Bank Group. This is perhaps not surprising, as these are by far the two largest MDBs. While EBRD is the largest in terms of fossil fuel finance as a percentage of its energy portfolio, it has also committed the largest share of its portfolio to clean energy among the MDBs (35 percent of its portfolio went to fossil fuels compared to 32 percent to clean energy). This is because many of the other MDBs have provided a plurality of their finance to 'other' energy activities that do not fit within our classification of clean energy or fossil fuels. These activities include large hydro projects or transmission and distribution projects without a clear association with a specific energy source. The IADB and AfDB have financed the lowest levels of fossil fuels both in absolute terms and by proportion of their overall energy portfolio. Both have provided less than $170 million in average annual fossil fuel finance between 2013 and 2015.

In June 2015, the Group of 7 (G7) governments highlighted the role of multilateral development banks in climate action: "We recognize the potential of multilateral development banks (MDBs) in delivering climate finance and helping countries transition to low carbon economies. We call on MDBs to use to the fullest extent possible their balance sheets and their capacity to mobilize other partners in support of country-led programs to meet this goal."[61]

Each of the MDBs have also individually and collectively committed to playing a part in climate action. Yet finance trends show that these institutions have neither significantly reduced their fossil fuel finance nor significantly increased their clean energy finance between 2013 and 2015. The data suggests that MDBs could be doing far more to support ambitious climate action in their client countries.

MDB Finance For Fossil Fuel Exploration

Given recent climate change and sustainable development commitments by MDBs, it is important to understand the role of MDBs in supporting exploration for new fossil fuel reserves. Given that depleting already-developed fossil fuel reserves would overshoot the climate limits enshrined in the Paris Agreement (as explained in the Introduction), there is no space remaining in the global carbon budget for additional exploration activities. The degree to which public finance institutions are still supporting exploration to discover new fossil fuel reserves is deeply problematic.

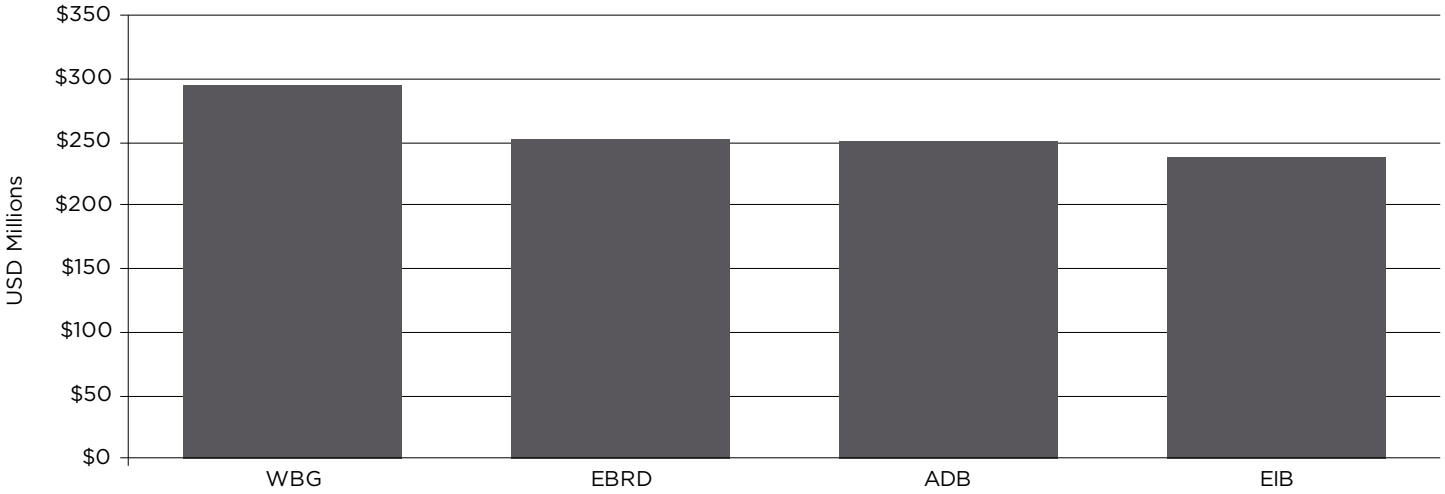
As Figure 12 illustrates, MDB finance for fossil fuel exploration continued through 2015 – totaling over $1 billion in a single year – despite the buildup of MDB attention and stated commitments to climate action in the lead-up to the Paris Agreement.

MAJOR RECIPIENT COUNTRIES FOR PUBLIC FINANCE FOR FOSSIL FUELS

Public institutions often claim that support for coal is needed in the poorest countries in order to help them develop, but the greatest sums of coal money are not going to the countries in the greatest need. The top receivers of such support are mainly either lower middle-income countries, such as Vietnam, Indonesia, and India, upper middle-income countries like Russia, or the world's wealthiest nations, as illustrated in Figure 13. For example, Australia received nearly $785 million per year in support for coal projects – the fifth greatest sum of any beneficiary.

The picture is even more stark for oil and gas financing. Companies operating in the wealthiest country in the world – the United

Figure 12: MDB Finance For Fossil Fuel Exploration by Institution, 2015 only
Source: Oil Change International Shift the Subsidies Database.



61 "G-7 Leaders' Declaration," The White House, June 8, 2015. https://obamawhitehouse.archives.gov/the-press-office/2015/06/08/g-7-leaders-declaration

States – received over $5.7 billion in annual average public financing for oil and gas, the second most of any country. Almost all of this support to firms operating in the U.S. came from Canada, Japan, and South Korea.

This massive amount of support raises the question as to why so much public finance for fossil fuels is flowing from wealthy countries *into* a wealthy country with robust capital markets. Oil and gas firms in the world's wealthiest countries should need no outside assistance, especially when we know that investments in clean energy create more jobs than fossil fuels.[62] At a time when so many countries are cutting social welfare programs, this financial aid to oil and gas projects is helping fossil fuel tycoons from the wealthiest countries get even wealthier. Moreover, this assistance places a burden on the taxpayer. Figure 14 shows the countries receiving the largest amounts of public finance for oil and gas from G20 countries.

Many of the world's wealthiest countries also receive the greatest shares of clean energy public finance. The United Kingdom and Germany are both in the top five, with significant levels of support coming from the European Investment Bank. Other large recipients of public finance for clean energy include South Africa, India, and Brazil, with a considerable amount of that finance coming from domestic public finance institutions. While a wide variety of public support around the world can help speed the transition to clean energy, it is notable that relatively little of the public finance analyzed in this report is helping those countries most in need of support – despite the fact that much of this finance is from institutions with a development mandate and which have also committed to supporting climate action. It is also important to note that even the largest beneficiaries of clean energy support receive far less than those receiving the greatest support for fossil fuels.

Figure 13: Largest Recipients of G20 Public Finance for Coal by Country, Annual Average, 2013-2015
Source: Oil Change International Shift the Subsidies Database.

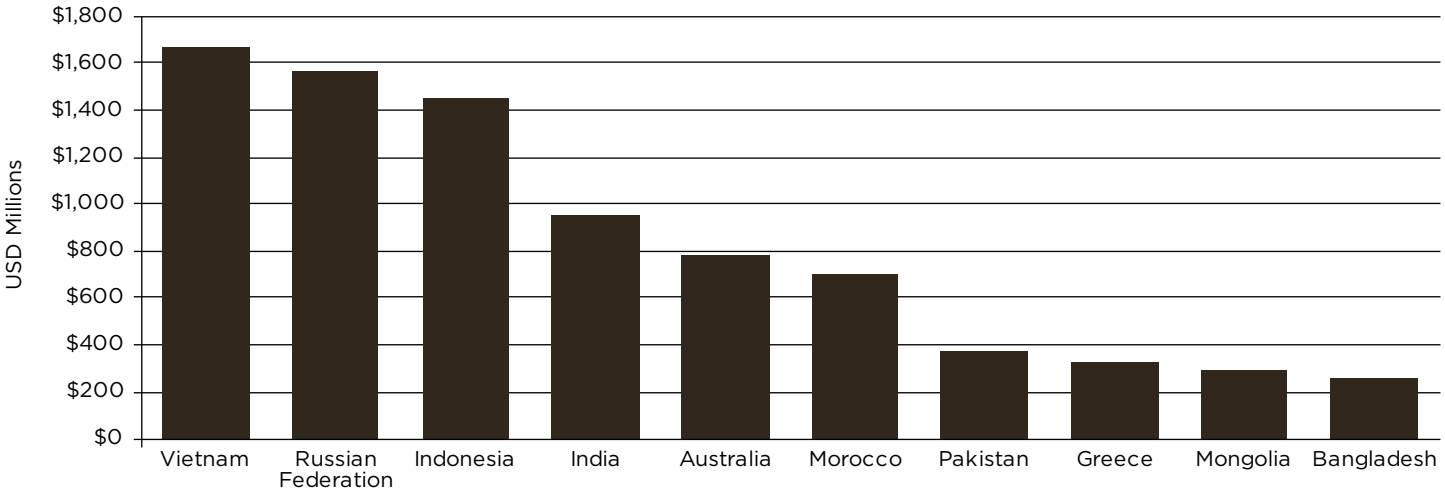
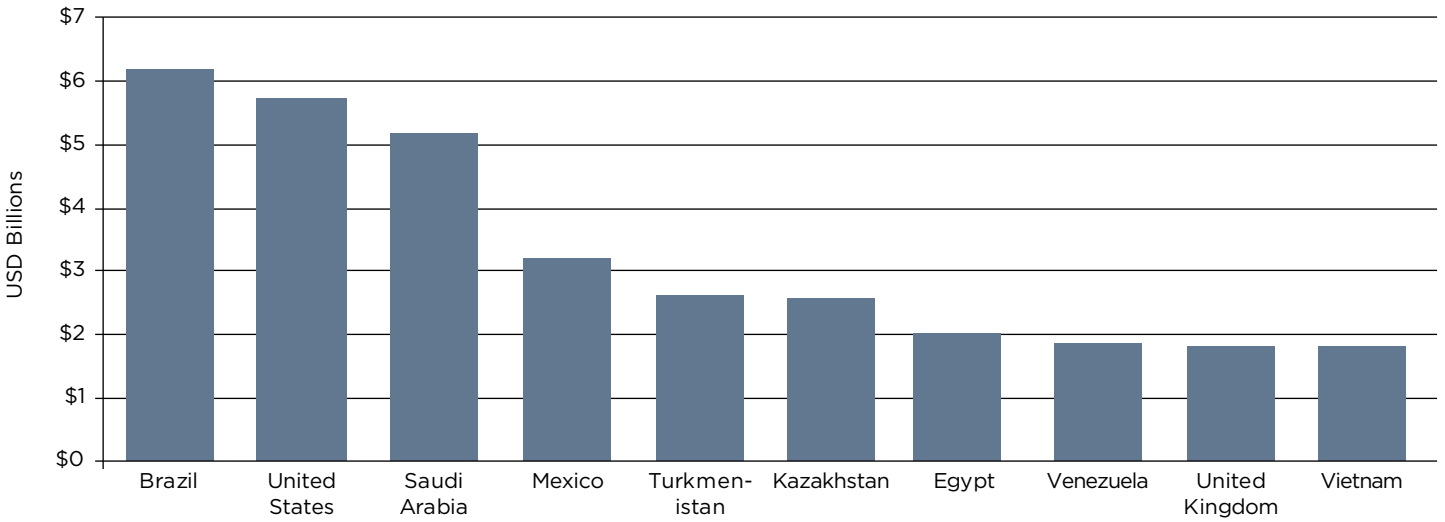


Figure 14: Largest Recipients of G20 Public Finance for Oil and Gas by Country, Annual Average, 2013-2015
Source: Oil Change International Shift the Subsidies Database.



62 Sierra Club, "Clean Energy Jobs Overwhelm Coal, Oil & Gas in 41 States and D.C.," 2017. https://www.scribd.com/document/343243328/Sierra-Club-Clean-Energy-Jobs-Report-Final-1.

CURRENT POLICY RESTRICTIONS ON FOSSIL FUELS AT PUBLIC FINANCE INSTITUTIONS

Although there has been recent progress on commitments to limit international finance for coal, very few international finance institutions have made *any* commitments to limit oil and gas finance, despite the fact that public finance for oil and gas greatly outweighs coal finance – and carries heavy consequences for the climate.

POLICIES LIMITING PUBLIC FINANCE FOR COAL

In 2013, several multilateral development banks and national governments started to adopt significant restrictions on international public financing of coal, mainly due to climate concerns. These institutions include the World Bank Group, the European Bank for Reconstruction and Development, the European Investment Bank, and the governments of the United States (building on prior restrictions), the United Kingdom, the Netherlands,[63] and the Nordic countries. In 2014, France and Germany both announced policies to limit coal finance. In November 2015, 29 OECD export credit agencies entered into an agreement to restrict financing for coal-fired power plants, which entered into force in January 2017.

A summary of restrictions on coal projects at the MDBs and G20 public finance institutions (including development finance institutions and export credit agencies) is provided in Tables 3 and 4.

63 The Dutch government provides hardly any public finance for coal, so this statement has little impact on the Netherlands' fossil fuel finance.

Coal reclaimer at Newcastle Port; used to process coal from open cut coal mines in Australia, number of which benefit from Japanese public finance.
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Table 3: Restrictions on Coal Finance at Multilateral Development Banks

Institution Name	Coal Phase-Out Commitment?	Commitment Date	Summary of Commitment	Source Name
European Investment Bank	Yes - power plants	16-Jul-13	Emissions performance standard - 550g/kWh maximum emissions intensity	Energy Lending Criteria, 2013.
European Bank for Reconstruction and Development	Yes - power plants and mining	10-Dec-13	Excluded except in rare cases	EBRD Energy Sector Strategy (Approved Dec.2013)
World Bank Group	Yes - power plants and mining	Jul-13	Excluded except in rare cases - policy language also applies to thermal coal mining	Towards A Sustainable Energy Future for All: Directions for the World Bank Group's Energy Sector.
Inter-American Development Bank	No	N/A	Efficiency thresholds for coal support. Support for subcritical coal plants to circulating fluidized bed combustion units of 300 MWe capacity or smaller; no meaningful restriction.	
Asian Development Bank	Yes - mining	Jun-2009	Will not finance coal mines except for captive use by power plants	ADB Energy Policy Paper, 2009.
African Development Bank	No	N/A		Energy Sector Policy of the African Development Bank Group, 2012 Revised Version.
Asian Infrastructure Investment Bank	Unclear	N/A	Some language on limiting coal finance (only considered if replacing less efficient capacity, if essential to reliability of a system), though the language is not specific.	AIIB Energy Strategy: Sustainable Energy for Asia. June, 2017.
CAF Development Bank	No	N/A		
Black Sea Trade and Development Bank	No			Black Sea Trade and Development Bank, Energy Sector Operational Strategy, Thessaliniki, June 2000
Islamic Development Bank	No	N/A		Islamic Development Bank Energy Sector Policy: Energy for Prosperity, Policy for the Transition, 2013-2017
New Development Bank	No	N/A		New Development Bank Environment and Social Framework, 2016
Nordic Bank	Yes	21-Mar-12	Will not finance coal plants or baseload plants above 50 MW with similar emissions intensity to coal	Nordic Investment Bank, Sustainability and Policy Guidelines, March, 2012

Table 4: Restrictions on Public Finance for Coal in G20 and OECD Countries

G20 Countries	Commitment at MDB Level (beyond WBG, EIB, EBRD)?	Commitment at National Development Agencies (NDAs) & Banks?	Commitment at National/ Domestic Export Credit Agencies?	Export Credit Restriction in OECD?	Notes	Source
Australia		No	No	Yes		OECD statement
Argentina		No	No	No		
Brazil		Yes	No	No	BNDES has announced it will no longer support coal plants.	Statement by BNDES Infrastructure Director Marilene Ramos
Canada		No	Yes	Yes	In addition to the OECD Arrangement, EDC will not finance coal plants in Equator Principle designated countries unless equipped with carbon capture and storage (CCS).	OECD statement
China		Yes	No	No	China's Green Credit policy and associated regulations pushed all Chinese public and private banks to reduce financing to highly polluting industries, including coal, though these restrictions were not rigid. U.S.-China joint statement included a restatement of this principle, that China would strengthen "regulations with a view to strictly controlling public investment flowing into projects with high pollution and carbon emissions..."	Information on China's Green Credit Policy and restrictions on highly-polluting industries US-China joint statement
France		Yes	Yes	Yes	Restrictions on export credits for coal plants without CCS and with no CO_2 storage. Restrictions on bilateral development finance for coal.	France's Speech at the Environmental Conference at Elysee Prior statement regarding bilateral finance through AFD
Germany	Yes	Yes	No	Yes	Restrictions on coal finance at bilateral institutions. KfW-Ipex bank restrictions still allow for coal plants under 500 MW and over 500 MW if they meet a minimum efficiency standard.	Federal Government report on the financing of international coal-related projects for the Economic Committee of the Bundestag
India		No	No	No		
Indonesia		No	No	No		
Italy		No	No	Yes		OECD statement
Japan		No	No	Yes		OECD statement

Table 4 (Continued):

G20 Countries	Commitment at MDB Level (beyond WBG, EIB, EBRD)?	Commitment at National Development Agencies (NDAs) & Banks?	Commitment at National/ Domestic Export Credit Agencies?	Export Credit Restriction in OECD?	Notes	Source
Korea		No	No	Yes		OECD statement
Mexico		No	No	No		
Russia		No	No	No		
Saudi Arabia		No	No	No		
South Africa		No	No	No		
Turkey		No	No	No		
United Kingdom	Yes	Yes	No	Yes	Issued policy statement similar to U.S. and Nordic joint statement restricting coal finance overseas, but did not apply to export credits.	Statement
United States	Yes	Yes	Yes	Yes	Joint statement with U.S. and Nordic countries: ending public financing for new coal-fired power plants overseas (at MDBs and in bilateral finance) except in rare circumstances.	Treasury guidance
OECD Countries Not in the G20	**Commitment at MDB Level (outside of WB, EIB, EBRD)?**	**Commitment at National Development Agencies (NDAs) & Banks?**	**Commitment at National/ Domestic Export Credit Agencies?**	**Export Credit Restriction in OECD?**	**Notes**	**Source**
Austria		No	No	Yes		OECD statement
Belgium		No	No	Yes		OECD statement
Chile		No	No	No		
Czech Republic		No	No	Yes		OECD statement
Denmark	Yes	Yes	Yes	Yes	U.S.-Netherlands joint statement covers bilateral development finance institutions and MDB projects.	Joint Statement by Kingdom of Denmark, Republic of Finland, Republic of Iceland, Kingdom of Norway, Kingdom of Sweden & the United States of America
Estonia		No	No	Yes		OECD statement
Finland	Yes	Yes	Yes	Yes	Joint U.S. and Nordic statement ended public finance for coal overseas except in rare circumstances.	Statement
Greece		No	No	Yes		OECD statement

Table 4 (Continued):

OECD Countries Not in the G20	Commitment at MDB Level (beyond WBG, EIB, EBRD)?	Commitment at National Development Agencies (NDAs) & Banks?	Commitment at National/ Domestic Export Credit Agencies?	Export Credit Restriction in OECD?	Notes	Source
Hungary		No	No	Yes		OECD statement
Iceland	Yes	Yes	Yes	No	Joint U.S. and Nordic statement ended public finance for coal overseas except in rare circumstances. Iceland is an OECD member, but not party to the Arrangement.	
Ireland		No	No	Yes		OECD statement
Israel		No	No	Yes		OECD statement
Luxembourg		No	No	Yes		OECD statement
Netherlands	Yes - power plants and mining	Netherlands Development Finance Company (FMO) has a policy statement, but no policy	No[64]	Yes	U.S. Netherlands joint statement covers bilateral development finance institutions and MDB projects. FMO policy forbids any investment in thermal coal power or mining.	Statement FMO position statement (weaker than a policy) on mining and coal power
New Zealand		No	No	Yes		OECD statement
Norway	Yes	Yes	Yes	Yes	Joint U.S. and Nordic statement ended public finance for coal overseas except in rare circumstances.	OECD statement
Poland		No	No	Yes		OECD statement
Portugal		No	No	Yes		OECD statement
Slovak Republic		No	No	Yes		OECD statement
Slovenia		No	No	Yes		OECD statement
Spain		No	No	Yes		OECD statement
Sweden	Yes	Yes	Yes	Yes	Joint U.S. and Nordic statement ended public finance for coal overseas except in rare circumstances.	OECD statement
Switzerland		No	No	Yes		OECD statement

→ *Suncor Energy tar sands operations in Alberta. Canada has provided significant public finance to oil and gas companies, including Suncor, through Export Development Canada.* *©Jason Woodhead License: https://creativecommons.org/licenses/by/2.0/*

64 The Dutch ECA, Atradius DSB, does not have the U.S.-Netherlands statement explicitly mentioned in its Corporate Social Responsibility policy document, so coal is not excluded categorically. It could provide insurance for a coal-fired steel plant in India, for example.

POLICIES LIMITING PUBLIC FINANCE FOR OIL AND GAS

While coal finance has received much more attention, and is very troubling, it pales in comparison to the support provided for oil and gas projects on a dollar-to-dollar basis. Given recent findings that developed reserves of oil, gas, and coal would, if burned, commit the world to warming far beyond 2°C, the same policies should apply to upstream and midstream oil, gas, and coal infrastructure.[65]

Presently, though, there are far fewer public finance institutions with restrictions on oil and gas finance compared to coal finance. The examples that could be identified of oil and gas restrictions at bilateral, country-specific public finance institutions, including export credit agencies and development banks, are included in Table 5. A further discussion of oil and gas policies at public finance institutions follows.

Export Credit Agencies

Sweden's export credit agency, SEK, is currently the only export credit agency that appears to have significant restrictions on oil and gas finance. In 2016, SEK "conducted a scenario analysis to identify the impact on SEK's lending portfolio of the implementation of the COP21 global climate treaty," and joined the Fossil Free Sweden Initiative.[66] While these are not ironclad commitments to ending fossil fuel finance, they point in the direction of SEK considering reducing or even phasing out fossil fuel finance.

While the OECD has now established restrictions on officially supported export credits for certain coal projects, no such restrictions exist for oil and gas financing. The OECD has only acknowledged the negative climate impacts of coal-fired power plants. The OECD itself has found that oil and gas projects received 5 times as much past financing as coal projects from OECD ECAs.[67] The data presented in this report suggests that, across export credit agencies (OECD and otherwise), that figure may have been significantly higher in recent years.

The OECD is expected to review the current restrictions on coal export credit financing by the end of 2019. If the review takes into account the latest climate science for limiting global warming to 2°C, as the coal sector understanding requires it to do, the OECD Export Credit Group would find that no new fossil fuel-fired plants, including coal, oil, and gas, should be built after 2017.[68] Therefore, the OECD should expand the coal sector understanding to cover all coal-related projects (not just power plants) and to include restrictions on all oil and gas financing. In addition, there are negotiations on export credit guidelines of the International Working Group on Export Credits (IWG) between China, the U.S., Brazil, and the European Union. The IWG aims to develop standards that apply to emerging markets as well as OECD countries.

Development Finance Institutions

BNDES, Brazil's national development bank, modified its policies in October 2016 to eliminate financing for oil-fired power plants and to significantly reduce support for gas-fired power plants.[69,70] BNDES infrastructure director Marilene Ramos explained the decision: "The bank wants to privilege projects with environmental, social return. We are choosing power sources that don't emit pollution, given that we have a pledge in the Paris agreement."[71]

The U.S. Overseas Private Investment Corporation has a policy restricting the greenhouse gas emissions associated with OPIC's active portfolio. However, this policy is currently not being enforced due to legislative action. If the policy is implemented, it would limit the amount of carbon-intensive projects of any kind the institution could support.

Countries should commit their development banks and other development-oriented institutions to end financing for all fossil fuels in order to align with their development mandates and with agreed upon climate targets.

65 Greg Muttitt, "The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production," Oil Change International, September 2016. http://priceofoil.org/2016/09/22/the-skys-limit-report/
66 SEK, "Annual Report, 2016," 2017. http://www.sek.se/en/wp-content/uploads/sites/2/2014/02/SEK_annual_report_2016.pdf
67 OECD Secretariat, "Room Document No. 11: Informal Meeting on Export Credits and Climate Change Issues - DATA ON EXPORT CREDIT SUPPORT FOR FOSSIL FUEL POWER PLANTS AND FOSSIL FUEL EXTRACTION PROJECTS," 2014. http://priceofoil.org/content/uploads/2015/02/OECD-Leak-Data-on-export-credit-for-fossil-fuels-Oct14.pdf
68 Alexander Pfeiffer, Richard Millar, Cameron Hepburn, and Eric Beinhocker, "The '2°C capital stock' for electricity generation: Committed cumulative carbon emissions from the electricity generation sector and the transition to a green economy," 179 Applied Energy 1395, October 1, 2016. http://www.sciencedirect.com/science/article/pii/S0306261916302495
69 BNDES presentation, "Novas políticas OPERACIONAIS Condições," 2016, slide 4. http://bit.ly/2oHLxt9
70 Souza Cescon, "BNDES announced the new conditions for financing the energy sector," October 2016. http://www.souzacescon.com.br/arquivos/noticias/anexos/en/99ae9cec-b6bd-4a7b-818f-39c5ee0b3587.pdf
71 Vanessa Dezem, "Brazil to Boost Funding for Solar, Cut Loans for Coal, Gas by Vanessa Dezem," Bloomberg, October 3, 2016. https://www.bloomberg.com/news/articles/2016-10-03/brazil-to-boost-funding-for-solar-cut-loans-for-coal-and-gas

Multilateral Development Banks

A 2016 joint MDB report on climate finance noted, "the Paris Agreement becomes the foundation for [MDBs'] contribution to efficient and effective low-carbon and climate-resilient development."[72] The MDBs collectively acknowledge their important role in furthering the Paris Agreement's goal of increasing finance flows that support development pathways towards climate change resilience and low greenhouse gas emissions. But so far their policies and energy portfolios do not reflect this direction.

The Asian Development Bank and African Development Bank both have restrictions on finance for oil and gas exploration activities. However, these restrictions are motivated by non-climate risk factors, such as the financial risk that plagues the sector and the status of oil and gas as international commodities that do not require concessional finance.

While the European Investment Bank has a 550 g/kWh carbon intensity restriction on power plants, it is not strong enough to meaningfully restrict natural gas investment, even for simple-cycle technology.

Some governments are demonstrating increasing willingness to advance this issue at the MDBs. In November 2016, the German government stated that, "the Multilateral development banks are key actors when it comes to implementing [...] the Paris Agreement. These institutions therefore should clearly commit themselves to ending the financing of fossil fuel projects, especially coal."[73]

Table 5: Oil and Gas Policies at MDBs and Bilateral Institutions

Oil and Gas Commitments by Bilateral Institutions	
BNDES	In 2016, BNDES ceased to finance oil-fired power stations and significantly reduced the amount of support going to gas-fired plants. (Source: https://www.bloomberg.com/news/articles/2016-10-03/brazil-to-boost-funding-for-solar-cut-loans-for-coal-and-gas)
SEK	"During the year, SEK conducted a scenario analysis to identify the impact on SEK's lending portfolio of the implementation of the COP21 global climate treaty (2016)." SEK is also a member of the government's Fossil Free Sweden Initiative, which requires members to move their operations away from fossil fuels over time. (Source: http://www.sek.se/en/wp-content/uploads/sites/2/2014/02/SEK_annual_report_2016.pdf)
Oil and Gas Commitments by Multilateral Institutions	
ADB	"ADB does not finance any oil and gas field exploration projects because of the associated risks." (Source: https://www.adb.org/sites/default/files/institutional-document/32032/energy-policy-2009.pdf)
AfDB	"The Bank will not support oil and gas exploration activities." (Source: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/Energy_Sector_Policy_of_the_AfDB_Group.pdf)
Islamic Development Bank	"Development of new oil, natural gas and coal production facilities may be exceptionally supported under PPP scheme (excluding areas involving high financial risk, such as, oil and gas field exploration)." (Source: http://www.isdb.org/irj/go/km/docs/documents/IDBDevelopments/Internet/English/IDB/CM/Publications/IDB%20Energy%20Sector%20Policy.pdf)
Asian Infrastructure Investment Bank (provisional)	Energy Strategy approved in June 2017 contains language that suggests limits on coal- and oil-fired power plants, except in special circumstance, though the language is not specific. (Source: https://www.aiib.org/en/policies-strategies/strategies/.content/index/_download/aiib-energy-sector-Strategy-2017.pdf)

72 African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, European Investment Bank, Inter-American Development Bank, and World Bank Group, "2015 Joint Report on Multilateral Development Banks' Climate Finance," August 2016. http://pubdocs.worldbank.org/en/740431470757468260/MDB-joint-report-climate-finance-2015.pdf

73 Clean Energy Wire, "No funding of fossil fuel projects," December 2, 2016. https://www.cleanenergywire.org/news/germany-ends-coal-funding-wb-gabriel-defends-renewables-support/no-funding-fossil-fuel-projects

RECOMMENDATIONS FOR POLICYMAKERS

The science of climate change is clear: we must expeditiously move away from fossil fuels as part of our global energy mix if we are to limit the impacts of global warming. The Paris Agreement commits countries to aiming to hold warming to well below 2°C and to pursuing efforts to limit temperature rise to 1.5°C. All financial institutions could apply a 'climate test' when assessing energy investments to ensure they are in line with the latest climate science and will limit global warming.

G20 governments. Given the scale of public energy finance they provide, and the significance of this finance in setting the stage for future investment, G20 governments must shift the financing they control away from fossil fuels and lead the way on climate solutions. In accordance with their common but differentiated responsibilities,[74] G20 governments should:

- Commit to ending all public fossil fuel financing by 2020, including fossil fuel exploration and related infrastructure;
- In the case of developed G20 countries, provide adequate finance to enable developing countries to achieve an expeditious shift to renewable energy – in line with developed countries' historical responsibility;
- Increase the transparency of financing at all public finance institutions;
- Expand support for truly clean technologies such as solar and wind.

Multilateral development banks. The governments composing the boards of MDBs should:

- **Expand and enforce limits on coal.** MDBs must ensure adherence to limits on coal finance where they already exist (i.e. at WBG, EIB, and EBRD) and work to close loopholes, such as the significant levels of coal finance that continue to flow through financial intermediaries and via non-project finance, such as development policy finance. MDBs should also expand restrictions on finance for coal-related activities, including mining or transport infrastructure like ports.
- **Extend restrictions to all fossil fuel finance.** The post-Paris Agreement reality means that scarce development finance can no longer be used to finance fossil fuels of any type or for any use, including coal, oil, and gas. MDBs should aim to end fossil fuel finance immediately, including finance for fossil fuel exploration. Fossil fuel finance is incompatible with their policies of promoting development and helping countries to achieve their sustainable development goals and nationally determined contributions to reducing greenhouse gas emissions.
- **Urge MDBs to make internal changes to implement a shift in energy finance.** Shift internal incentives for staff and change the way projects are evaluated to ensure these institutions lead the way in the sustainable energy transition (including prioritizing distributed renewable energy to deliver energy access for the poor).

Bilateral development finance institutions. Governments should:

- **Immediately restrict bilateral finance for fossil fuels.** Governments should commit to ending all public finance for fossil fuels by 2020, including oil and gas.
- **Enforce the letter and the spirit of existing coal restrictions.** Countries that currently have commitments to restrict coal finance, including Japan, the United States, and South Korea, must enforce those commitments. Countries that currently lack concrete commitments to restrict coal finance, such as China, should also be encouraged to follow through on their stated commitment to low-carbon finance.
- **Expand limits on coal finance.** Governments with existing coal restrictions must implement these commitments and should immediately expand limits on coal finance to include all thermal coal-focused infrastructure, including mines and related infrastructure such as coal terminals and ports.

74 Common but differentiated responsibilities is a principle that recognizes that countries have vastly different responsibilities in terms of reducing their emissions and different capabilities to address climate change.

Hundreds of thousands of people around the world have called on governments to stop funding fossils. Participants at the COP22 UN climate negotiations in Marrakech join the call. ©Collin Rees, Oil Change International

Export credit agencies. Governments should:

- **Increase restrictions at the OECD level.** The coal sector understanding under the OECD "Arrangement on Officially Supported Export Credits" is "subject to a mandatory review starting in 2019, with the goal of strengthening" these restrictions. OECD countries that are party to the Arrangement should approach this revision with the following goals in mind:
  - **Close loopholes in current limits to coal finance.** Close the two main loopholes in the Sector Understanding on coal under the OECD Arrangement, including: 1) extending restrictions to cover all coal projects, including plants of any efficiency, coal mines, and related infrastructure, and 2) expanding the scope of financial transactions.
  - **Address oil and gas finance.** The oil and gas sectors were not addressed in the first set of restrictions. Given that ECA oil and gas finance is much higher than coal finance, OECD ECAs should set an expeditious timetable to phase out all fossil fuel finance.
- **Establish restrictions on fossil fuel finance at non-OECD ECAs.** Non-OECD ECAs, including CHEXIM, are already large and growing in terms of their fossil fuel finance. These institutions should also set a concrete, expeditious timeline to phase out fossil fuel finance, beginning with all coal finance as well as oil and gas exploration finance. The International Working Group on Export Credits provides a forum to implement fossil fuel restrictions beyond the OECD.

The task is urgent, and all governments - particularly G20 governments - must act quickly to align their finance with the scientific reality of climate change and the objectives to which these governments have already agreed as part of the Paris Agreement. There is no time to waste, and talk is cheap: governments need to stop financing climate destruction, and start supporting solutions.

ANNEX 1. INSTITUTIONS INCLUDED IN THIS REPORT

Multilateral Development Banks (MDBs). The data in this report covers energy financing from the following major MDBs: the World Bank Group (which is made up of the International Bank for Reconstruction and Development, the International Development Agency, the International Finance Corporation, and the Multilateral Investment Guarantee Agency), the African Development Bank, the Asian Development Bank, the Inter-American Development Bank, the European Bank for Reconstruction and Development, and the European Investment Bank.

Export Credit Agencies (ECAs). The data in this report covers energy financing from the following ECAs in G20 countries:

- Australia's Export Finance and Insurance Corporation (EFIC)
- BPI France, which absorbed France's Compagnie Francaise d'Assurance pour le Commerce Exterieur (Coface)
- China Export and Credit Insurance Corporation (Sinosure)
- China Export-Import Bank (CHEXIM)
- Euler Hermes (Germany)
- Export Development Canada (EDC)
- Export-Import Agency of Russia (EXIAR)
- Export-Import Bank of India (India EXIM)
- Export-Import Bank of the United States (U.S. EXIM)
- Italy's Servizi Assicurativi del Commercio Estero (SACE)
- Japan Bank for International Cooperation (JBIC)
- Korea Export-Import Bank (KEXIM)
- Korea Trade Insurance Corporation (K-Sure)
- Mexico's Banco Nacional de Comercio Exterior (Bancomext)
- Nippon Export & Investment Insurance (NEXI) (Japan)
- South Africa's Export Credit Insurance Corporation
- UK Export Finance (UKEF)

Development Finance Institutions (DFIs), including development agencies and development banks. The data in this report covers energy financing from the following development finance institutions in G20 countries:

- Agence Francaise de Development (France)
- Australian Renewable Energy Agency
- Brazilian Development Bank (BNDES)
- Business Development Bank of Canada (BDC)
- Caisse des Depots et Consignations (France)
- Cassa Depositi e Prestiti (CDP) (Italy)
- CDC Group Plc (UK)
- China Development Bank (CDB)
- Clean Energy Finance Corporation (CEFC) (Australia)
- Department for International Development (DFID) (UK)
- Development Bank of Japan (DBJ)
- Development Bank of Southern Africa (DBSA)
- German Investment & Development Corporation
- India Infrastructure Finance Company
- Indian Renewable Energy Development Agency
- Industrial Development Corporation of South Africa
- Infrastructure Development Finance Company (India)
- Japan International Cooperation Agency (JICA)
- Japan Oil, Gas and Metals National Corporation (JOGMEC)
- KfW IPEX-Bank (Germany)
- Korea Development Bank (KDB)
- Korea Finance Corporation (KoFC)
- Kreditanstalt fur Wiederaufbau (KfW) (Germany)
- Nacional Financiera (Mexico)
- Overseas Private Investment Corporation (OPIC) (U.S.)
- Power Finance Corporation (India)
- PPP Canada
- Proparco (France)
- Public Investment Fund (Saudi Arabia)
- Russian Development Bank (VEB)
- Russian Direct Investment Fund
- Russian National Wealth Fund
- Saudi Fund for Development
- Saudi Industrial Development Fund (SIDF)

Governments and government agencies. The data in this report covers some energy financing from the following governments, subnational governments, and government agencies in G20 countries:

- Department for Business Innovation and Skills (BEIS) (UK)
- Government of Canada
- Government of Indonesia
- Government of New South Wales (Australia)
- Government of the Russian Federation
- Ministry of Economy and Finances (Argentina)
- Ministry of Federal Planning (Argentina)
- Ministry of Finance (Saudi Arabia)
- U.S. Department of Energy

Many institutions provide a mix of services. ECAs may provide bilateral development finance in addition to export credits. For example, JBIC provides bilateral aid in addition to financing overseas investments by Japanese companies. KfW provides support for domestic projects, bilateral aid, and export finance. National development banks, such as China Development Bank and Russian Development Bank (VEB), provide domestic financing as well as international financing. There are also bilateral aid agencies such as JICA that may provide loans, grants, policy lending, and technical assistance. Generally, these institutions provide energy finance internationally, but they sometimes also provide domestic support. These projects are also included when information was available.

An oil drilling rig offshore of California. Public finance institutions provided tens of billions of dollars between 2013 and 2015 to support offshore drilling.
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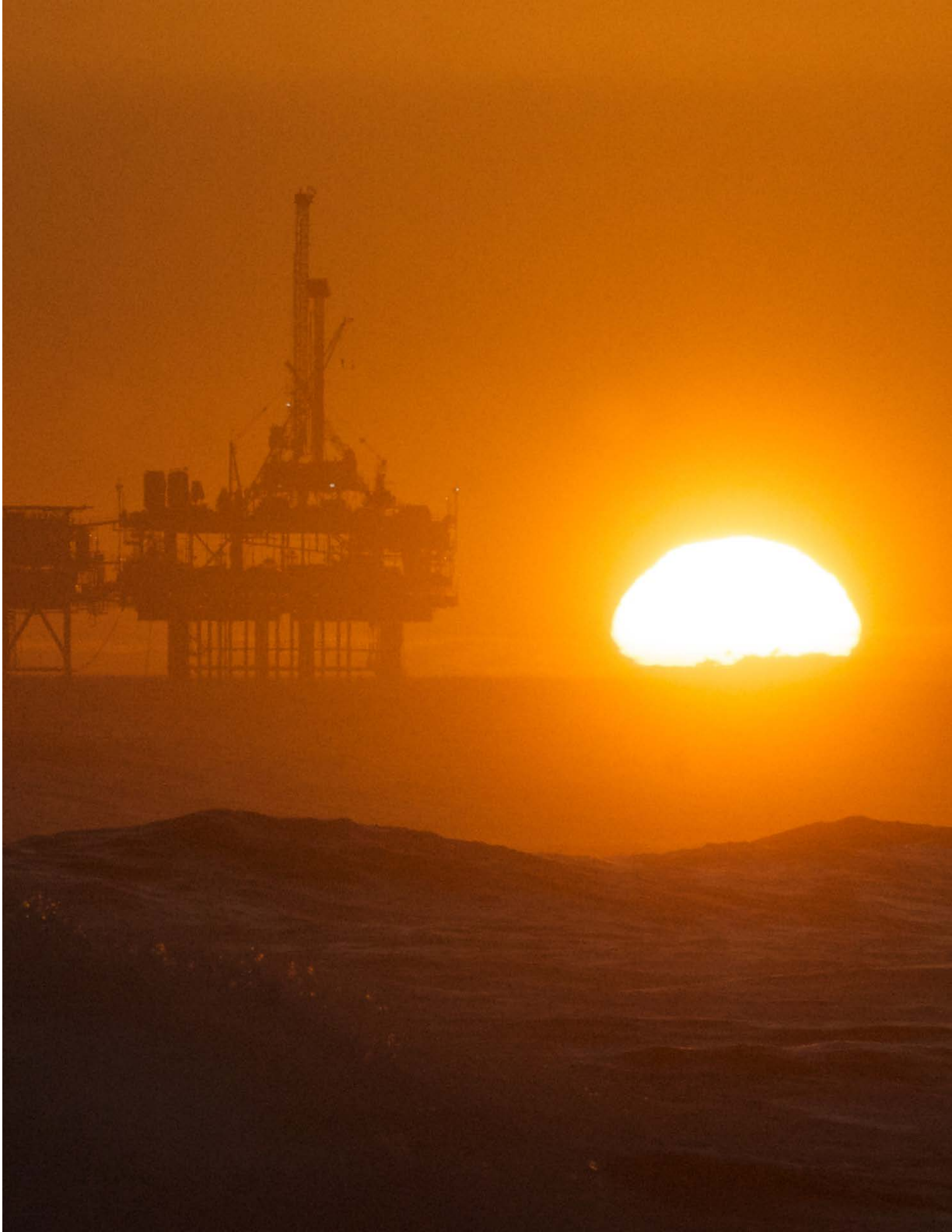

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