

**STORIES FROM  
G20 COUNTRIES:**

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# Shifting Public Money out of Fossil Fuels

November 2018

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### Stories from G20 Countries: Shifting public money out of fossil fuels

November 2018

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## Executive Summary

Energy subsidies and tax revenues, investments by state-owned enterprises (SOEs) as well as credit support through state-owned banks and international finance institutions represent flows of public money that can either undermine or encourage sustainable and equitable development and decarbonization.

Group of 20 (G20) governments have committed to ending government support to fossil fuels through a number of reform pledges (Gerasimchuk, Bassi et al., 2017, Annex 2), starting with the G20's 2009 commitment to phase out "inefficient fossil fuel subsidies that encourage wasteful consumption" (G20, 2009). In addition, under the Paris Agreement (United Nations Framework Convention on Climate [UNFCCC], 2015, Article 2.1.c), all governments have further committed to "making finance flows consistent with a pathway toward low greenhouse gas emissions and climate-resilient development"—a pledge that applies to both private and public finance in all their forms. Sustainable Development Goals (SDGs), in particular target 12.C and indicator 12.C.1 under SDG 12 on Sustainable Consumption and Production, also include the reform of subsidies to fossil consumption and production.

Despite these commitments, G20 governments continue subsidies, credit support and SOE investments to support both the production and consumption of oil, gas, coal and fossil-fuel-based electricity. Political inertia, vested interests of the industry and a lack of transparency and accountability all lead to the continued use of taxpayers' money to lock in unsustainable development pathways (Victor, 2009; Skovgaard & van Asselt, 2018).

Yet, change is possible. Some G20 governments have made progress in shifting at least some support away from fossil fuels and increasing taxation of fossil fuels. This working paper has brought together examples illustrating how reforms can be enabled and implemented to align the flows of public money with the Paris Agreement and SDGs.

[Story 1](#) addresses fossil fuel consumption subsidies, which, in the G20, amounted to USD 354 billion in 2014 (Organisation for Economic Co-operation and Development [OECD], 2017). An example of a country that cut back on this inefficient use of public money is Indonesia. This G20 country saved USD 15.6 billion by reforming untargeted subsidies for gasoline and diesel in 2015. Indonesia invested these savings in health insurance, housing for low-income groups, clean water access, infrastructure and other areas. As international oil prices started increasing in 2018 and national elections are due in 2019, Indonesia must resist the reintroduction of these subsidies.

[Stories 2 and 3](#) highlight recent reforms removing subsidies for fossil fuel exploration, development and production. In the G20, national subsidies for fossil fuel production were estimated to be an annual average of at least USD 70 billion in 2013/14 (Bast et al., 2015). Annually, Canada and Argentina saved USD 260 million and USD 780 million respectively by removing some incentives to upstream fossil fuel companies in recent years. However, both countries still retain many forms of government support to upstream fossil fuel developments.

[Story 4](#) features the leadership of the European Union (EU), which has committed to phasing out environmentally harmful subsidies, including those to fossil fuel consumption and production, by 2020. The EU also fast-tracked phasing out subsidies for hard coal mining by the end of 2018 and has directed some government support to a just transition for workers and communities currently engaged in fossil fuel production. In Germany, the Czech Republic and Spain, 75–99 per cent of the hard coal sector support went toward enabling a fair transition for workers and communities, as well as the decommissioning and rehabilitation of mining sites. Despite this progress, the EU is continuing to provide a range of subsidies and public finance to fossil fuel production and consumption at home and abroad, and risks missing its 2020 phase-out deadline.

[Story 5](#) unpacks the progress on shifting credit support from public financial institutions, including multilateral development banks, away from fossil fuels. From 2013 to 2015, these institutions continued to provide an average of USD 72 billion annually for fossil fuels globally (Doukas, DeAngelis, & Ghio, 2017). These numbers reveal a considerable amount of public money still funnelled to carbon-intensive activities,

but also show a decrease in public finance from some actors going to certain fossil fuels, especially to coal, compared with the previous survey by Bast et al. (2015).

[Story 6](#) deals with yet another type of government support for fossil fuels—through SOEs. In 2013/14, annual investments by G20 SOEs in fossil fuel production averaged USD 286 billion. In recent years, some SOEs previously focused on coal mining and fossil-fuel-based power generation in China, India and Sweden (a G20 member as part of the EU) have begun to diversify their activities into renewables and toward a just transition for workers in those sectors. Unfortunately, recent analysis by the International Energy Agency (2018) finds that, more broadly, SOEs are playing an increasing role in fossil fuel investment worldwide.

[Stories 7 and 8](#) discuss a related issue of not just removing government support from fossil fuels, but also increasing taxation on their consumption and production. Increased taxation of the extraction and use of oil, gas and coal makes these fuels less attractive and less competitive while mobilizing additional public funds.

[Story 7](#) focuses on efforts to increase reforms in value-added taxes (and other taxes on fossil fuel energy consumption in China, Saudi Arabia and South Africa. The International Monetary Fund (2015a) estimated the under-taxation of fossil fuel consumption at USD 5.3 trillion in 2015. In contrast, current carbon pricing is estimated globally at just 1 per cent of this value (USD 52 billion in 2017) (World Bank, 2018). In comparison with the carbon tax, the taxation of fossil fuels through basic taxes like a value-added tax and excise duties could generate more government revenue. In certain cases, the tax revenue generated has been earmarked to support clean energy deployment, as is the case with electricity surcharges in China.

[Story 8](#) further develops the idea of creating more fiscal space in the G20 through taxing fossil fuel production. Government fiscal systems are designed to capture resource rents from oil, gas and coal extraction, which amounted to over USD 1 trillion in 2016 (World Bank, n.d.a, n.d.b, n.d.c). In certain cases, there is potential for increasing taxes, royalties and other fees on fossil fuel extraction. This has been the case in India where the government charged a Clean Energy Cess on the dispatch of coal and lignite that was partially used to fund the viability gap for renewable energy technologies from FY 2010/11 up until 2017. However, India has many competing development needs and failed to use a bigger share of the Clean Energy Cess receipts according to the initial design, which is for supporting renewable energy and clean environment technologies. In 2017, India scrapped the Clean Energy Cess. Though large-scale renewables reached grid parity cost in India, small-scale clean energy solutions still need government support.

In some cases, government support is shifting away from fossil fuels, with the recent reforms in fossil fuel consumption subsidies, some progress on removing fossil fuel production subsidies (see [Stories 1–4](#) on [Indonesia](#), [Canada](#), [Argentina](#) and the [EU](#)) and the reduction of public finance for certain fossil fuels (see [Story 5](#)). Furthermore, some countries discourage fossil fuel use by increased taxation and carbon pricing and ramp up support for renewables (see [Stories 7 and 8](#)).

However, due to the immense scale of public money that still promotes the production and consumption of fossil fuels, this nascent positive shift must occur at a much faster rate for the G20 to get on track to meeting the Paris Agreement targets. Hundreds of billions of dollars in G20 countries still support fossil fuels, which risks locking the world into a carbon-intensive economy and is a missed opportunity for using public money in support of sustainable development and a clean energy transition.

G20 action on removing government support to fossil fuels is long overdue. There are numerous and repeated calls from many countries (Friends of Fossil Fuel Subsidy Reform, 2016; V20, 2017), international organizations (OECD, 2015; UN Secretary General, 2018), investors and insurers (UNFCCC, 2017), the global civil society (Oil Change International, 2016; C20, 2018) and other stakeholders to the G20 governments to deliver against their unfulfilled promises to phase out fossil fuel subsidies. In the context of case studies in this paper, these calls can be reiterated as the following recommendations (also summarized in [Figure ES1](#)):

**First, by 2020, G20 countries should adopt concrete and ambitious timelines for reforming each type of government support related to fossil fuels.** Some first-movers have already adopted such timelines, and they can be expanded to all G20 members. Examples include the EU deadline to phase out environmentally harmful subsidies by 2020 ([Story 4](#)), the G7 deadline to phase out inefficient fossil fuel

subsidies by 2025 (G7, 2016, 2017) and the World Bank Group commitment not to fund upstream oil and gas after 2019 (World Bank, 2017).

**Second, these reforms should be implemented in a way that protects vulnerable groups.**

Support should be targeted at vulnerable consumers and a just transition for workers and communities currently dependent on fossil fuels. Story 1 on Indonesia and Story 4 on the EU provide examples of such complementary policies. In the meantime, G20 governments should ensure that flows of public money aimed at the energy transition do not support further production or use of fossil fuels.

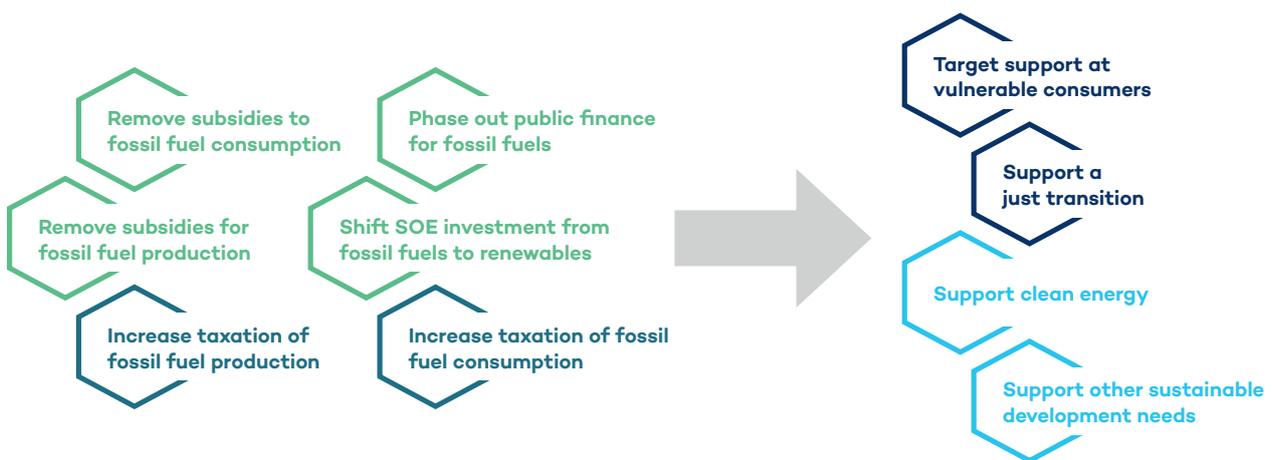
**Third, all G20 countries should seek to complete voluntary peer reviews of fossil fuel subsidies by 2020.**

Peer reviews provide a platform for governments to exchange their experiences, shifting support away from fossil fuels. Argentina, Canada, China, Germany, Indonesia, Italy, Mexico and the United States have either completed or are in the process of completing their peer reviews of fossil fuel subsidies (OECD, n.d.; Gerasimchuk, Wooders et al., 2017). Such reviews would benefit from expanding the scope of these reviews to include related types of government support to fossil fuels such as credit support and SOE investment.

**Fourth, shifting public money away from fossil fuels and their increased taxation also creates government fiscal space that can be used for wider social and sustainable development needs,**

such as public health, education, resilient low-carbon infrastructure, climate change adaptation and investments in renewable energy (see Story 1 on Indonesia, Story 7 on taxing fossil fuel consumption and Story 8 on India).

**Figure ES1.** Using public money to support the transition away from fossil fuels



Source: Author's Summary.

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The content in this report does not necessarily reflect the views of the funders and peer reviewers. All remaining inaccuracies remain the responsibility of the authors.

## Acronyms and Abbreviations

<b>EU</b>	European Union
<b>G20</b>	Group of Twenty
<b>GSI</b>	Global Subsidies Initiative
<b>IEA</b>	International Energy Agency
<b>IISD</b>	International Institute for Sustainable Development
<b>IMF</b>	International Monetary Fund
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>SDG</b>	Sustainable Development Goal
<b>SOE</b>	state-owned enterprise
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>WTO</b>	World Trade Organization

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# 1.0 Introduction

In each of the Group of 20 (G20) countries, public money is a significant resource. It also leverages private finance. To a large extent, how these resources are used will determine the success of delivering climate targets under the Paris Agreement and the Sustainable Development Goals (SDGs).

Energy subsidies, investments by state-owned enterprises (SOEs) as well as loans and loan guarantees through state-owned banks and international finance institutions are forms of government support that can either undermine or encourage sustainable and equitable development and decarbonization. Taxation of fossil fuels can further discourage or encourage high- or low-carbon investments.

G20 governments have committed to ending government support to fossil fuels through a number of reform pledges (Gerasimchuk, Bassi et al., 2017, Annex 2), starting with the G20's 2009 commitment to phase out "inefficient fossil fuel subsidies that encourage wasteful consumption" (G20, 2009). In addition, under the Paris Agreement (UNFCCC, 2015, Article 2.1.c), all governments have further committed to "making finance flows consistent with a pathway toward low greenhouse gas emissions and climate-resilient development"—a pledge that applies to both private and public finance in all their forms. SDGs, and in particular target 12.C and indicator 12.C.1 under SDG 12 on Sustainable Consumption and Production, also include the reform of subsidies to fossil consumption and production.

Despite these commitments, G20 governments continue using billions in public funds and tax relief to support fossil fuel production and consumption. Political and regulatory inertia, vested interests of the industry, and a lack of transparency and accountability all lead to the continued use of taxpayers' money to lock in unsustainable development pathways (Victor, 2009; Skovgaard & van Asselt, 2018).

Yet change is possible. Some G20 governments have made progress in shifting at least some support away from fossil fuels and in increasing taxes on fossil fuels. This working paper has brought together examples illustrating how reforms can be enabled and implemented to align the flows of public money with the Paris Agreement and the SDGs.

# 2.0 About This Working Paper

Government support from G20 countries, including through national, regional and international public finance institutions, has been under increasing scrutiny. In the energy sector, estimates and reporting have improved for some elements of government support to fossil fuels, for example, through and thanks to the work on government support for fossil fuels by the Organisation for Economic Co-operation and Development (OECD), the International Energy Agency (IEA), the Global Subsidies Initiative, Oil Change International, the Overseas Development Institute and other research, policy and advocacy organizations. However, for certain other elements of government support to fossil fuels, such as investments by SOEs, data still remain patchy and sometimes not available for all G20 countries.

Due to data limitations, this paper does not attempt to track progress in the G20 in a systematic way. Instead, it highlights some recent examples of relevant reforms in G20 countries. The goal of this publication is to provide policy-makers, researchers and non-governmental organizations with practical references for where governments have begun to shift public resources away from fossil fuels and toward the low-carbon economy.

## 3.0 Public Money and the Transition Away From Fossil Fuels

For the sake of conceptualization and selecting case studies for this paper, it is helpful to think of several distinct moving pieces in terms of shifting public money out of fossil fuels<sup>1</sup> and supporting the clean energy transition and wider sustainable development needs.

As illustrated in Figure 1, there are four elements of phasing out government support to fossil fuels (in light green):

- Reforming subsidies for fossil fuel consumption in a way that protects vulnerable groups
- Removing subsidies for fossil fuel production
- Phasing out public finance (credit support via public national and multinational banks) for fossil fuel production
- Shifting SOE investment from fossil fuels to renewables

There are also two fiscal policies that can discourage production and consumption of fossil fuels compared with clean energy (in dark teal):

- Increasing taxation of fossil fuel consumption in a way that protects vulnerable groups
- Increasing taxation of fossil fuel production

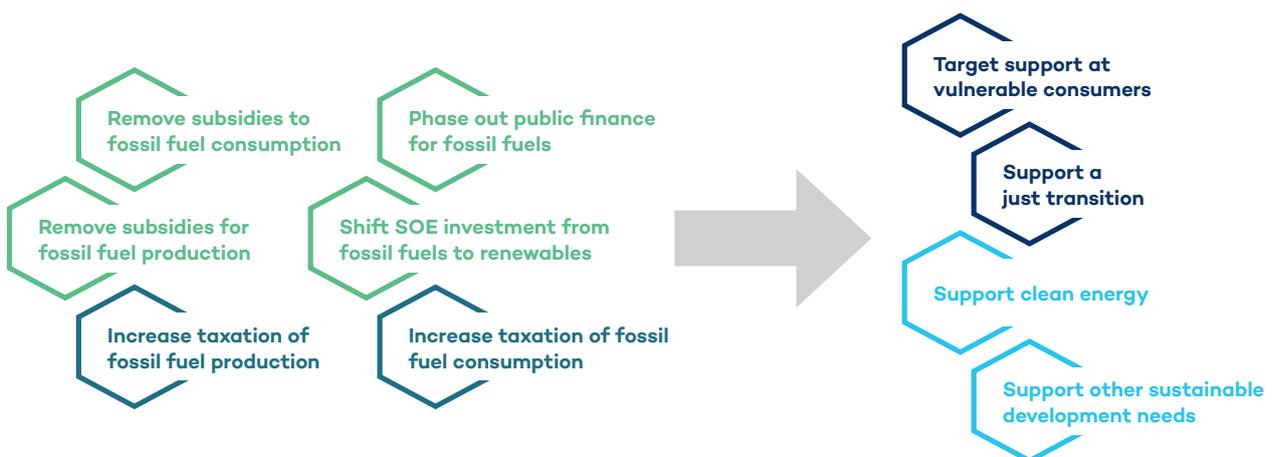
Implementation of these reforms should be accompanied by measures that protect vulnerable groups (in navy blue):

- Targeting support at vulnerable groups of consumers
- Supporting a just transition for workers and communities currently dependent on fossil fuels

These reforms can create fiscal space that governments can use for sustainable development needs (in light blue):

- Supporting clean energy
- Supporting other development needs such as public health, education, resilient low-carbon infrastructure, climate change adaptation and investments in renewable energy

**Figure 1.** Using public money to support the transition away from fossil fuels



Source: Authors' summary.

<sup>1</sup> In this working paper, fossil fuels are understood as comprising oil, natural gas, solid fuels (peat, lignite, sub-bituminous or brown coal, bituminous or black coal or anthracite) as well as electricity and heat generated from these fuels. Government support to fossil fuels and their taxation affect the entire value chain, including exploration and development, extraction and transportation of fossil fuels, construction and operation of refineries and power plants, decommissioning of fossil fuel facilities, transmission and distribution of electricity and heat, and marketing and consumption of fossil fuels.

## 4.0 The Public Resources at Stake

Depending on the methodology and scope, the estimated scale of different types of government support to fossil fuels can vary from hundreds of billions to several trillions of dollars. Bast et al. (2015) estimate that, in 2013–2014<sup>2</sup>, the G20 governments provided at least USD 444 billion per year in support for fossil fuel production through national subsidies, public finance and SOE investment. Separately, a joint estimate<sup>3</sup> from the OECD and IEA puts G20 subsidies for fossil fuel consumption at USD 354 billion in 2014 (OECD, 2017), though the value of consumption subsidies decreased in 2015–2017 due to both decreases in world oil prices and pricing reforms.

Absolute amounts of government support to fossil fuels significantly exceed that to renewables. According to the IEA (2016, 2017), global subsidies for renewables in power generation were at USD 114 billion in 2014 and USD 140 billion in 2016.

The competitiveness of clean energy versus fossil fuels also depends on taxation levels. Global revenues raised through carbon pricing were estimated at USD 30 billion in 2013/2014, increasing to USD 52 billion in 2017 (World Bank, 2014, 2018). This level of carbon pricing is seen as inadequate, and International Monetary Fund (IMF) analysts estimated the global under-taxation of fossil fuel consumption (non-internalization of negative externalities including air pollution, congestion on the roads and climate change) at USD 4.9 trillion in 2013 and USD 5.3 trillion in 2015 (IMF, 2015a).

In terms of taxation of fossil fuel production, it is possible to use as a proxy the World Bank's estimate of resource rents from oil, gas and coal extraction: the corresponding global value was at USD 2.035 trillion in 2014 and USD 1.059 trillion in 2016, decreasing due to the drop in the global prices for fossil fuels.

## 5.0 Featured Case Studies

This working paper features eight case studies (see Table 1 and Stories 1–8) selected to represent a diversity of reforms in terms of the types of government support and taxation, geography and countries' energy structures and overall level of economic development.

Some of the case studies focus on one country while others highlight several countries that have implemented similar reforms. Each story focuses on one form of government support to fossil fuels through their taxation. For example, Story 1 on Indonesia's reform of subsidies to gasoline and diesel exemplifies the recent policy changes in dozens of countries that reformed at least some of their fossil fuel consumption subsidies in 2014–2017, taking advantage of the drop in the world oil price (Figures 2 and 3).

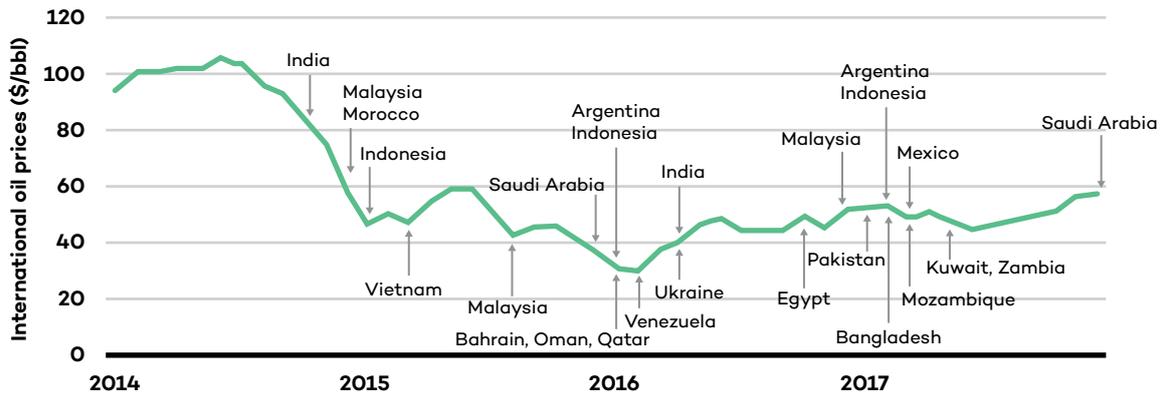
None of the featured reforms is free from criticism from environmental, social or economic angles (see "Watching brief" sections of each of the stories). But together these stories of change form a picture of how government support can be shifted and fossil fuels can be taxed to encourage the low-carbon transition. Table 1 brings these moving pieces together.

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<sup>2</sup> 2013–2014 was the period before a sharp decrease in the world oil, gas and coal prices. Both policy changes and oil price changes have an impact on the value of fossil fuel subsidies and taxes.

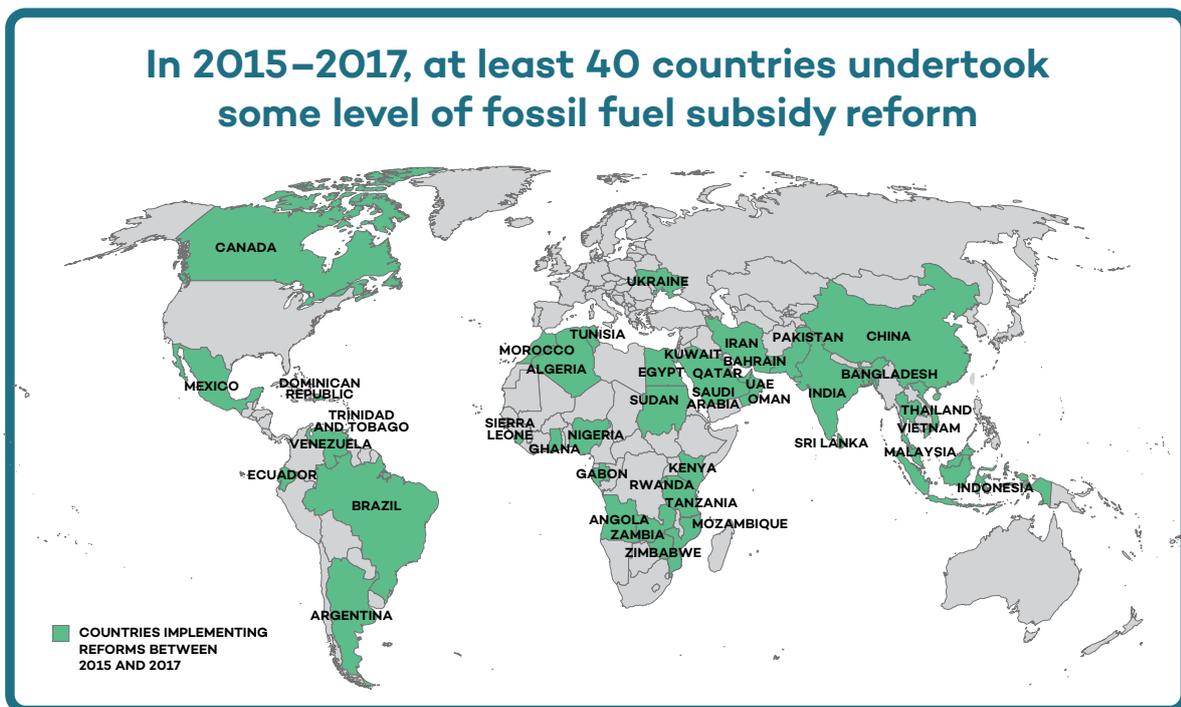
<sup>3</sup> The joint IEA and OECD estimate of consumption subsidies is larger, due to inclusion of more support schemes, than the IEA estimate of consumption subsidies.

**Figure 2.** Select policy developments to reduce fossil fuel consumption subsidies



Source: IEA & OECD, 2018.

**Figure 3.** Map of select countries that reformed subsidies for fossil fuel production or consumption in 2015–2017.



Sources: GSI research, World Energy Outlook 2016, IEA and GIZ data

Source: Zinecker, Sharma, Beaton, & Merrill, 2018.

**Table 1.** Stories from G20 countries shifting public money out of fossil fuels and increasing fossil fuel taxes

1. Removing subsidies for gasoline and diesel consumption in Indonesia			
Type of reform			
Key country characteristics	Public resources at stake	Key reform characteristics	Watching brief
<b>Indonesia</b> <ul style="list-style-type: none"> <li>• A lower-middle-income, non-OECD country</li> <li>• A net exporter of gas and coal</li> <li>• A net importer of oil and oil products</li> </ul>	<ul style="list-style-type: none"> <li>• Indonesia saved USD 15.6 billion through the removal of subsidies for gasoline and diesel in 2015.</li> </ul>	<ul style="list-style-type: none"> <li>• The reform affected households, transport, agriculture and fishing.</li> <li>• To protect vulnerable groups from energy price increases, the government launched a targeted social assistance scheme (smart cards).</li> <li>• The government invested the savings in health insurance, housing for low-income groups, clean water access, infrastructure and other areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Strong political willpower is needed to maintain reforms as world oil prices rise.</li> </ul>
2. Removing subsidies for fossil fuel exploration and development in Canada			
Type of reform			
Key country characteristics	Public resources at stake	Key reform characteristics	Watching brief
<b>Canada</b> <ul style="list-style-type: none"> <li>• A high-income OECD country</li> <li>• A net exporter of oil, gas and coal</li> <li>• The world's second largest reserves of non-conventional oil</li> </ul>	<ul style="list-style-type: none"> <li>• The reforms implemented between 2011 and 2022 should result in annual savings of about USD 260 million.</li> </ul>	<ul style="list-style-type: none"> <li>• Canada reformed seven tax exemptions for oil, gas and coal exploration since 2011.</li> </ul>	<ul style="list-style-type: none"> <li>• Canada still retains many government support schemes to upstream fossil fuel developments.</li> </ul>

### 3. Removing subsidies for oil production in Argentina

<p>Type of reform</p>	
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Key country characteristics	Public resources at stake	Key reform characteristics	Watching brief
<p><b>Argentina</b></p> <ul style="list-style-type: none"> <li>• A high-income, non-OECD country</li> <li>• An importer of oil and gas products</li> <li>• Reserves of non-conventional oil and gas</li> </ul>	<ul style="list-style-type: none"> <li>• Argentina saved at least USD 780 million in 2017 because of reducing the direct budget transfers to oil producers.</li> </ul>	<ul style="list-style-type: none"> <li>• The reform affected exploration, development and extraction of oil.</li> </ul>	<ul style="list-style-type: none"> <li>• Argentina still retains many schemes of government support to upstream gas developments.</li> </ul>

### 4. Governance of the EU-wide phase-out of fossil fuel subsidies by 2020

<p>Type of reform</p>			
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Key country characteristics	Public resources at stake	Key reform characteristics	Watching brief
<p><b>EU</b></p> <ul style="list-style-type: none"> <li>• High-income and upper-middle-income countries in and outside the OECD</li> <li>• All countries are net energy importers.</li> </ul>	<ul style="list-style-type: none"> <li>• EUR 112 billion in the EU was the annual average value of all forms of government support (fiscal support, public finance and SOE investment) to production and consumption of oil, gas and coal between 2014 and 2016.</li> </ul>	<ul style="list-style-type: none"> <li>• The reforms affect all sectors: coal mining, oil and gas production, power production, transport, industry, households and agriculture.</li> <li>• 75–99 per cent of hard coal sector support in the Czech Republic, Germany and Spain was directed at a just transition for workers and communities, and the decommissioning and rehabilitation of mining sites.</li> </ul>	<ul style="list-style-type: none"> <li>• The EU is continuing to provide a range of subsidies and public finance to fossil fuel production and consumption at home and abroad, and risks missing its 2020 phase-out deadline.</li> </ul>

## 5. Reducing public finance for fossil fuels

<b>Type of reform</b>	 <p>Phase out public finance for fossil fuels</p>
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Key country characteristics	Public resources at stake	Key reform characteristics	Watching brief
<b>Multi-country</b> <ul style="list-style-type: none"> <li>• G20 and other countries in different income categories</li> <li>• Both net energy importer and exporter countries</li> </ul>	<ul style="list-style-type: none"> <li>• USD 72 billion globally was the annual average of public finance flowing to fossil fuels from G20-controlled public finance institutions over 2013–2015.</li> </ul>	<ul style="list-style-type: none"> <li>• Recent policy restrictions on international public finance affected upstream oil and gas and, especially, coal-fired power and thermal coal mining.</li> </ul>	<ul style="list-style-type: none"> <li>• Loans and guarantees from both national and multilateral financial institutions still support fossil fuel infrastructure.</li> </ul>

## 6. State-owned companies transitioning away from coal mining and coal-fired power

<b>Type of reform</b>	 <p>Shift SOE investment from fossil fuels to renewables</p>
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Key country characteristics	Public resources at stake	Key reform characteristics	Watching brief
<b>China, India, Sweden</b> <ul style="list-style-type: none"> <li>• Different levels of income and development</li> <li>• Net energy importer countries</li> </ul>	<ul style="list-style-type: none"> <li>• USD 12 billion in the G20 was the annual average value of SOE investment in coal mining and coal-fired power in 2013 and 2014.</li> </ul>	<ul style="list-style-type: none"> <li>• In China, India and Sweden, SOEs start diversification in renewables.</li> </ul>	<ul style="list-style-type: none"> <li>• SOEs play an increasing role in fossil fuel investment worldwide.</li> </ul>

## 7. Increasing taxation of fossil fuel consumption

Type of reform	
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Key country characteristics	Public resources at stake	Key reform characteristics	Watching brief
<p><b>China, Saudi Arabia, South Africa</b></p> <ul style="list-style-type: none"> <li>• Non-OECD countries with different levels of income</li> <li>• Two net energy importers and a net energy exporter</li> </ul>	<ul style="list-style-type: none"> <li>• USD 354 billion was the value of subsidies for fossil fuel consumption in the G20 in 2015.</li> </ul>	<ul style="list-style-type: none"> <li>• China, Saudi Arabia and South Africa gradually increase taxes on fossil fuel consumption.</li> </ul>	<ul style="list-style-type: none"> <li>• IMF analysts estimate the global under-taxation of fossil fuel consumption at USD 5.3 trillion in 2015.</li> </ul>

## 8. The evolution of the Clean Energy Cess on coal in production in India

Type of reform	
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Key country characteristics	Public resources at stake	Key reform characteristics	Watching brief
<p><b>India</b></p> <ul style="list-style-type: none"> <li>• A lower-middle-income country outside the OECD</li> <li>• A net energy importer</li> </ul>	<ul style="list-style-type: none"> <li>• USD 12 billion is the value of the Clean Energy Cess for coal production collected in India over FY 2010–2018.</li> </ul>	<ul style="list-style-type: none"> <li>• India applies a “carbon tax on fossil fuel production.” Revenues from the Clean Energy Cess were partially used to cover the viability gap for renewable energy technologies between 2010 and 2017.</li> </ul>	<ul style="list-style-type: none"> <li>• Utility-scale wind and solar are at grid parity in India, but small-scale renewable energy solutions still need government support.</li> </ul>

Source: Authors' summary based on Figures 1 and 2 and Stories 1–8.

## 6.0 Principles of Shifting Public Money Away From Fossil Fuels

The hundreds of billions of dollars spent or foregone annually by governments to support fossil fuel production or consumption represent an enormous missed opportunity. These financial flows inhibit sustainable economic development by creating a burden on government budgets and taking away resources that could be put to more efficient use within the economy. They also increase inequality and undermine access to affordable energy by benefiting the rich rather than the poorest members of society (Beaton et al., 2013; Whitley & van der Burg, 2015). The IMF (2015b) has estimated that the richest 20 per cent of households receive six times more in fossil fuel consumption subsidies than the poorest 20 per cent. Meanwhile, Zinecker et al. (2018) put the annual value of achieving both universal electricity and cooking access by 2030 at USD 61.2 billion per year, or just one sixth of the fossil fuel consumption subsidies in the G20 in 2014.

Government support for fossil fuels also reduces the competitiveness of low-carbon industries by discouraging investment in renewable energy and energy efficiency; locking-in high-carbon investments (Gerasimchuk, Bassi et al., 2017); increasing the risk of stranded high-carbon assets (Worrall, Whitley, Garg, Krishnaswamy, & Beaton, 2018); compromising energy security (compared with subsidizing alternatives such as renewables and energy efficiency); damaging public health by increasing air pollution; and negating carbon price signals (Whitley & van der Burg, 2015).

Jewell et al. (2018) estimate that the removal of both production and consumption subsidies for fossil fuels could result in between 1 and 4 per cent of carbon emission reductions by 2030. However, effects can be more significant for some countries than for others. Modelling of the removal of fossil fuel consumption subsidies in a sample of 20 countries found emission reductions of 11 per cent by 2050. The emission savings would increase to 18 per cent if part of these subsidies were to be reallocated to renewables and energy efficiency (Merrill, Bassi, Bridle, & Christensen, 2015). Simulation of the global removal of fossil fuel subsidies only to the extraction of oil, gas and coal demonstrates potential for saving 37 Gt of emissions by 2050, or roughly the amount of emissions from the aviation sector (Gerasimchuk, Bassi et al., 2017).

These arguments provide a strong case for shifting public money away from fossil fuels to create fiscal space for investments in social protection, health care, education, development of resilient infrastructure and a low-carbon economy (van der Burg & Whitley 2016; Health and Environment Alliance, 2017; Merrill et al., 2017), climate change adaptation, and a just transition for workers and communities currently dependent on fossil fuels (Gass & Echeverría, 2017).

Reforms of government support to fossil fuels need to be suited to the unique circumstances of each country, with special attention given to mitigating unintended negative impacts and protecting vulnerable groups. However, there are some common principles building off structural reform experiences, which are analyzed in a considerable body of literature (see e.g., Beaton et al., 2013; Inchauste & Victor, 2017; Whitley & van der Burg, 2015, on political, social and communication strategies for the phase-out of fossil fuel consumption subsidies). These principles can be summarized as follows:

- The role of energy in the economy justifies a **“whole of government” approach** to the reform processes. Individual ministries seldom have access to all the tools required to mitigate the impacts of reform or to support economic diversification, or the convening power to plan reform processes.
- **Reforms should be evidence-based.** Research should be undertaken before, during and after reform to support understanding of the scope and nature of government support to fossil fuels and their taxation, their intended policy objectives and intended and unintended impacts, the true costs of various energy types, key attributes of relevant institutions and decision-making processes, the potential domestic impacts of removing government support for fossil fuels, and the groups that will gain or lose as a result of reform.
- Reform processes should be supported by **transparent and extensive communication and consultation with stakeholders**, including the general public. There is strong evidence for the

need for clear, open and honest information on the scale of subsidies, their costs and impacts, plans for reform and complementary measures. The G20 voluntary peer reviews of fossil fuel subsidies are one example of how governments can improve the transparency of their financial flows related to the energy transition (OECD, n.d.; Gerasimchuk, Wooders et al., 2017).

- Shifting public money away from fossil fuel production and consumption can create significant fiscal space and additional government revenue, which are often far greater than the upfront costs of reform. However, these positive impacts are felt only after the reforms have been enacted, and most governments will **need to mobilize resources to support reform implementation**. For many developing countries, this means that the international donor community should offer both technical and financial assistance. For international funders, this aid opportunity is associated with high return on investment given the amounts of financial flows involved (Whitley & van der Burg, 2015).
- A key element of successful reform is the **efficient and visible reallocation of resources to social causes and the protection of vulnerable groups**. Such complementary policies should be based on the protection of vulnerable groups of consumers and “imperatives of a just transition for workers” mentioned in the preamble of the Paris Agreement (UNFCCC, 2015).

## 7.0 Conclusions and Recommendations to the G20

In each of the G20 countries, public money is a significant resource that also leverages private finance. The hundreds of billions of dollars a year of G20 public money that still goes to fossil fuels is not just supporting the high-carbon economy. It is also a missed opportunity to support a clean energy transition and sustainable development.

In some cases, government support is shifting away from fossil fuels, with the recent reforms in fossil fuel consumption subsidies, some progress on removing fossil fuel production subsidies (see Stories 1–4 on [Indonesia](#), [Canada](#), [Argentina](#) and the [EU](#)) and the reduction of public finance for certain fossil fuels (see [Story 5](#)). Furthermore, some countries discourage fossil fuel use by increasing taxation and carbon pricing and by ramping up support for renewables (see [Stories 7 and 8](#)).

However, due to the immense scale of public money that still promotes the production and consumption of fossil fuels, this nascent positive shift must occur at a much faster rate for the G20 to get on track to meeting the Paris Agreement targets. Hundreds of billions of dollars in G20 countries still support fossil fuels, which risks locking the world into a carbon-intensive economy and is a missed opportunity for using public money in support of sustainable development and clean energy transition.

G20 countries have unfulfilled commitments to phase out “inefficient fossil fuel subsidies that encourage wasteful consumption” (G20, 2009) and to make “finance flows consistent with a pathway toward low greenhouse gas emissions and climate-resilient development” (UNFCCC, 2015, Article 2.1.c).

There are also numerous unfulfilled commitments and repeated calls from many countries (Friends of Fossil Fuel Subsidy Reform, 2016; V20, 2017), international organizations (OECD, 2015; UN Secretary General, 2018), investors and insurers (UNFCCC, 2017), the global civil society (Oil Change International 2016; C20, 2018) and other stakeholders to the G20 governments to deliver against their unfulfilled promises to phase out fossil fuel subsidies.<sup>4</sup> In the context of case studies in this paper, these calls can be reiterated as the following recommendations.

**First, by 2020, G20 countries should adopt concrete and ambitious timelines for reforming each type of government support related to fossil fuels.** Some first-movers have already adopted such timelines, and they can be expanded to all G20 members. Examples include the EU deadline to phase out environmentally harmful subsidies by 2020 ([Story 4](#)), the G7 deadline to phase out inefficient fossil fuel

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<sup>4</sup> For a detailed list of international commitments and supportive language on fossil fuel subsidy reform, see Annex 2 in Gerasimchuk, Wooders et al. (2017).

subsidies by 2025 (G7, 2016, 2017) and the World Bank Group commitment not to fund upstream oil and gas after 2019 (World Bank, 2017).

**Second, these reforms should be implemented in a way that protects vulnerable groups.**

Support should be targeted at vulnerable consumers and a just transition for workers and communities currently dependent on fossil fuels. [Story 1 on Indonesia](#) and [Story 4 on the EU](#) provide examples of such complementary policies. In the meantime, G20 governments should ensure that flows of public money aimed at the energy transition do not support further production or use of fossil fuels.

**Third, all G20 countries should seek to complete voluntary peer reviews of fossil fuel subsidies by 2020.**

Peer reviews provide a platform for government to exchange their experiences, shifting government support away from fossil fuels. Argentina, Canada, China, Germany, Indonesia, Italy, Mexico and the United States have either completed or are in the process of completing their peer reviews of fossil fuel subsidies (OECD n.d.; Gerasimchuk, Wooders et al., 2017). Such reviews would benefit from expanding the scope of these reviews to include related types of government support to fossil fuels such as credit support and SOE investment.

**Fourth, shifts of public money away from fossil fuels and their increased taxation also create government fiscal space that can be used for wider social and sustainable development needs,** such as public health, education, resilient low-carbon infrastructure, climate change adaptation and investments in renewable energy (see [Story 1 on Indonesia](#), [Story 7 on taxing fossil fuel consumption](#) and [Story 8 on India](#)).

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