Working paper

Phasing out fossil fuel subsidies in Colombia

A crucial step towards a just energy transition

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Key messages

Despite strong climate ambition and national plans, Colombia's transition to a climate-compatible future is not yet on track. In the context of the global energy transition – the shift from fossil fuels to renewables – Colombia's prospects as a major exporter of hydrocarbons are diminishing, with major importers of Colombian coal committing to phase-out coal-fired power and oil demand significantly fluctuating.

The Colombian government continues to support the production and consumption of fossil fuels, including through Ecopetrol, the majority publicly-owned national oil company which is responsible for over 60% of fossil fuel production in the country.

Analysis by ODI, with support from Transforma and based on data from the Organisation for Economic Co-operation and Development, shows that the Colombian government provided at least 5,610 billion pesos (around USD 1.7 billion) in subsidies to fossil fuel production and consumption in 2019, with around 60% of these directed to petroleum. Investing in new oil and gas infrastructure increases the country's exposure to transition risks through building assets that are likely to be uneconomical and 'stranded' in years to come.

However, alternative revenue sources and employment opportunities in the green sector are emerging, and there are glimmers of hope within Colombia's recent plans and initiatives, such as the National Just Transition Strategy launched by The Ministry of Labour.

A just transition in Colombia entails avoiding further financing for and lock-in to carbon assets, channelling of fossil fuel subsidies towards development and sustainability priorities, supporting the regions, workers and livelihoods that will be affected by the shift away from hydrocarbon sectors, and ensuring an inclusive transition process that amplifies the voices and addresses the needs of diverse stakeholders.

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Contents

Acknowledgements / i

Display items / iii

Executive summary / 1

1 **Introduction** / 5

2 **Public finance for fossil fuels in Colombia** / 8

2.1 The scale and types of fossil fuel subsidies: tax exemptions and budgetary allocations to fossil fuels / 8

2.2 Broader public finance for fossil fuels and Covid-19 response / 15

3 **The diminishing prospects for fossil fuel exports** / 19

4 **The opportunities for green economic development** / 23

4.1 Planning and financing a just transition / 23

4.2 Fostering green businesses and jobs / 26

5 **Conclusions** / 29

References / 30

Display items

Boxes

Box 1 Examining transport subsidies / 12
Box 2 Examining electricity subsidies / 14
Box 3 Definition of green jobs / 26

Tables

Table 1 Selection of the biggest fossil fuel subsidies in Colombia / 11
Table 2 Policy developments in key coal export markets / 19

Figures

Figure 1 Colombia's energy mix (1990–2019) / 6
Figure 2 Fossil fuel subsidies trends in Colombia (2010–2020, million US$) / 9
Figure 3 Fossil fuel subsidies in Colombia, by fuel type and incidence / 9
Figure 4 Fossil fuel subsidies in Colombia, by subsidy measure / 10
Figure 5 Colombia's commitments to energy investments since January 2020 / 16

Executive summary

Over the last two decades, successive Colombian governments have supported natural resource extraction and export – including of coal and oil – through a series of policies that facilitate mining and drilling, such as environmental deregulation, reductions to royalties and incentives for the industry. Support has also been provided through Ecopetrol, the majority public-owned national oil company that is responsible for over 60% of the total volume of fossil fuel production in the country. The Colombian government has a strong incentive to facilitate fossil fuel production; the taxes and royalties received from fossil fuels are a major source of revenue, and the industry is also an important source of jobs and cheap energy.

However, given the global energy transition – the shift from fossil fuels to renewables – Colombia's prospects as a major exporter of hydrocarbons are diminishing. The EU and UK, which make up 47% of Colombia's coal exports, have made pledges to move away from coal-fired power. Turkey, the recipient of 14% of Colombia's coal exports, has plans to increase domestic coal production to meet demand, at the same time as facing delays in the construction of its planned coal plants. Other key export markets such as Brazil and Chile, which together account for 13% of Colombian coal exports, aim to phase out coal-fired power by 2025. The prospect of opening alternative markets for its coal exports may not be very realistic for Colombia, given competition from other major producers and global plans to phase down coal production and use.

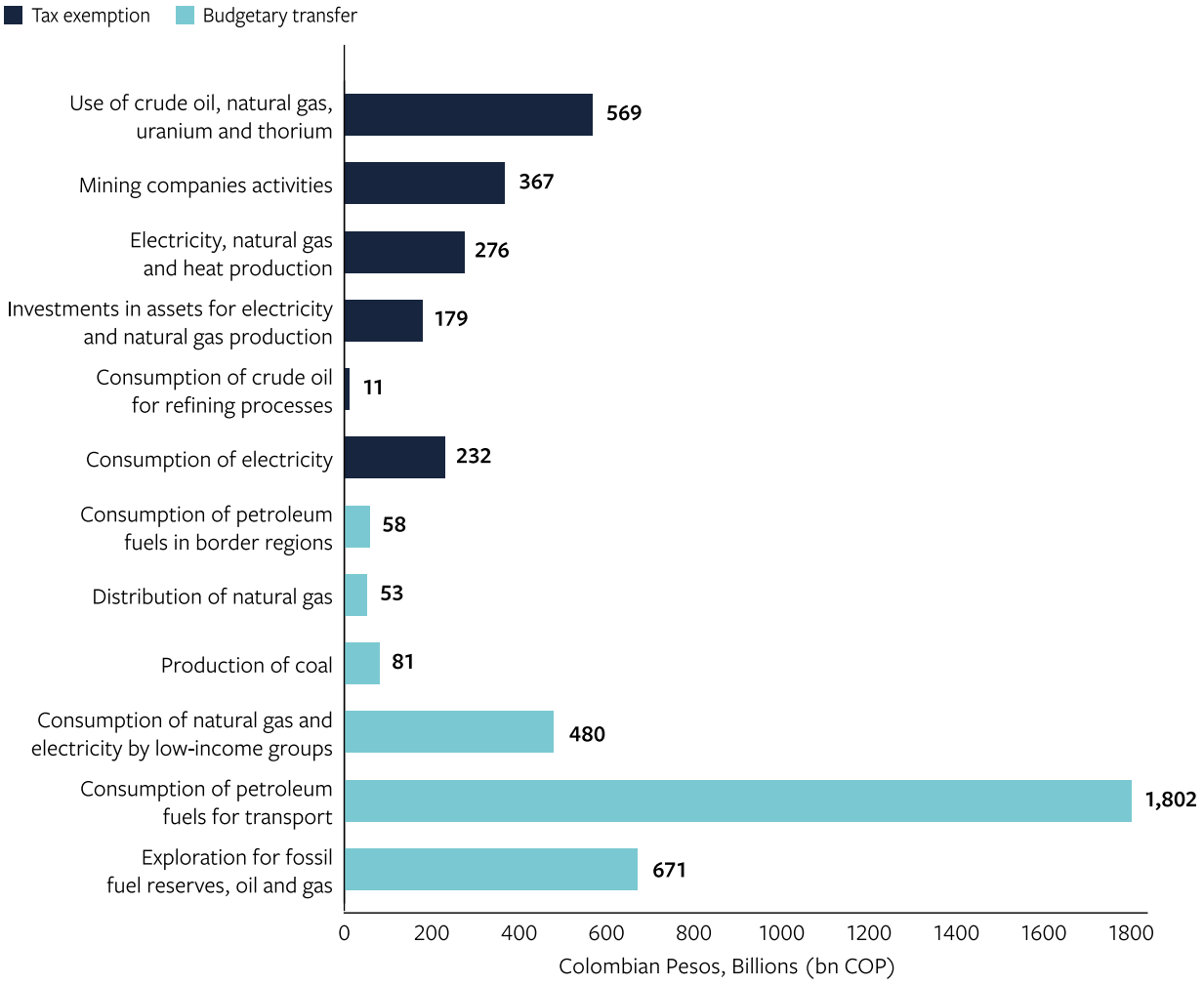
Meanwhile Colombia's oil production has fallen steadily since 2015 due to a combination of violence in oil-producing regions, low oil prices and the pandemic-induced fall in energy demand in 2020–2021. Most of Colombia's crude oil exports go to the US, where demand is uncertain due to a combination of increased domestic supply and emission reduction targets. Colombia's ongoing support for oil and gas exploration is therefore likely to be a poor investment, as newly discovered fields cannot be developed if current global goals to limit warming to 1.5°C are to be met. Investing in new oil and gas infrastructure increases the country's exposure to transition risks through building assets that are likely to be uneconomical and 'stranded' in years to come. And of course, fossil fuel production in Colombia is not just a story about economic gains and losses, it's also about jobs and livelihoods. A global energy transition risks destroying domestic jobs in coal mining and oil and gas production. The more deeply the country is invested, the more costly and demanding it will be for the workers and communities to shift away from fossil fuels through new industries and livelihoods.

In this working paper, we look at the continued finance provided by the Colombian government for fossil fuels and consider how these resources could be better deployed to achieve the country's development priorities. Fossil fuel subsidies mean consumers have less incentive to implement efficiency measures or invest in clean alternatives like decentralised renewables, leading to wasteful energy use. They are also a relatively unproductive form of government

spending, and reforming them can free-up much-needed fiscal space which can support political priorities such as healthcare, education and job creation. All of these sectors urgently require fiscal support in the wake of the Covid-19 pandemic.

Our analysis, based on data from the Organisation for Economic Co-operation and Development, shows that the Colombian government provided a total of 5,610 billion pesos (around $1,710 million) in subsidies to fossil fuel production and consumption in 2019, with around 60% of these subsidies directed at the production and consumption of petroleum. We find that 66% of the subsidies identified are for the consumption of fossil fuels while 34% are for production. Most of the consumption subsidies – 3,152 billion Colombian pesos (US$ 960 million) in 2019– reduce the cost of petroleum used for transport, which disproportionately benefits richer Colombians who own private cars. Most of the production subsidies – 1,626 billion Colombian pesos (US$ 495 million) in 2019– support oil and gas exploration, although their production has a distinctly uncertain future in a carbon-constrained world. Figure ES1 provides more detail on public support for fossil fuels in Colombia.

Figure ES 1 Fossil fuel subsidies in Colombia, by subsidy measure



Source: authors' own calculations based on data from OECD (2021).

These subsidies have been provided against a backdrop of a growing public budget deficit in Colombia, with the accumulated value between 2014 and 2021 estimated to be higher than 1.3% of the accumulated gross domestic product during the same period (Lopez Carbajal et al., 2021). Moreover, public funding for fossil fuels has increased further in Colombia during the Covid-19 crisis. Between January 2020 and January 2022, recovery spending has been extremely skewed towards fossil fuel investments, with at least $1.1 billion committed to support fossil fuel-related investments and only $4.41 million for clean energy.

Despite its ambitious climate targets and the inclusion of environmental and climate aims in its recent national plans, Colombia's transition to a climate-compatible future is not yet on track. The country's pathway to reach its greenhouse gas reduction target as set out in its Nationally Determined Contribution (NDC) – its plan under the United Nations international climate process – relies to a large extent on emissions reductions in the forestry and land use sectors, and the country continues to depend heavily on fossil fuel consumption for its energy needs. Continued investments in fossil fuel extraction and government subsidies for fossil fuel consumption are at odds with its climate ambitions, and risk locking the country into an inefficient, polluting development trajectory that jeopardises the competitiveness of other economic sectors.

Fortunately, there are glimmers of hope within Colombia's recent plans and initiatives. The National Development Plan of 2018 commits to establishing new models of dialogue between the government and the regions, in part to manage coal mine closures more fairly and effectively. The Ministry of Labour has since launched a National Just Transition Strategy focusing on green job opportunities in the circular economy, energy, water and waste-utilisation sectors, which will be implemented from 2023. Colombia's new NDC and forthcoming Long-Term Strategy under the Paris Agreement both also highlight the importance of a just transition.

A just transition in Colombia will need to have several components, including avoiding further financing for and lock-in to carbon assets which would delay the transition, supporting the regions and workers that will be affected by the shift away from hydrocarbon sectors and ensuring an inclusive transition process that amplifies the voices and addresses the needs of diverse stakeholders. Some of these objectives can jointly support Colombia's broader goals of implementing its peace process, which entails providing employment and livelihoods for former combatants and developing the regions most impacted by the conflict, as well as helping to remedy the deeply entrenched inequalities that exist within the country.

Alternative revenue sources and employment opportunities in the green sector are emerging. Even though to date, Colombia is only realising some of the potential opportunities associated with a green economy, given its exceptional biodiversity and carbon-rich ecosystems, there are current and potential green jobs in forestry, wetland management and other nature-based solutions. But the more significant opportunities for an urbanised, educated country like Colombia are in sectors such as green construction, manufacturing and services. Global

value chains are being reconfigured by low-carbon technologies and climate policies, leading to the emergence of new manufacturing hubs for solar panels, wind turbines, energy-efficient appliances, electric vehicles, green hydrogen and more. Therefore, shifting financing away from fossil fuels and towards these new sectors will ensure Colombia is well placed to reap the benefits of the transition.

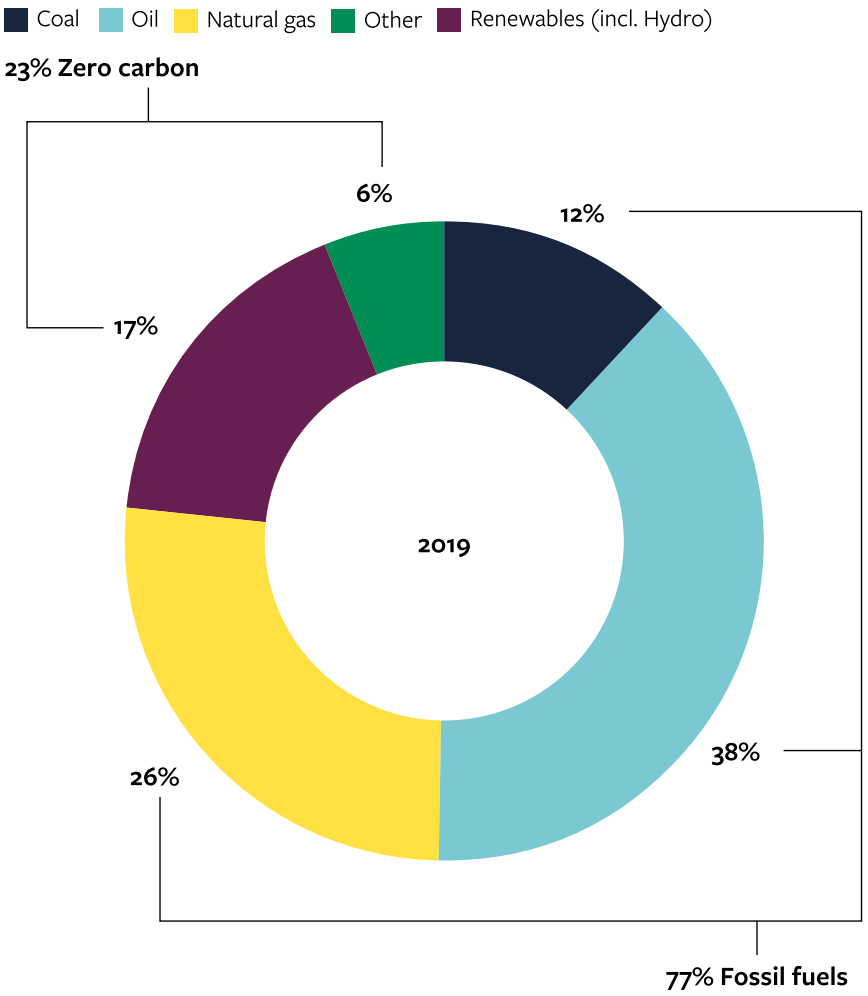
1 Introduction

The Government of Colombia has shown strong climate ambition in recent years, putting in place various policies with the intention to drive a green and just transition across the whole economy. Colombia's new Nationally Determined Contribution (NDC), its climate targets submitted under the UN climate process, pledges to reduce its global greenhouse gas (GHG) emissions by 51% compared to their projected emissions for 2030. Colombia's Low Carbon Development Strategy, launched in 2012, aims to mitigate GHG emissions across different sectors in Colombia while at the same time contributing to Colombia's broader social, environmental and economic goals. More recently, the Colombian government has declared their intention to deliver a sustainable and inclusive recovery from Covid-19 (CONPES, 2021).

However, Colombia's pathway to reach its greenhouse gas (GHG) reduction target as set out in its NDC relies heavily on emission reductions in the forestry and land use sectors. The country continues to depend on fossil fuel consumption for its energy needs, with oil, natural gas and coal making up 38%, 26% and 12% of the energy mix respectively (Climate Transparency, 2020). Colombia's NDC does not sufficiently address domestic emissions from fossil fuels, particularly in the energy and transport sectors, which are major sources of emissions. Moreover, Colombia is one of the world's largest producers of coal and a significant producer of oil and gas. Colombia's continued plans on fossil fuel extraction are at odds with its climate goals, and its recent investments in ongoing and new extraction projects exemplify this contradiction (Strambo and González Espinosa, 2020).

There is strong scientific consensus on the need for the world to wean itself off fossil fuels to avoid dangerous climate change. According to the International Energy Agency (IEA, 2021a), there can be no further investments in new oil and gas fields and coal mines in order to maintain a 50% chance of limiting global warming to 1.5°C. The UN 26th Conference of Parties (COP26) in Glasgow marked a major global step towards fossil fuel phase-out. More than 40 countries signed up to phase out coal power by 2030 or 2040 (although some major coal producers and consumers were notably absent), and over 30 countries pledged to end international financing for all fossil fuels by the end of 2022 (UK Government, 2021; UKCOP26, 2021). The final COP26 agreement, the Glasgow Climate Pact, commits signatories to phase down coal power and phase out inefficient subsidies to fossil fuels (UNFCCC, 2021). These trends have significant implications for the future of fossil fuels, through changing global demand and supply. It is therefore a critical moment for Colombia to reflect on its current climate aims and macroeconomic options and put together a realistic and robust strategy to reduce its dependence on fossil fuels.

Figure 1 Colombia's energy mix (1990–2019)



Source: Climate Transparency (2020).

A key part of the low-carbon transition will be phasing out government support for fossil fuels. Subsidies for the production and consumption of fossil fuels prop up the fossil fuel industry, creating market distortions and disadvantaging low-carbon measures. Reducing the price of fossil fuels means consumers have less incentive to implement efficiency measures or invest in clean alternatives like decentralised renewables, leading to wasteful energy use. Subsidies also tend to be regressive, as they largely flow to higher-income groups who consume more energy (Coady et al., 2015). Fossil fuel subsidies are also widely regarded as a relatively unproductive form of government spending and reforming them can free up much-needed fiscal space, which can support political priorities, such as healthcare, education and job creation, and the very implementation of climate-related policies and programmes.

This working paper looks at how Colombia is currently supporting fossil fuels and some of the key benefits of a shift away from fossil fuels and related spending, including the creation of more and better-quality employment, the opportunity to free up public funds for other uses and the avoidance of risk of stranded assets. In Section 2, we analyse public finance to fossil fuels, with a

focus on the electricity and transport sectors and fossil fuel production. We examine government subsidies, as well as support through state-owned energy companies and public banks, and their role in supporting a just transition away from the fossil fuel economy. We identify some potentially regressive consumption subsidies in the transport sector. We also identify a large amount of public support that goes to fossil fuel exploration and production in Colombia – which has only increased since the onset of the Covid-19 pandemic. In Section 3, we look at the bleak prospects around a continued reliance on fossil fuel exports and managing the risk of stranded assets. In Section 4, we explore the opportunities and challenges around a just transition away from fossil fuels and the alternative employment opportunities in the green economy. We conclude with recommendations on how shifting government financing away from fossil fuels and towards supporting the development of green sectors can help Colombia achieve its development goals and strengthen its public finances amid the global health, fiscal and climate crises.

The energy transition in Colombia must be examined within the country's broader political economy context. While this paper does not have the scope to explore these in detail, a just transition away from fossil fuels will inevitably have implications for the country's existing severe inequalities, which often concern some of the key fossil fuel producer regions and are likely to be deepened due to the covid-19 pandemic and its economic impacts. Equally, a move away from the established fossil fuel-based structures will be interlinked with some of the challenges around conflict and Colombia's advances in terms of its peace process.

2 Public finance for fossil fuels in Colombia

2.1 The scale and types of fossil fuel subsidies: tax exemptions and budgetary allocations to fossil fuels

Government subsidies to the consumption and production of fossil fuels create perverse incentives for their extraction and use. These fiscal choices encourage new investment in fossil fuels that would otherwise not make commercial sense, prolong the life of fossil fuel assets when they are no longer viable, channel public money to higher-income groups, and undermine investment and behaviour change towards low-carbon options such as renewable energy investments or energy efficiency measures. In this section, we focus on subsidies directed to support fossil fuels in the forms of tax exemptions and budgetary allocations. Other forms of public finance support for fossil fuels, such as investments by state-owned enterprises and Covid-19 recovery packages, are the focus of the following sections.

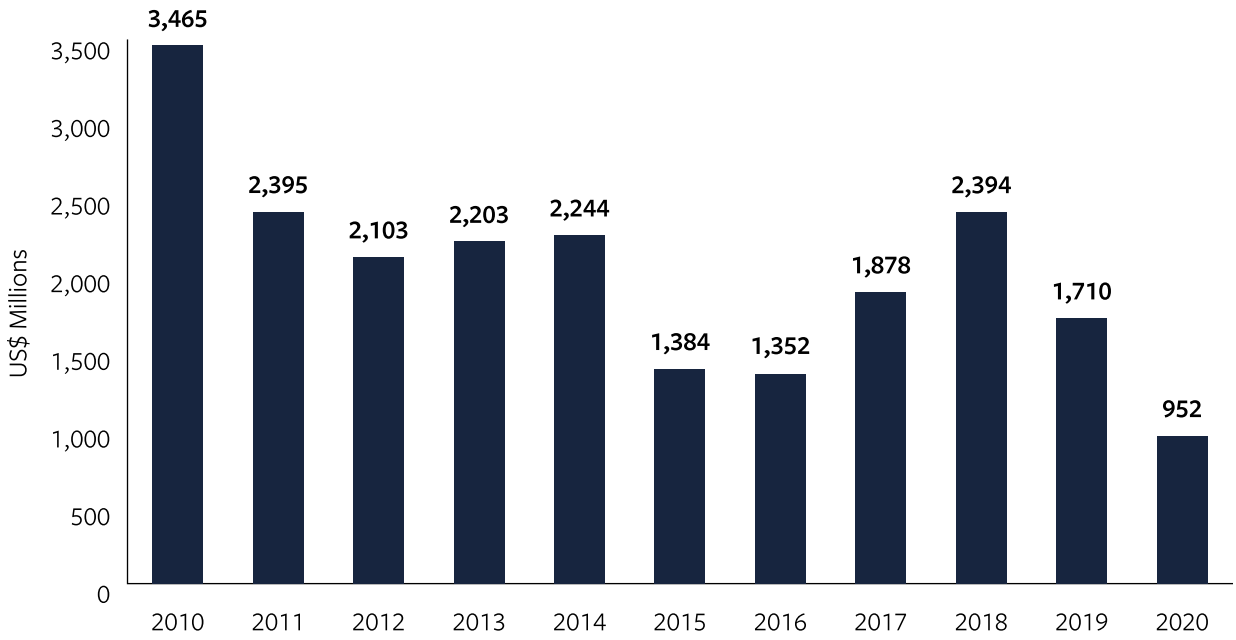
There are various estimates of the extent of fossil fuel subsidies provided by the Colombian government, which rely on different definitions and methodologies for computing subsidy figures. Even though data from 2020 are available, this is unlikely to be a representative year due to pandemic economic effects and its related policy decisions; therefore, we focus on subsidy estimates for 2019 instead. According to the International Energy Agency (IEA), subsidies for the consumption of fossil fuels (mainly oil) in Colombia amounted to 1,728 billion pesos[1] ($526 million) in 2019. This is quite low in comparison with subsidies provided by other oil-producing, middle-income countries, such as Venezuela ($8,366 million), Algeria ($11,147 million) and Nigeria ($1,705 million). Note, however, that these figures cover only a subset of consumer subsidies and do not include production subsidies at all. Different estimates by the Organisation for Economic Co-operation and Development (OECD), which also include production subsidies, find that the Colombian government provided a total of 5,610 billion pesos (around $1,710 million[2]) in subsidies to fossil fuel production and consumption in the same year. Similar estimates are not available for most of the other oil-producing, middle-income countries, but to put this figure into context, the 5,610 billion pesos estimated to have been spent on fossil fuel subsidies amounts to 1.6% of total government expenditure in the same year (CountryEconomy, n.d.). Around 60% of these subsidies were directed at the production and consumption of petroleum (OECD, 2021a).

Subsidies in Colombia have been on a decreasing trend since 2010, and after another peak in 2018, they decreased in 2019 and further dropped in 2020 (mirroring similar global trends due to the fall in demand in light of the Covid-19 pandemic) (OECD, 2021a) (see Figure 2). Importantly, these

1 OECD exchange rates for 2019 have been applied (OECD, 2021b).
2 OECD exchange rates for 2019 have been applied (OECD, 2021b).

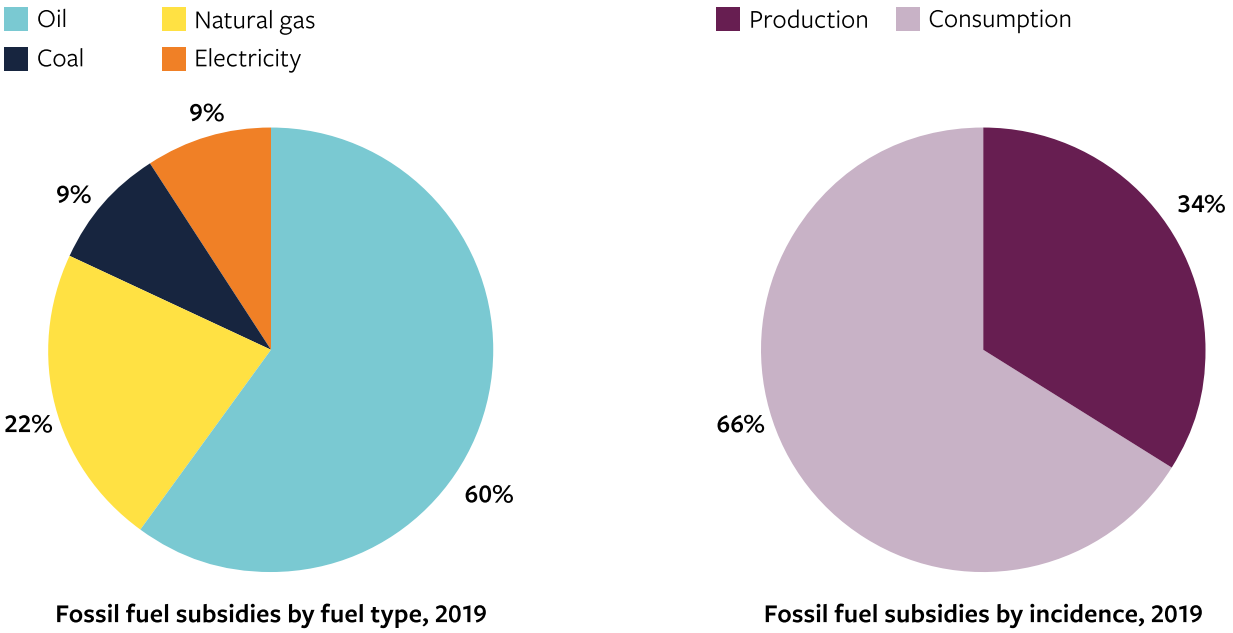
subsidies have been provided against a backdrop of a growing public budget deficit in Colombia, with an accumulated value between 2014 and 2021 estimated to be higher than 1.3% of the accumulated GDP during the same period (Lopez Carbajal et al., 2021).

Figure 2 Fossil fuel subsidies trends in Colombia (2010–2020, million US$)



Source: Authors' own calculations, based on data from OECD (2021a).

Figure 3 Fossil fuel subsidies in Colombia, by fuel type and incidence



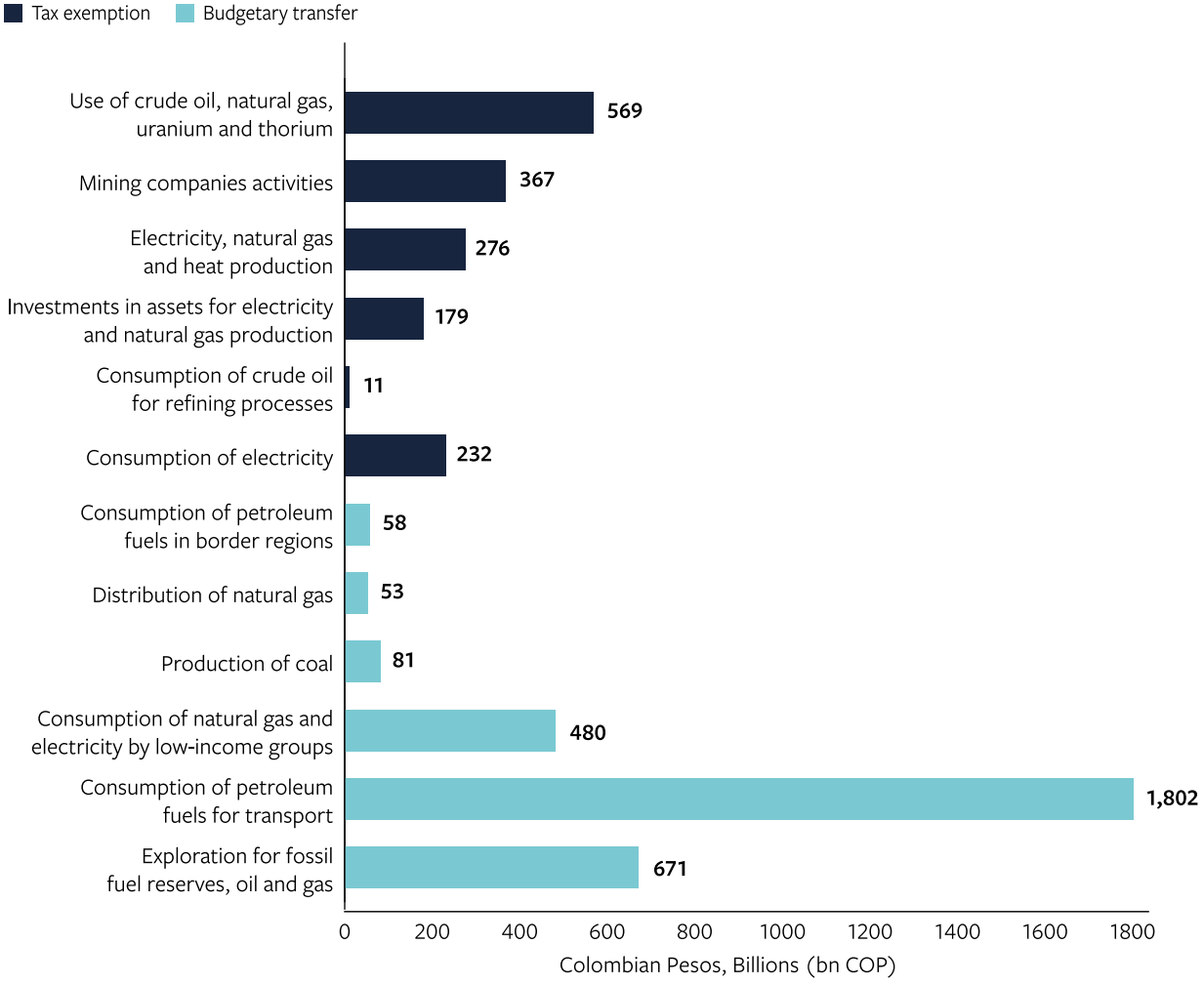
Fossil fuel subsidies by fuel type, 2019

Fossil fuel subsidies by incidence, 2019

Source: authors' own calculations based on data from OECD (2021a).

As Table 1 and Figures 3 and 4 show, Colombia deploys various types of subsidies, provided by means of both budgetary transfers and tax exemptions (OECD, 2021a). Consumption subsidies accounted for 66% of Colombia's subsidies in 2019. Some of this support is intended to reduce energy costs for low-income groups (through so-called 'Subsidies to the Underprivileged Share of the Population'), but the majority is provided through the so-called Fuel Price Stabilization Fund (FEPC) in support of petroleum fuels used for transport purposes, including for private vehicles used by the richer segments of Colombian society. The remaining 34% of subsidies is directed to fossil fuel production, largely to oil and gas exploration and only marginally to coal production. Production subsidies are likely to benefit the wealthy, even more so when directed to the oil and gas sector that contributes very little to employment creation.

Figure 4 Fossil fuel subsidies in Colombia, by subsidy measure



Source: authors' own calculations based on data from OECD (2021a).

Table 1 Selection of the biggest fossil fuel subsidies in Colombia

Name of subsidy	Subsidy description	Type of subsidy mechanism	Subsidised fuel type	Subsidy incidence	Subsidy amount in Colombian Pesos (2019)	Subsidy amount in US$ (2019)
Fuel Price Stabilisation Fund (FEPC)	The FEPC aims at mitigating the impact of international oil price volatility on domestic retail prices of petroleum-derived products used as transport fuels. In 2020, the government announced plans to eliminate the reference pricing system and ultimately phase out the FEPC over the following two years.	Budgetary transfer	Petroleum	Consumption	1,802 billion	549 million
Public funding of the National Agency of Hydrocarbons	Funding for hydrocarbon exploration projects and for mapping of areas of Colombia with unexplored potential in terms of hydrocarbon resources.	Budgetary transfer	Petroleum, gas	Production	671 billion	205 million
Sales Tax Exemption on Crude Oil, Natural Gas, Uranium and Thorium	This measure exempts crude oil and natural gas (as well as uranium and thorium) from the general sales tax rate of 16%.	Tax exemption	Petroleum, gas	Consumption	569 billion	173 million
Subsidies to the Underprivileged Share of the Population[3]	Subsidies for the domestic consumption of electricity and natural gas among the three poorest brackets of the population.[4] Subsidies cannot exceed 15%, 40% and 50% of the electricity and natural gas consumption for brackets three, two and one respectively.	Budgetary transfer	Electricity, gas	Consumption	480 billion	146 million
Tax Credit for Mining Companies	Tax credits for mining companies. These are additional to the partial tax deduction for investments made in fixed assets computed under other subsidy measures.	Tax exemption	Coal	Production	367 billion	112 million
Tax Credit for Companies Producing Electricity, Natural Gas and Heat	Tax credits for companies producing electricity, natural gas and heat. These are additional to the partial tax deduction for investments made in fixed assets computed under other subsidy measures.	Tax exemption	Electricity, gas	Production	276 billion	84 million

Source: authors' own calculations, based on data from OECD (2021a).

3 Note that electricity production in Colombia relies largely on renewable energy (mostly hydropower) sources, which contributed around 73% of total electricity production in 2020 (Climate Transparency, 2020). Therefore, part of the electricity subsidies may not be effectively directed at fossil fuels. Moreover, given that this subsidy is mostly a cross-subsidy, some of the expenditure related to it may not come out of the public purse but rather use resources collected from higher-income groups to support the electricity spending of lower-income ones.

4 According to the Colombian law, the first bracket refers to extremely low-income families, while brackets two and three refer to low-income and middle- to low-income families, respectively (OECD, 2021a). Around 90% of Colombian households belong to the lowest three brackets (Ortiz Jara et al., 2020).

It is important to note that both the IEA and the OECD figures are likely to underestimate the actual subsidies provided to fossil fuels in Colombia. Another study, based on the figures published by the Colombian government, found that subsidies provided to petroleum since 2014 amounted to a total of $33.1 billion (Lopez Carbajal et al., 2021). The underestimation is often because many subsidy measures are not included in the IEA's and OECD's standard methodology. For example, when it comes to coal subsidies, while a large share is provided through the aforementioned National Mining Agency (ANM) in the form of tax exemptions and rebates, reduced royalty payments and easier licences, incentives such as those provided by the non-fossil fuel-specific so-called Vallejo Plan are not included in the subsidy figures. Yet the incentives provided through this plan turn out to be very relevant, as the Vallejo Plan allows Colombian companies to claim total or partial exemption from customs duties when importing raw materials, intermediate inputs, capital goods and spare parts that are to be employed in the manufacturing of export goods. While not specifically targeted at the coal sector, it has disproportionally favoured it over the years (Transforma, 2021a; Strambo et al., 2018; MINCIT, 2021).

After agriculture, forestry and land-use change, the transport and energy (electricity and heat) sectors are the two sectors accounting for most emissions in Colombia, respectively around 13% and 12% of the country's emissions (Climate Watch, n.d.). So the emissions impact of subsidising consumption in these sectors is very significant. Boxes 1 and 2 examine subsidies to these two sectors in more detail.

Box 1 Examining transport subsidies

The transport sector in Colombia is responsible for 41% of the energy-related emissions in the country, with oil making up 95% of the transport energy mix (Climate Transparency, 2020). Prices of gasoline and diesel in Colombia, both used for transport purposes, are among the lowest in the Latin American region, only higher than in Ecuador, Bolivia and Panama (Minenergia, 2019). The two fuels are particularly subsidised in the border areas, which include 171 administrative areas (*municipios*). There are two main types of subsidies provided by the central government for these products in border areas in order to mitigate their otherwise higher costs compared to the rest of the country: tax exemptions and subsidies to the producers' revenues, the latter being part of the Fuel Price Stabilisation Fund (FEPC) already described (Minenergia, 2019; see also Table 1). Gasoline producers have recently started receiving a price equal to the refinery market price (based on the principle

of export parity[5]) and the VAT on such income was reduced from 19% to 5% in 2019 as part of the National Development Plan (Plan Nacional de Desarrollo) (Martínez Ortiz et al., 2019). A similar mechanism for price setting is applied to diesel. Both subsidies have been creating deficits that the FEPC (and through it the national budget) has absorbed over the last few years – reaching 14 billion pesos (around $4.3 million) in March 2019 (Martínez Ortiz et al., 2019).

Subsidies for transport fuels can be regressive, based on the latest statistics of only around a quarter of adults owning a car and three out of five not having access to a car at all in Colombia. Given that higher income is the most significant determinant of car ownership in the country (Gómez-Gélvez and Obando, 2013), it is reasonable to conclude that wealthier households are currently among the main beneficiaries of Colombia's transport subsidies. This helps explain why Colombia has had little success in reducing gasoline and diesel subsidies since 2003, partly due to these efforts having been opposed by middle- and high-income voters who have much higher rates of turnout at elections (Garcia Romero and Calderon Etter, 2013).

However, it is also important to note that higher transport fuel prices would affect public transport and food prices as well, with consequences for a much broader share of the population beyond the wealthiest groups that benefit directly from the lower fuel prices. Therefore, in addition to their appeal to higher-income classes, it is also the wider potential distributional impacts which act as major barriers to the reform of this substantial chunk of Colombia's fossil fuel subsidies.

In major cities such as Cartagena, Medellín and Bogotá, gasoline and diesel have been mostly phased out for use in public transport and have been largely replaced by gas (Garcia Romero and Calderon Etter, 2013). Liquefied petroleum gas is also widely used for rural development. However, the gas supply is imported (Martínez Ortiz et al., 2019), which means that Colombia would be exposed to the price volatility recently seen in international markets if the country should choose to transition to gas rather than clean energy. Electrification arguably offers greater energy security and more predictable prices where private vehicles are not avoidable. Of course, Colombia has an impressive track record of investing in walking, cycling and mass transit infrastructure, which have transformed its cities for the better while reducing the carbon intensity of urban transport.

5 The reference price is the price received by refiners and importers for motor gasoline and diesel, while the export parity price represents the opportunity cost of selling these petroleum-based products on the international markets. The parity export price is computed on a monthly basis by the Ministry of Mines and Energy (MME). The price of motor gasoline and diesel is set considering the income received by the refiner, the transportation costs and the margin of the wholesalers. Each refiner and importer of motor gasoline and diesel operating in the domestic market holds an account in the FEPC that is offset every three months based on the MME calculations (OECD, 2021a).

Box 2 Examining electricity subsidies

Electricity subsidies in Colombia amounted to 1.79 billion pesos ($545 million) in 2019, equivalent to 0.3% of GDP (Martínez Ortiz et al., 2019). These funds are distributed as part of the Subsidies to the Underprivileged Share of the Population, intended to benefit lower-income groups in the country. Some of the resources are mobilised through cross-subsidisation, with higher tariffs paid by middle- and high-income households and commercial users. These energy subsidies are therefore unusual because they are not regressive in nature.

It is also important to recognise that electricity subsidies are not necessarily incompatible with climate goals, depending on the composition of power generation. While energy subsidies generally discourage efficient energy use, they do not necessarily fuel greenhouse gas emissions. In the case of Colombia, around 70% of electricity is generated from hydropower and less than 10% from coal (Obregon et al., 2019). These subsidies are therefore neither as socially regressive nor as environmental harmful as the other measures in Table 1.

According to Ortiz Jara et al. (2020), however, a significant portion (40%) of those who currently receive the subsidies for underprivileged groups are not actually below the poverty line. Although further considerations are required, such as the vulnerabilities of some of the subsidy recipients not officially in poverty but potentially at risk of it, what this shows is that there may be some scope for a gradual and socially sensitive reform of the subsidy. For example, one proposal is a gradual phase-out of total electricity subsidies at a pace of 5% per year over the next five years. This plan would eliminate half of the subsidies currently received by the richest 60% of the population.

Over the last two decades, successive Colombian governments have supported natural resource extraction and export – including of coal and oil – as a potential driver of economic growth. A series of policies were introduced or reformed to facilitate mining and drilling, including changes to property and contract law, privatisation of state-owned enterprises, environmental deregulation, reductions to royalties and incentives for the extractives industry (Flórez Enciso, 2001; Sankey, 2018). The context helps to explain the scale of fiscal support for fossil fuel production, via subsidies to the National Agency of Hydrocarbons and ANM, as well as the lack of public or political debate about subsidy reform.

Flows of public finance to fossil fuels are only part of the fiscal picture in Colombia. Fossil fuels are also an important source of public revenues. For example, diesel and gasoline are taxed in the country by means of five different measures that collectively raised 8 billion pesos ($270 million) in 2018, equal to 5.5% of total tax revenues (Martínez Ortiz et al., 2019). This creates incentives for the government to maintain the use of these fuels in the country in order not to lose this income stream. The challenge is still more stark with fossil fuel production. The Colombian

General Royalty System (GRS) is organised in such a way that individuals pay the government for the right to exploit non-renewable natural resources. The income is distributed to subnational governments for public investment, with a certain proportion of revenues reallocated back to the producing regions (Ministerio de Minas y Energía, 2020; Viale, 2020). Contrary to prevailing narratives of shared prosperity linked to coal extraction, the departments with high economic focus on coal (such as Cesar and La Guajira) tend to have lower-than-average socioeconomic indicators and even reap only partially the benefits of coal mining royalties due to low administrative capacity (Yanguas Parra et al., 2021).

During the period January 2019–July 2020, the resources collected and transferred by the GRS amounted to $3.28 billion, of which hydrocarbons accounted for $2.33 billion (71%) and mining $0.95 billion (29%) (Lopez Carbajal et al., 2021). These figures make annual subsidies for fossil fuel exploration – worth 671 billion Colombian Pesos ($205 million) in 2019 (Table 1) – look like strategic fiscal investments given the return on investment, both for oil (the largest source of royalties) and for coal, characterised by bigger reserves (Transforma, 2021a). However, as discussed in Section 1, future demand and commensurate export opportunities for fossil fuels are uncertain, creating risks around continued fiscal reliance on their extraction. The risks around Colombia's stranded fossil fuel assets are discussed in Section 3.2.

2.2 Broader public finance for fossil fuels and Covid-19 response

Subsidies through tax exemptions and budgetary allocations through government measures are not the only channels through which public finance is directed to support fossil fuels, although they often garner the most attention. Public finance institutions, such as national development banks and export credit agencies, can provide direct funding and encourage private investments by lowering the cost of and risk for capital through various forms of guarantees. The government also continues to incentivise production of fossil fuels through the investments made by state-owned fossil fuel companies.

Support to fossil fuels through state-owned enterprises

Ecopetrol is Colombia's national oil company, with 88.49% public ownership (Ecopetrol, 2021a). The company is responsible for over 60% of the total volume of fossil fuel production in the country, covering both oil and gas (Vega Araújo et al., 2021). The company's regular financial reports show that between 2018 and 2020, Ecopetrol made annual capital investments of between $2.9 billion and $4.3 billion (Ecopetrol, 2020) and planned for a further $3.5 billion–$4 billion investment in 2021 (Carino, 2020), all of them almost entirely directed at the production of oil and gas. While state-owned enterprise investments in fossil fuel-producing activities do not directly represent a form of subsidy (hence they are not included in the IEA/OECD subsidy estimates discussed in Section 2.1), the state has a fundamental role in setting the strategic direction of majority-owned companies. For this reason, we consider fossil fuel investments by Ecopetrol as a form of public finance support to fossil fuels.

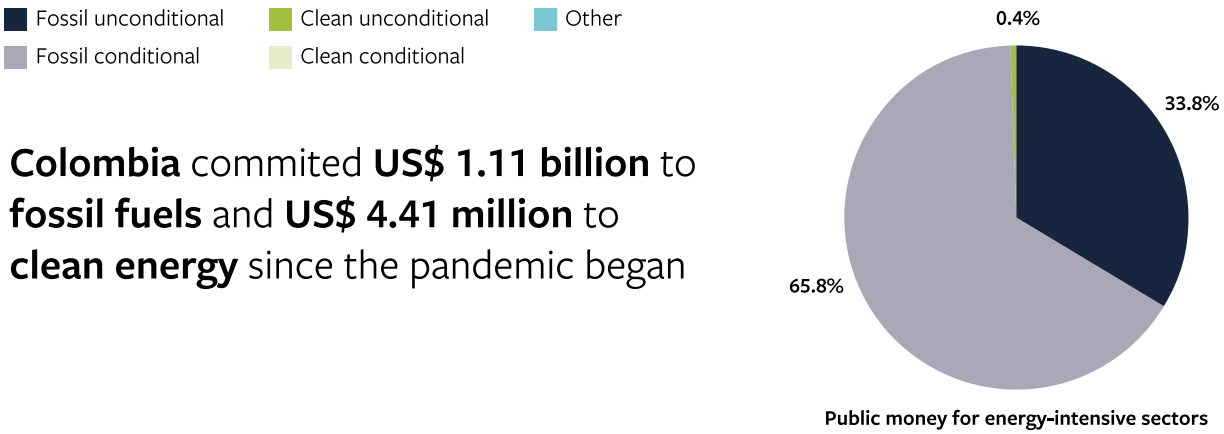
In December 2021, the company's Board of Directors approved the 2022 investment plan, amounting to $4.8 billion–$5.8 billion (Ecopetrol, 2021b). $50 million of this is committed to decarbonisation-related goals, including investments in renewable energy but also in gas (totalling only 0.8–1% of the total planned investments). However, the overwhelming majority of the company's investment plans are for fossil fuel-centred activities, including offshore natural gas activities in the Caribbean, natural gas transport infrastructure and the expansion of the refineries in Barrancabermeja and Cartagena, as well as research pilots for fracking (Ecopetrol, 2021b). The plan allocates 63% of the total investment to oil and gas exploration and production, around 6% to crude oil transportation and 8% to oil refining (Ecopetrol, 2021b).

Furthermore, in August 2021, Ecopetrol dominated the news in Colombia for its acquisition of a 51.4% stake in Interconnection Electric SA ESP (ISA), the Colombia-based company engaged in electric power transmission. This has raised questions regarding whether the acquisition would affect Ecopetrol's strategic direction, as it could mean either a shift towards more transmission- and storage-oriented investments or bring in more finances that Ecopetrol could use to continue investing in fossil fuels (Reuters, 2021). It is still too early to speculate answers to these questions, but there is some similarity with Ecopetrol's recent selling to PetroChina of a crude oil product whose emissions will be offset by the carbon credits generated through a renewable energy project, as the first Latin American company to do so (Argus Media, 2021). Moreover, what is clear is that Ecopetrol's investment plan for 2022 allocates a substantial portion of the total planned investments (20%) to ISA's transmission activities, both at the national and international levels (Ecopetrol, 2021b).

Public finance for fossil fuels as part of the Covid-19 pandemic response

Public funding for fossil fuels seems to have increased further in Colombia during the Covid-19 crisis. Between January 2020 and January 2022, recovery spending has been skewed towards fossil fuel investments, with at least $1.1 billion committed to support fossil-related investments (Energy Policy Tracker, n.d.; see Figure 5). By comparison, only $4.41 million was provided for clean energy.

Figure 5 Colombia's commitments to energy investments since January 2020



Source: Energy Policy Tracker (n.d.) (last updated 19 January 2022).

Most of this new funding ($730 million) is flowing to Ecopetrol's new investments in the Barrancabermeja refinery, announced in February 2021, and was included in their planned investments for 2021, as already described. Much of the remaining energy-related stimulus spending – $370 million – is credit granted in August 2020 to Avianca airlines to support its restructuring as part of its US bankruptcy claim (Energy Policy Tracker, n.d.).

The central government has identified mining as crucial to Colombia's Covid-19 recovery, due to its potential to generate public revenues and create jobs. It has therefore committed to the so-called Agenda Carbón, a roadmap for improving the competitiveness of the coal sector, thus preparing it to face new global scenarios and emerging challenges (Bustamante Ortega et al.,2020), and provided substantive support to the extractive sector beyond its fiscal contributions to Ecopetrol and Avianca. In 2020, the Ministry of Mines and Energy announced that it had prioritised 33 coal-mining projects for 2021 and 2022, which are expected to generate about $9,400 million in investments and 54,000 jobs (Transforma, 2021a).

Similarly, fifteen new contracts for oil and gas exploration and production were added to the pipeline for 2021, on top of the 35 contracts signed during 2019 and 2020, all in the context of the country's attempts to increase its oil and gas reserves (Vega Araújo et al., 2021). Moreover, a number of projects related to gas provision have been approved in the context of the Natural Gas Provision Plan 2019–2028 (Plan de Abastecimiento de Gas Natural 2019–2028), including the Pacific Regasification Plant (Vega Aráujo et al., 2021).

A viable way forward?

These various funding streams show that, despite its ambitious NDC, the Colombian government is still actively and heavily funding fossil-intensive industries and activities, be it price support for fossil fuel consumption, budgetary support and tax exemptions for coal, oil and gas production, concessional credit to aviation or public investment in fossil fuel infrastructure. On the consumption side, the generous subsidies for transport fuels are complex from a socioeconomic perspective but can also be regressive. Reform of such subsidies, supported for example by efforts to improve the quality of public transport in big cities by increasing availability and affordability of subways, electric bicycles and schemes for shared ownership of private vehicles, might enable more equitable use of public funds and discourage household investment in private cars. However, this section reveals that a substantial share of Colombia's public support to fossil fuels is also focused on exploration and production, channelled via the National Agency of Hydrocarbons ($205 million in 2019) and Ecopetrol ($2.8 billion–$4.2 billion per year between 2018 and 2021).

By allocating public resources in this way, the Ministry of Finance and Public Credit contradicts and undermines some key forward-looking initiatives aimed at accelerating the transition towards a more sustainable and equitable future, such as the Misión de Crecimiento Verde (DNP, n.d.) and Misión de Sabios (Gobierno de Colombia, n.d.), and risks locking Colombia into a high-emission

future that is not only damaging from a climate perspective but also from an economic one. Taxes and public spending could be used more strategically to achieve the goals articulated in Colombia's most recent National Development Plan, such as: enhancing human capital through education and healthcare spending; supporting regional development and international trade through investments in transport and digital connectivity; and growing and formalising the small and medium-sized enterprises (SMEs) that are the engines of job creation (DNP, 2020).

Section 3 delves into the economic viability of both the business-as-usual scenario for fossil fuel production and consumption and some of its alternatives, and the employment opportunities arising from aligning public financing with the low-carbon transition. We look into both the oil and gas sector, which is less relevant as a source of employment in the country but to which most of the identified subsidies have been directed so far, and the coal sector, which is much less central in terms of public finance allocations but a major source of employment.

3 The diminishing prospects for fossil fuel exports

The global energy transition – the shift from fossil fuels to renewables – is accelerating. Most of the world's largest economies have pledged to reach net-zero emissions by mid-century, and a number have set targets to phase out coal earlier. The Glasgow Climate Pact signed at COP26 further commits all signatories to phase down coal (UNFCCC, 2021). The falling costs of renewable-generation technologies, electric vehicles and heat pumps suggest that powerful market forces will begin driving down oil and gas demand as well, even if global energy demand increases.

These policies and trends raise important questions for countries – like Colombia – whose economies depend on fossil fuel production to generate tax revenues, foreign exchange earnings and jobs (Ansari and Holz, 2020). The most imminent threat is to the coal sector, given the commitments outlined above. Colombia is the world's fourth largest exporter of steam coal, exporting around 90% of its production due to the coal's high quality and low production costs. Export trends have been stable over the last decade, with a significant drop in 2020 (DANE, 2021), caused by the fall in global coal prices and strikes against one of the three major mines in Colombia – Glencore (The Coal Hub, 2021). Looking forward, the prospects for Colombia to continue exporting its coal do not look promising either, given that most of Colombia's main export markets are already starting, or planning to start, phasing out their coal use (see Table 2).

Table 2 Policy developments in key coal export markets

Export market	Share of Colombian coal exports (2010–2020, %)	Policy developments
Brazil	6	Plans to shift its thermoelectric plans to become gas-fired rather than coal-fired.
Chile	7	Plans to phase out coal-fired power plants by 2025.
European Union and UK	47	The EU's and UK's coal consumption is declining rapidly, having nearly halved between 10,215 terajoules (TJ) in 2010 to 5,841 TJ in 2020 Demand for coal is specifically expected to drop dramatically in a number of European countries that rely on coal imports from Colombia: Germany (accounting for 1% of Colombia's annual coal exports) has a new coalition government that aims to phase out coal by 2030 (Wacket, 2021); Spain (accounting for 5% of Colombian annual coal exports) has announced its coal phase-out scheduled for 2035; and the Netherlands (accounting for 16% of coal exports) has set plans for a 2030 coal phase-out.
Israel	6	Plans to phase out coal-fired power plants by 2025.
Turkey	14	The construction of new coal-fired power plants is lagging significantly behind plans, and the government is seeking to expand domestic coal production to replace imports (Transforma, 2021a).

Source: Information on Colombia's coal exports were obtained from Transforma (2021a) and SIMCO (Sistema de informacion minero Colombiano).

The prospect of opening alternative markets for its coal exports may not be very realistic for Colombia. The North American market is still dominated by the USA, and the region's coal-fired power plants are closing fast in any case. China, India and Japan remain large markets, but the first two are also expanding domestic coal production and all three have longstanding relationships with other large, competitive exporters, including Australia, Indonesia, Mozambique and South Africa (Oei and Mendelevitch, 2019). While these market scenarios do not point to an immediate collapse of Colombian coal exports, they do suggest that current export levels are likely to be sustained for no longer than the next five years or so, with a clear decline over the medium term.

Most of the natural gas produced in Colombia is consumed domestically. The future is less clear for Colombia's oil exports. The vast majority of Colombia's crude oil exports go to the USA. Exports have fallen steadily since 2015 due to a combination of violence in oil-producing regions, low oil prices and the pandemic-induced fall in energy demand in 2020–2021. Although the immediate prospects for international oil and gas markets do not look as dire as for coal, their volatility in recent years underscores the risks of macroeconomic dependence on oil and gas exports. In addition, Ecopetrol's Climate Change Strategy, launched in 2020, sends positive signals towards a low-carbon transition, where they aim to reduce carbon emissions by 25% from a baseline of 2019 and to achieve a reduction of 50% of its total emissions by 2050 (Ecopetrol, 2020).

These global trends raise questions about the levels of public support provided for fossil fuel exploration and production in Colombia. The falling demand for fossil fuels create three interrelated investment risks (IRENA, 2017):

1. 'Unburnable' fossil fuels: existing fossil fuel reserves that will be left unexploited.
2. Stranded assets: inability to recover capital investments over the lifetime of the asset due to reduced demand or prices.
3. Carbon bubble: the overvaluation of fossil fuel assets and firms, given the potential reduction in future revenue due to reduced demand or prices.

The allocation of public finance in Colombia increases the probability and severity of all three risks. Colombia has significant proven fossil fuel reserves: as at 2019, there is 5,020 million tonnes of coal (0.6% of global reserves) and as at 2021 there is 2 billion barrels of oil (0.1% of global reserves) (EIA, 2022). The country's generous support for oil and gas exploration makes it likely that Ecopetrol will discover additional resources, but there is a risk that newly discovered fields cannot be developed if current goals to limit global warming to 1.5°C are to be met (IEA, 2021b).

Similarly, ongoing public support for new fossil fuel infrastructure – natural gas pipelines, oil field equipment and oil refineries – increases the risk that Colombia will be stuck with stranded assets. These public investments are unlikely to generate the projected returns if global oil prices fall, and oil prices are likely to fall given the technological and regulatory changes underway to phase out oil consumption. Recent developments in Colombia's largest export market for oil – the United States – underscore the vulnerability of the sector. The production boom in the USA since 2015

reduced its demand for oil imports for several years; now both the US federal government and many state governments are introducing a suite of new climate policies that are collectively likely to reduce oil demand in the road transport sector through vehicle efficiency, electrification and modal shift. The rapidity with which energy markets can shift in response to new climate policies is already apparent in the coal sector.

The global transition to clean energy will inevitably create some stranded assets for major fossil fuel producers like Colombia. Ecopetrol has recognised the risks and is already beginning to diversify away from fossil fuel production through investments in renewable energy generation (Long, 2021). However, the Ministry of Finance and Public Credit is increasing the country's exposure to transition risks by allocating new public resources to fossil fuel exploration and production. These funds incentivise the purchase or construction of fossil fuel assets that otherwise might not make economic sense and may later become stranded. A huge proportion of these stranded assets will sit on Ecopetrol's balance sheets. Colombia's public budget is fuelling the global carbon bubble.

Of course, fossil fuel production in Colombia is not just a story about tax revenues and foreign exchange earnings but about jobs and livelihoods. A global energy transition risks destroying domestic jobs in coal mining and oil and gas production. These are often well-paid jobs and/or located in parts of the country where alternative employment options are limited and provide lower incomes than the national average. Approximately 20,000 Colombians are directly or indirectly employed in large-scale coal operations in Cesar and La Guajira departments (Yanguas Parra et al., 2021), and at least 100,000 others work in small and medium-sized mines in Cundinamarca, Boyacá, Norte de Santander, Santander and Antioquia departments (Strambo and Atteridge, 2018). These areas tend to be particularly marginalised, with for example around 51.7% of the population in El Cesar (approximately 650,000 people) living under the poverty line (DANE, 2022). Ecopetrol alone employs nearly 10,000 full-time staff across Colombia (Ecopetrol, 2021c). These formal jobs are economically important, given that most of Colombia's employment is in the informal sector, where workers have less security and the government cannot collect income tax. Such jobs are especially precious in the wake of the Covid-19 pandemic, which led the labour force participation rate to fall from 63% to 52% (Alvarez and Pizzinelli, 2021).

Suspension and strikes of major coal mines in Colombia have contributed to the national decline in coal production in 2020, of 50.6 million tons (lowest since 2004, where production reached 53.9 million tons) putting jobs and livelihoods at risk (Delgado, 2021; CEIC, 2022). Recent, rapidly increasing investor–state disputes in the country, a few of which concern coal-mining activities, also pose risks to the stability of the jobs in the sectors; the 2016 dispute between Glencore International and C.I. Prodeco S.A. against the Colombian state over the government's alleged unlawful interference with the coal concession contract was eventually decided in favour of the investors, while the 2019 dispute between Glencore and other investors and the Colombian state over the concession contract for a public services port for the export of coal in the municipality of Ciénaga, northern Colombia, is still pending (UNCTAD, 2020). In turn, some of Colombia's

coal mines, such as the Prodeco Group are relinquishing the mining contracts and legal rights and commencing the process of returning the mining titles to the Republic of Colombia. Coal mine workers and the communities that depend on their wages will need support. Going forward, the government of Colombia can mitigate the economic, social and political impacts of declining fossil fuel production through targeted social protection measures that provide interim security, retraining programs and economic development and diversification strategies to create employment in fossil fuel-dependent regions. It can pay for these efforts by repurposing public finances away from oil and gas exploration and production. Fiscal reform is therefore the first step towards a managed and just transition, which is considered in more depth in Section 4.

4 The opportunities for green economic development

4.1 Planning and financing a just transition

In Colombia, the debate on a just energy transition has progressed, partly driven by the risk of stranded assets as the countries Colombia exports to shift away from coal, conflicts in territories with large energy or mining projects, and the use of revenues from the mining industry to fund the country's peace process (WRI, 2021). The National Development Plan commits to establishing new models of dialogue between the government and the regions, in part to manage coal mine closures more fairly and effectively (PND, 2018). In turn, the Ministry of Labour has since launched a National Just Transition Strategy focusing on green job opportunities in the circular economy, energy, water and waste-utilisation sectors, which will be implemented from 2023. Furthermore, Colombia's new NDC and forthcoming Long-Term Strategy under the Paris Agreement both highlight the importance of a just transition. The promotion of social dialogue and expansion of social protection is evident within these policies, which can spur efforts in ensuring that policy reforms follow an inclusive process. In addition, the overall consideration of a 'Just Transition' across national policies enables the development of tangible strategies and in turn can spur cross-sectoral coordination for their implementation.

Ensuring a just transition from a fossil fuel-based economy to a clean one in Colombia is a complex process which will include the following key elements (Atteridge and Strambo, 2020):

1. actively pursuing decarbonisation and avoiding new carbon lock-ins, which risk creating further 'losers' from a delayed transition
2. supporting regions that stand to be worst affected by the transition, as well as those that have less financing capacity and responsibility in current emissions levels
3. supporting workers that would be negatively impacted by the transition, as well as their families and communities
4. remedying the environmental damages created by the current energy and productive model, while ensuring that the 'polluter pays' principle is applied and the costs of these interventions are not transferred from the private to the public sector
5. tackling existing inequalities through all interventions by prioritising social equity and the empowerment of vulnerable groups
6. ensuring that the planning and decision-making process behind the transition is fair and inclusive.

Currently, there are several policies and laws regarding hydrocarbons in place that could undermine efforts towards a just transition. First, there is the continuation of providing subsidies for fossil fuel production, and Colombia's Agenda Carbon, which looks to increase competitiveness within the coal sector and aims to increase coal production by 98 million metric

tons (WRI, 2021). Second, Colombia's Hydrogen Roadmap, launched in October 2021, focuses more on blue than green hydrogen,[6] which locks in coal and natural gas (Minenergia, 2021). Third, even though the 2019 and 2020 energy transition law and renewable energy auctions served to promote renewable energy generation in Colombia, there are risks around the promotion of carbon capture and storage and, again, blue hydrogen. They indirectly promote natural gas, including through non-conventional techniques (such as hydraulic fracturing, or 'fracking'). Such policies continue to lock the country in to fossil fuels and create risks for workers and communities who will have to inevitably move beyond the high-carbon economy. Finally, the clean energy agenda also has its own challenges, which include challenges around the protection of the rights for Indigenous peoples where large-scale renewable energy projects are being planned, such as La Guajira. Colombia's 1991 Constitution is explicit about recognizing and protecting the ethnic and cultural diversity of the Colombian nation, including through giving minorities territorial rights and the right to autonomy and participation in key planning and processes.

With regard to ensuring an inclusive just transition, Colombia's stakeholder consultation processes through labour unions also pose challenges. There are low rates of union participation, with only 4–5% of the workforce being unionised, which diminishes the power of public influence for change. In addition, there are high rates of subcontracted employees, a condition that affects their social protection and ability to organise themselves around trade unions and collectively bargain. This presents constraints to the social dimension of energy policy reform and the ability of the public to hold the government to account in delivering its pledge for Green Jobs and Just Transition.

A key component of Colombia's National Development Plan (PND, 2018) is addressing the deep socio-economic inequalities that exist within the country. Currently Colombia has one of the highest levels of income inequality in the world, with a Gini coefficient of 51.3[7] in 2019 (World Bank, 2022), and one of the highest poverty levels, with 42.5% of the population living below the poverty line in 2020, an increase of 6.8% from 2019 figures (DANE, 2022). Many factors have influenced and continue to influence these inequalities, including the large economic reforms in the early 1900s that benefitted businesses, long-lasting civil unrest and the recent global pandemic. There are different barriers across the country, and in turn in the fossil fuel industry, in terms of addressing these deep inequalities. The National Development Plan aims to achieve social and productive inclusion through entrepreneurship and legality. It has set 20 goals, of which two include the reduction of the number of those in poverty and extreme poverty, by 2.9 million and 1.5 million people respectively. In addition, the plan has five key lines of legal reform that aim to strengthen rights and protect the most vulnerable.

6 Green hydrogen is produced using the electrolysis of water and blue hydrogen is produced from natural gas.

7 A Gini coefficient of 0 implies perfect equality and 100 implies perfect inequality.

In the coal sector, the departments of Cesar, La Guajira and Magdalena, which have the largest coal mines, currently have some of the highest poverty and inequality levels in the country. In turn, according to a due diligence report conducted by Vattenfall in 2017 (pre-current National Development Plan) in these departments, there are several observed challenges. These include risks to workers' rights, displacement and land restitution in armed conflict areas, involuntary resettlements risking the environment and local communities (Vattenfall, 2017). Ensuring that the transition does not further contribute to existing inequalities and also helps reduce and eliminate these inequalities is crucial (Yanguas Parra et al., 2021).

Most of these steps outlined above in terms of the just transition will require some level of public spending and investment, as well as enabling policies to incentivise low-carbon investment from private sources and inclusive governance arrangements to amplify the voices and needs of marginalised groups. Even more resources will be required to drive structural economic transformation, that is, nurturing and attracting more productive, skills-based industries (such as manufacturing and tradeable services) that can drive sustained job creation and skill development.

Finding the necessary funds in Colombia sounds challenging given the economic and fiscal crisis caused by the Covid-19 pandemic, due to which Colombia's GDP contracted by 6.8% in 2020 and public sector debt jumped from 30% to 39.3% of GDP, as the government rightly expanded healthcare spending, social protection and credit lines to vulnerable SMEs (IMF, 2021).

One source of financing could come from the reallocation of public resources away from oil and gas exploration and production and towards financing the transition towards a low-carbon future. Investments in public services and support to small and medium-sized enterprises (SMEs) and strategic industries would both be popular with Colombians and lay the foundations for sustained economic development.

And finally, a key area where provision of finance and energy transition plans could collectively support key goals is with regards to Colombia's Peace Process (Amaya-Panche, 2021). The Colombian Peace Agreement, signed in 2016, is a key driver to addressing some of the root causes of the persisting inequalities in the country. With the aim for peacebuilding and reconciliation at the local level, the agreement also aims to achieve land reform and restitution, political participation, reincorporation of ex-combatants into society, substitution of illicit crops, victims' reparation and the protection of civilians. According to the government's progress report, implementation has fallen short, particularly in terms of the provision of compensation to victims of conflict, the provision of a substitution plan for illicit crops to support livelihoods and the provision of economic opportunities for former combatants with economic opportunities (Congreso de la Republica, 2021).

One of the main barriers to implementing the agreement is the lack of alignment to the National Development Plan and the lack of resources, including finance. Some of the regions affected by the energy transition are also heavily conflict affected areas, so the misalignment between the

National Development Plan and the peace agreement is problematic. The repurposing of fossil fuel subsidies could support the government in accelerating progress towards meeting the peace agreement. Aligning with the peace agreement could also help make energy reform more just. However, there is a need to better understand the trade-offs at local level, including the scale and geographic distribution of the losses of jobs and livelihoods in the fossil fuel industry and alternative employment potential in green jobs in associated geographic areas.

4.2 Fostering green businesses and jobs

The concept of green business, and in turn green jobs, is not new in Colombia. The Ministry of Environment put forward the concept of 'green business' back in 2010 as a key component of their sustainable production and consumption policy (Ministerio de Ambiente, 2011). In 2012, the National Green Business Plan was issued to make them visible and promote them. In Colombia, 2,581 green businesses were identified between 2014 and 2021, which reports the creation of 30,661 direct and indirect jobs (42% taken up by women and 58% by men) (DANE, 2019). Beyond jobs from green businesses, in 2019 alone, the number of jobs in overall environmental activities was estimated at 124,044, of which just half correspond to green jobs – 56,779 (DANE, 2019).

Box 3 Definition of green jobs

The International Labour Organization (ILO) has defined green jobs as those that directly contribute to environmental sustainability, either by producing environmental goods or by making more efficient use of natural resources.

In 2018, Colombia's Ministry of Labour defined green jobs as those that aim at reducing the pressures on natural capital through its protection, conservation and sustainable use in all production process of a good or service, while acknowledging workers' rights and social protection. To ensure effectively transition, they emphasise the prospect of decent work and the usage of social dialogue.

In this context, in 2019 the Ministry of Labour and the ILO launched the pact for green employment and a just transition (ILO, 2019). The focus of the pact is on implementing skills that are relevant in a green economy, such as manufacturing, construction, renewable energy and energy efficiency. However, whether the coal extraction sector will be prioritised as part of this pact is yet to be seen (Transforma, 2021b).

Two major considerations regarding the quality of new green jobs when implementing just transition policies are:

1. the creation of decent conditions for new green jobs (including equal opportunities for men and women, Indigenous peoples and Afro-descendants, respect for labour rights and ensuring economic stability)
2. avoiding risks from the creation of informal workers for businesses that continue to pollute.

As at early 2022, Colombia is only just realising some of the potential opportunities associated with a green economy. Tourism (predominately eco-tourism) generated 2% of GDP, 52% of foreign exchange earnings and 2 million jobs in 2018 (OECD, 2020), although the sector was hit hard by the pandemic. In addition, there are 194,000 people working in biofuels in Colombia, although these are not all full-time jobs and their environmental sustainability is open to debate (IRENA, 2021). Given Colombia's exceptional biodiversity and carbon-rich ecosystems, there are current and potential green jobs in forestry, wetland management and other nature-based solutions.

However, there are perhaps more important opportunities for an urbanised, educated country like Colombia in green construction, manufacturing and services. Global value chains are being reconfigured by low-carbon technologies and climate policies, leading to the emergence of new manufacturing hubs for solar panels, wind turbines, energy-efficient appliances, electric vehicles, green hydrogen and more. Changing consumer demand and new trade measures such as the European Union's carbon border adjustment mechanism are also driving decarbonisation up existing supply chains. These tectonic shifts pose both risks and opportunities for Colombia. The country's current industrial base – chemicals, plastics, cement, iron and steel, motor vehicles, and pulp and paper – is highly susceptible to more stringent climate policies abroad. However, the country also has opportunities to join new green value chains as well as to create significant jobs at home through deploying their products: the installation of decentralised renewables and electric vehicle charging infrastructure, for example, are highly labour intensive.

Colombia has taken some steps towards greening its economy. The new national carbon tax and emissions-trading scheme are very welcome, introducing a price of $4–5 per tonne of carbon dioxide for specific segments of the economy (World Bank, 2021). Colombia has also introduced legislation to reward companies that demonstrate good social and environmental practices, including adopting equitable, green procurement policies and introducing environmental targets, audits and disclosures. Such companies enjoy benefits such as tax exemptions, preferential access to credit and preferential treatment in public procurement (MINCIT, 2018).

However, more can be done to climate proof the country's established manufacturing sector, nurture nascent green industries and expand enabling economic infrastructure, such as digital and physical connectivity. Rather than locking Colombia into fossil fuel dependence, public resources can be strategically deployed to prepare its workers and firms to successfully navigate the low-carbon transition. The pressing need for the country to move away from a fossil fuel-

based economy is mentioned as an objective in the Strategy for a sustainable and resilient economic recovery and strengthening programmatic document (DNP, n. d.). However, the strategic plan does not directly acknowledge this as a necessary step for other types of more sustainable activities to take off; nor is current financing seen as a way to finance the proposed alternative economic pathways. Indeed, the plan refers only once to the need to repurpose some of the current fossil fuel subsidies to protect the most vulnerable people from price increases for essential goods and services. But there is no clarity as to how and when that subsidy reform needs to be done.

A systematic overhaul of the current public financing of fossil fuel consumption and production could contribute to green economic development in several ways. First, it can free up fiscal space that could be put to other uses. Second, it can initiate an assessment of the direct impacts of subsidy repurposing as well as the indirect effects of removal of the support, which has implications for competitiveness of certain sectors and demand for alternative models of production and consumption. Third, it can create incentives and catalyse planning for more sustainable activities that can fill the gap that fossil fuels will leave in terms of foreign exchange earnings and government budgets (including current royalty revenues).[8] As an important part of this, subsidy reform offers a window of opportunity for the Colombian government to begin defining new roles for the key actors in Colombia's fossil fuel economy, such as Ecopetrol and the National Agency of Hydrocarbons; the former could take on an increasingly larger role in electricity network infrastructure and clean power generation (as its strategic decisions in 2021/2 seem to be indicating) and the latter in environmental remediation for coal mining areas, allowing both entities to continue being pivotal in Colombia's economic landscape but in formats that facilitate the ongoing transition rather than impeding it.

8 Colombia's oil output amounts to 3% of the country's GDP, 17% of government revenues and 28% of exports by value, while coal makes up 1% of Colombia's GDP and 13% of exports by value (Smith, 2021; DANE, n.d.; Market Insider, 2021).

5 Conclusions

Colombia's current plans and financing in support of its fossil fuel industry are at odds with its ambitious climate targets. Especially in light of the rapidly changing global landscape of fossil fuel demand and reliance, and the increasing climate ambition of some of its export markets, Colombia's future prospects for coal exports are looking weak. At the same time, decarbonising its domestic energy mix will require strong incentives to move away from fossil fuel reliance, especially in the energy and transport sectors. A crucial part of supporting the transition away from such high levels of fossil fuel production and use is thus phasing out Colombia's subsidies for these activities. By doing so rapidly and efficiently, Colombia can avoid perpetuating the risk of stranded assets and jobs.

As outlined in Section 2, large coal companies in Colombia have received and are still benefitting from a variety of subsidies, such as tax exemptions and rebates, state-provided security services and special licensing procedures for 'strategic' projects. These support measures are only exacerbating the risks the country and its workers will face in the years to come and must be phased out, with any remaining government support being channelled to supporting a just transition.

Colombia has an opportunity to put in place the policies necessary to ensure a smoother and lower-risk pathway to a climate-compatible future, using the public finances unlocked through fossil fuel subsidy reform. Supporting green economic development and diversification will help create better-quality jobs, which will not be at risk of stranding. It will ensure the new workforce is trained in the industries of the future and not the past. Fossil fuel subsidy reform can also free up resources to support other key government objectives, such as investing in healthcare, education, or the peace process. Finally, it will lower the risks associated with further lock-in to fossil fuel infrastructure, a more costly and delayed transition and assets that will be stranded in the decades to come. Through a concerted push, working across various arms of government, using policy levers and with stakeholders, Colombia can seize the opportunity of a climate-compatible future, as it sets out in its ambitious NDC, and reap its wide-ranging socioeconomic benefits.

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