

## **Executive Summary**

Reform for Phasing Out Inefficient Fossil Fuel Subsidies in Latin America

COLOMBIA & MEXICO CASE STUDIES

THIS DOCUMENT SUMMARIZES A POLICY BRIEF WRITTEN IN SPANISH AND PUBLISHED IN APRIL 2025.



## Introduction

he results of the first global stocktake, adopted during COP 28 of the United Nations Framework Convention on Climate Change (UNFCCC), highlight different goals aligned with the need for deep, rapid, and sustained reductions in greenhouse gas emissions in line with 1.5 °C pathways.

These goals include phasing out inefficient fossil fuel subsidies that do not address energy poverty or just transitions, as soon as possible. In response, Transforma built a first <u>policy brief</u> highlighting the benefits of phasing out fossil fuel subsidies and illustrating the fiscal impact these subsidies represent for various countries in Latin America and the Caribbean (LAC), in addition to mentioning specific cases in the region where progress is being made in dismantling these subsidies.

Seeing that fossil fuel subsidies increased in LAC from USD \$29.5 billion (B) in 2020 to USD 98.6B in 2022 and USD 57.2B in 2023 and identifying additional support needed in the region to understand the implications and promote the phase-out of fossil fuel subsidies, Transforma published a <u>second</u> <u>policy brief</u> to review the relevance of using the concept of "inefficiency", determine whether this concept contributes to advancing a phase-out pathway for subsidies in Latin America, and carry out an economic analysis of two case studies, one in Colombia and one in Mexico.

Based on criteria derived from the analysis of inefficiency of fossil fuel subsidies, a methodology was developed for selecting and prioritizing subsidies to be phased out, establishing that the first subsidies to be dismantled are direct production subsidies, that represent a high fiscal burden and provide no direct benefit to vulnerable communities that could be affected by the transition. After applying the prioritization process, the two subsidies selected to be phased out first in each case study were: the Subsidy for the Development of Oil Infrastructure in Strategic Areas in Colombia and the Deferred Investment Projects in the Expenditure Budget Registry (PIDIREGAS in Spanish) in Mexico.

Applying a cost-benefit analysis of the selected subsidies to estimate the impacts of each revealed that fossil fuel production subsidies in Colombia and Mexico have resulted in higher costs than benefits. For each dollar invested in the oil sector between 2015 and 2023 in Colombia, USD 0.58 is lost due to subsidies and value-ad-ded costs, amounting to USD 0.73, including environmental costs. In México, USD 0.33 is lost due to the subsidy, with losses in value added and environmental costs rising to USD 0.77.

Finally, in each country, strategic sectors were identified as potential recipients of the resources freed up by subsidy removal, based on a multiplier analysis. In Colombia, the construction, water and sanitation, and agriculture sectors represent key opportunities for fund reallocation. In Mexico, the electricity, construction, and manufacturing sectors stand out for their high potential. These sectors not only have the capacity to drive economic growth and job creation, but also can be aligned with the transition to a low-carbon economy. TRANSFORMA

Chapter 1. Analyzing Fossil Fuel Subsidies in Light of the Inefficiency Concept



The concept of fossil fuel subsidy inefficiency first appeared in the Pittsburgh Summit declaration of the <u>Group of Twenty</u> (G20), held in 2009. Despite this commitment, only <u>32% of G20</u> member countries reduced their fossil fuel subsidies as a percentage of GDP between 2010 and 2022.

Even though there is a clear understanding of the urgent need for developed countries to eliminate all subsidies and incentives for fossil fuels as soon as possible, the question is posed as to, whether proposing a definition of inefficient subsidies could contribute to the prioritization of subsidies and the design of a roadmap for their gradual and orderly phase-out in LAC countries.

In this context, consultations were held with some civil society organizations from Latin America to discuss the appropriateness of using the concept of inefficiency and to explore how subsidies are analyzed.

The first outcome was that none of the organizations consulted (nor Transforma) have focused on defining the "inefficiency" of subsidies. Among the reasons for avoiding the use of the term were that the concept may be limited to an economic perspective, which is not aligned with an ecological justice approach, one that views access to energy as a right or as a means to access other rights. They also emphasized that the term "inefficiency" continues to be used as a delaying tactic by developed countries to avoid addressing the reduction of subsidies.

Among the key characteristics analyzed, the following were highlighted:

• **Types of quantified subsidies:** Organizations tend to account subsidies based on the mechanism through which subsidy funds are channeled (direct or indirect), and/or they disaggregate by type of beneficiary, distinguishing between producers and consumers. Sometimes, even including the socioe-

conomic level of beneficiaries, when the subsidy is aimed at consumption.

- Population benefiting from different subsidies: The organizations agree on the need to approach the reform of consumption subsidies with caution, as their removal or reform could negatively affect vulnerable populations. For this reason, they consider the elimination of production subsidies to be a priority. However, they also monitor funds allocated to consumption subsidies, some of which indirectly support fossil fuels. An example of this is electricity subsidies, since in many countries the electricity mix still depends heavily on fossil sources. Nevertheless, when these subsidies are aimed at improving energy access for vulnerable groups, their removal should be the last to be eliminated.
- Just Energy Transition: During the consultations, the concept of a just energy transition within the context of subsidy reform was also discussed. Organizations agreed that how the energy transition is carried out is critical. While the expansion of renewable energy is desirable, it should not come at any cost. It is essential to address the impacts that some renewable energy projects have had, or could have, on communities as installed capacity increases in the region. Along the same lines, some of the consulted organizations expressed concern about including the term "just energy transition" in the definition of a fossil fuel subsidy, as it could be used in ways that contradict the actual goals of the transition. Given the broad nature of the term, it could be invoked to justify the continued use of fossil fuels under the pretext of enabling a smoother, and therefore more prolonged transition.



In this context, value can be seen in establishing an inefficiency definition that takes all previous considerations into account and therefore guides the prioritization to phase out subsidies, specifically in developing countries. The resulting definition proposed was: Inefficient subsidies are those that, in addition to failing to address <u>energy poverty or support just transitions</u>, have <u>significant fiscal consequences</u>, distort the market by hindering economic growth, promote greenhouse gas emissions with associated health impacts due to pollution, and are not well targeted to low-income populations.<sup>1</sup>

1. The definition was built taking into account the definition used by the G20, the G7 and the International Monetary Fund (IMF).

# Chapter 2. Methodology Used for the Evaluation of Subsidies



#### After the previous chapter, the steps followed to analyze the case studies were:

FIGURE 1. METHODOLOGICAL PROCESS CARRIED OUT IN THE POLICY BRIEF.



For the **first step**, Input-Output analysis allows for the calculation of employment and investment multipliers based on the productive structure contained in the input-output matrix (IOM). These multipliers reflect the total impact (direct and indirect) that an increase in final demand for a given sector generates in terms of production, employment, and investment across the economy.

Production and **investment multipliers** are calculated using the Leontief matrix, which illustrates how changes in demand in one sector affect others, generating direct effects (in the targeted sector), indirect effects (in input-supplying sectors), and induced effects (through increased consumption resulting from higher income). **Employment multipliers**, in turn, estimate the number of jobs created as a result of an increase in final demand by combining sector-specific employment coefficients with the inverse Leontief matrix.

While in the **second step**, an inventory is built taking into account direct and indirect subsidies, in the third step, significant fiscal impacts are measured through direct and explicit subsidies. The analysis of these subsidies is based on associated measurements, as this type of subsidy is clearly identified in government budgets, allowing for better monitoring and oversight. Also, subsidies are classified based on the type of beneficiary. Even when a subsidy represents a high fiscal burden, if it affects vulnerable populations, its phase-out should occur after subsidies directed at production, which have a greater impact on producing companies and a lesser impact on vulnerable groups.

In the **fourth step**, the following benefits and costs are included:

• **Investment in the oil sector:** Foreign Direct Investment (FDI) attracted by each country is included among the

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benefits, as the analyzed subsidies focus on production, therefore creating incentives for investment in the hydrocarbons sector. This is measured in annual amounts (in millions (M) of USD) from 2015 to 2023, as well as its percentage share of GDP. Colombia's data is sourced from the <u>Central Bank</u> <u>of Colombia</u>, and Mexico's data is sourced from <u>Data Mexico</u>.

- Direct and explicit subsidies: The cost of the annual amount allocated to finance oil infrastructure and its fiscal impact (% of GDP). For Colombia, data is sourced from the National Hydrocarbons Agency, and for Mexico, data is sourced from their Ministry of Finance and Public Credit. To ensure comparability, figures are converted to USD using the average annual exchange rate provided by the <u>Central Bank of Colombia</u> and the <u>Bank of Mexico</u>.
- Value-added losses: The cost of annual economic losses resulting from the subsidized consumption of goods used in production, which reduces value-ad-ded tax (VAT) revenues within the fossil fuel sector. These losses are expressed in USD (constant 2021 prices) and as a percentage of GDP. The data is sourced from the International Monetary Fund's annual quantification of fossil fuel subsidies for <u>Colombia</u> and <u>Mexico</u>, where this category is classified as 'Foregone VAT' for each country.

**Climate impact:** Estimated cost of the contribution of the fossil fuel sector to climate change, expressed in USD (constant 2021 prices). This data is sourced from the annual quantification of fossil fuel subsidies by the International Monetary Fund for <u>Colombia</u> and <u>Mexico</u>. These costs cover all fossil fuels, so while many are associated with hydrocarbon production, there may be an overestimation due to the inclusion of coal, whose emission factors are approximately <u>25% to 45%</u> lower for petroleum derivatives and gas, respectively, compared to coal.

# Chapter 3. Case Study Colombia

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SANTA CRUZ DE MOMPOX, BOLIVAR



In the third quarter of 2024, Colombia's Gross Domestic Product (GDP) reached COP 250,548B (USD 61.2B), of which oil and gas extraction activities accounted for 2.6%, while coking, petroleum refining, and fuel blending activities represented 1.16% of GDP. Although the hydrocarbon sector has historically maintained a low and stable share of GDP (except for the high participation levels observed in 2013), it remains a key sector for the country due to its impact on exports and foreign investment, receiving 23% (USD 760M) of Foreign Direct Investment (FDI) inflows during the first quarter of 2024. This dependency affects the flexibility that the country has to phase out subsidies for the fossil fuel sector.

In 2023, of the USD 7.44B that Colombia allocated to <u>fossil fuel subsidies</u> (both consumption and production), 88.9% went to oil subsidies, 5.1% to coal, 4.2% to natural gas, and 1.8% to end-use electricity. The majority of these subsidies (87.8%, or USD 6.54B) were channeled through direct budgetary transfers, followed by USD 903.98M through tax reductions or 'tax expenditures'. Most fossil fuel subsidies are directed toward consumption, a trend that has remained consistent from 2010 to 2023.

For the selection of the subsidy in this case study, an inventory was built out of those subsidies within the hydrocarbon supply chain that focus on consumption and production, as presented below in Table 1.

#### TABLE 1. INVENTORY OF FOSSIL FUEL SUBSIDIES IN COLOMBIA

SUBSIDIES TO CONSUMPTION	MECHANISM
FUEL PRICE STABILIZATION FUND (FEPC)	Direct
SUBSIDIES FOR RESIDENTIAL LIQUEFIED PETROLEUM GAS	Direct
SUBSIDIES FOR DIESEL (ACPM) AND GASOLINE	Direct
REDUCTION OF THE GLOBAL TAX ON GASOLINE AND DIESEL	Indirect
TOLL EXEMPTIONS OR DISCOUNTS FOR PUBLIC AND FREIGHT TRANSPORT	Indirect
PREFERENTIAL PRICES IN BORDER ZONES	Indirect
EXEMPTIONS AND SUPPORT FOR CONVERSION TO NATURAL GAS FOR VEHICLES (NGV) AND AGRICULTURAL/FISHING USE	Indirect
SUBSIDIES TO PRODUCERS	MECHANISM
SUBSIDIES TO PRODUCERS TAX EXEMPTIONS FOR HYDROCARBON EXPLORATION	MECHANISM Indirect
SUBSIDIES TO PRODUCERS         TAX EXEMPTIONS FOR HYDROCARBON EXPLORATION         INCENTIVES FOR COAL EXTRACTION	MECHANISM Indirect Indirect
SUBSIDIES TO PRODUCERS         TAX EXEMPTIONS FOR HYDROCARBON EXPLORATION         INCENTIVES FOR COAL EXTRACTION         DEVELOPMENT OF PETROLEUM INFRASTRUCTURE IN STRATEGIC AREAS	MECHANISM Indirect Indirect Direct
SUBSIDIES TO PRODUCERS         TAX EXEMPTIONS FOR HYDROCARBON EXPLORATION         INCENTIVES FOR COAL EXTRACTION         DEVELOPMENT OF PETROLEUM INFRASTRUCTURE IN STRATEGIC AREAS         VAT EXEMPTIONS ON MACHINERY AND EQUIPMENT FOR THE EXTRACTIVE INDUSTRY	MECHANISM Indirect Indirect Direct Indirect
SUBSIDIES TO PRODUCERS         TAX EXEMPTIONS FOR HYDROCARBON EXPLORATION         INCENTIVES FOR COAL EXTRACTION         DEVELOPMENT OF PETROLEUM INFRASTRUCTURE IN STRATEGIC AREAS         VAT EXEMPTIONS ON MACHINERY AND EQUIPMENT FOR THE EXTRACTIVE INDUSTRY         DEDUCTIONS FOR R&D AND EXPLORATION EXPENSES	MECHANISM Indirect Indirect Indirect Indirect Indirect Indirect Indirect
SUBSIDIES TO PRODUCERS         TAX EXEMPTIONS FOR HYDROCARBON EXPLORATION         INCENTIVES FOR COAL EXTRACTION         DEVELOPMENT OF PETROLEUM INFRASTRUCTURE IN STRATEGIC AREAS         VAT EXEMPTIONS ON MACHINERY AND EQUIPMENT FOR THE EXTRACTIVE INDUSTRY         DEDUCTIONS FOR R&D AND EXPLORATION EXPENSES         SUBSIDIES FOR FINANCING PRODUCTION PROJECTS	MECHANISM Indirect Indirect Indirect Indirect Indirect Indirect Indirect Indirect
SUBSIDIES TO PRODUCERSTAX EXEMPTIONS FOR HYDROCARBON EXPLORATIONINCENTIVES FOR COAL EXTRACTIONDEVELOPMENT OF PETROLEUM INFRASTRUCTURE IN STRATEGIC AREASVAT EXEMPTIONS ON MACHINERY AND EQUIPMENT FOR THE EXTRACTIVE INDUSTRYDEDUCTIONS FOR R&D AND EXPLORATION EXPENSESSUBSIDIES FOR FINANCING PRODUCTION PROJECTSREDUCED ROYALTIES FOR MARGINAL OIL FIELDS	MECHANISM Indirect



Following the filtering process presented in the third step of the methodology, a comparison was made between the following three direct subsidies: Liquefied Petroleum Gas (LPG) Subsidy, Fuel Price Stabilization Fund, and the Subsidy for the Development of Oil Infrastructure in Strategic Areas.

FIGURE 2. COMPARISION OF SELECTED DIRECT SUBSIDIES FOR COLOMBIA



Though the first and second subsidies analyzed take up a bigger part of the budget, they are directed towards consumers, one focused completely on energy access for vulnerable communities and, the other affecting food prices through the increase in the cost of transportation, so the first subsidy that should be phased-out is the third one, Subsidy for the development of oil infrastructure in strategic areas, that is directed to producers.

The cost-benefit analysis of the oil subsidy reveals a negative net result: losses outweigh gains. Between 2015 and 2023, **for every dollar invested, approximately USD 0.58 was lost due to the subsidy and the loss of value added. When including the environmental costs of climate change, this loss rises to USD 0.73**, highlighting the need to integrate environmental impacts into subsidy evaluations, especially in the transition toward sustainable models. This exercise shows that these subsidies did not yield the expected benefits, as the associated costs exceeded the investment flows. Therefore, it would be more efficient to allocate these resources to productive sectors with better performance and employment potential. The monetary flows taken into account are as follows:

- **Investment** in the oil sector has shown considerable volatility, ranging between USD 457M in 2020 and USD 3,106B in 2017. Although there was an increase to USD 3,059B in 2023, the overall trend does not indicate sustained growth.
- Spending on subsidies for oil infrastructure has varied considerably, with USD 6.74M being the lowest point in 2022 and USD 17.80M the highest in 2019.
- An average annual loss in value added is estimated at USD 1.9B, peaking at USD 2,824M in 2022, with a slight decrease to USD 2,101M in 2023.



• The **environmental costs** attributable to activities in the hydrocarbon sector are estimated to range between 1.18% and 1.59% of Colombia's annual GDP.

Based on the analysis of investment and employment multipliers, where oil sector holds an investment multiplier of 2 and an employment multiplier of 40, sectors such as **construction**, **water and sanitation**, **and agriculture** were identified as potentially key, not only for boosting Colombia's economy due to their capacity to generate added value and employment, but also for advancing a just energy transition in the country through diversification and their potential to increase efficiency. The comparative data is shown below:

- **Construction**: investment multiplier of 3.7 and an employment multiplier of 21.
- Water and Sanitation: investment multiplier of 3.57 and an employment multiplier of 14.
- Agriculture: investment multiplier of 1.64 and an employment multiplier of 46.

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# **Chapter 4. Case Study Mexico**

SAN CRISTÓBAL DE LAS CASAS, CHIAPAS



In the second quarter of 2024, Mexico recorded a Gross Domestic Product (GDP) of MXN 31.8 trillion (T), equivalent to USD 1.85T. Of this amount, the oil and gas extraction industry accounted for MXN 872,030M, representing approximately 2.74% of the GDP. This reflects a 4.51% increase compared to the previous quarter and a 4.93% increase compared to the same period the previous year. In 2022, Mexico's total oil supply was 3,416,572 TJ, ranking behind Brazil with 4,664,391 TJ, and making it the second-largest oil producer in Latin America and the Caribbean. This dependency affects the flexibility that the country has to phase out fossil fuels and the subsidies related to the sector.

On the other hand, direct fossil fuel subsidies in Mexico reached <u>USD 16.41B in 2023</u>, with 89% (USD 14.62B) allocated to oil, 7.3% to natural gas, 3.5% to electricity (end use), and the remainder to coal. The majority (87%) was provided through tax reductions or "tax expenditures" (USD 14.37B), followed by direct budgetary transfers. Compared to 2022, direct fossil fuel subsidies decreased by 48.9%, after having reached USD 33.57B.

Since 2010, most of these subsidies have been directed toward consumption, while those for production began in 2016. Subsidies for general services, which indirectly benefit fossil fuels without being classified strictly as consumption or production incentives, have been implemented since 2013. In aggregate terms, subsidies peaked in 2022, mainly driven by consumption, which increased from <u>USD 8.5B</u> to <u>USD 17.4B</u>. Production subsidies rose by USD 1.7B, while general service subsidies declined by USD 3.4 billion. This increase was associated with the global energy crisis triggered by the pandemic and <u>Russia's invasion of Ukraine</u>.

An inventory of consumption and production-related subsidies within the hydrocarbon supply chain was constructed, as shown in Table 2.

#### **TABLE 2.** INVENTORY OF FOSSIL FUEL SUBSIDIES IN MEXICO

SUBSIDIES TO CONSUMPTION	MECHANISM
SUBSIDIES TO GASOLINE AND DIESEL PRICES	Indirect
FISCAL STIMULI TO EXCISE TAXES ON FUELS (IEPS)	Indirect
PREFERENTIAL FUEL PRICES IN BORDER ZONES	Indirect
SUBSIDY FOR LIQUEFIED PETROLEUM GAS (LPG) FOR DOMESTIC USE	Indirect
TOLL EXEMPTIONS OR DISCOUNTS FOR PUBLIC AND FREIGHT TRANSPORT	Indirect
SUPPORT PROGRAMS FOR VEHICLE CONVERSION TO NATURAL GAS (NGV)	Indirect
FUEL SUBSIDIES FOR AGRICULTURAL AND FISHING ACTIVITIES	Indirect
SUBSIDIES TO PRODUCERS	MECHANISM
SUBSIDIES TO PRODUCERS NATIONAL STRATEGY FOR THE HYDROCARBONS AND NATURAL GAS SECTOR	MECHANISM Direct
SUBSIDIES TO PRODUCERS         NATIONAL STRATEGY FOR THE HYDROCARBONS AND NATURAL GAS SECTOR         LONG-TERM PRODUCTIVE INFRASTRUCTURE PROJECTS (PIDIREGAS)	MECHANISM Direct Direct
SUBSIDIES TO PRODUCERS         NATIONAL STRATEGY FOR THE HYDROCARBONS AND NATURAL GAS SECTOR         LONG-TERM PRODUCTIVE INFRASTRUCTURE PROJECTS (PIDIREGAS)         FISCAL INCENTIVES FOR HYDROCARBON EXPLORATION AND PRODUCTION	MECHANISM Direct Direct Direct
SUBSIDIES TO PRODUCERS         NATIONAL STRATEGY FOR THE HYDROCARBONS AND NATURAL GAS SECTOR         LONG-TERM PRODUCTIVE INFRASTRUCTURE PROJECTS (PIDIREGAS)         FISCAL INCENTIVES FOR HYDROCARBON EXPLORATION AND PRODUCTION         INVESTMENTS IN PETROLEUM INFRASTRUCTURE IN STRATEGIC AREAS	MECHANISM Direct Direct Direct Direct
SUBSIDIES TO PRODUCERS         NATIONAL STRATEGY FOR THE HYDROCARBONS AND NATURAL GAS SECTOR         LONG-TERM PRODUCTIVE INFRASTRUCTURE PROJECTS (PIDIREGAS)         FISCAL INCENTIVES FOR HYDROCARBON EXPLORATION AND PRODUCTION         INVESTMENTS IN PETROLEUM INFRASTRUCTURE IN STRATEGIC AREAS         REDUCED EXTRACTION FEES FOR MARGINAL FIELDS	MECHANISM Direct Direct Direct Direct Indirect
SUBSIDIES TO PRODUCERS         NATIONAL STRATEGY FOR THE HYDROCARBONS AND NATURAL GAS SECTOR         LONG-TERM PRODUCTIVE INFRASTRUCTURE PROJECTS (PIDIREGAS)         FISCAL INCENTIVES FOR HYDROCARBON EXPLORATION AND PRODUCTION         INVESTMENTS IN PETROLEUM INFRASTRUCTURE IN STRATEGIC AREAS         REDUCED EXTRACTION FEES FOR MARGINAL FIELDS         TARIFF EXEMPTIONS ON IMPORTS OF MACHINERY FOR THE INDUSTRY	MECHANISM Direct Direct Direct Indirect Indirect
SUBSIDIES TO PRODUCERSNATIONAL STRATEGY FOR THE HYDROCARBONS AND NATURAL GAS SECTORLONG-TERM PRODUCTIVE INFRASTRUCTURE PROJECTS (PIDIREGAS)FISCAL INCENTIVES FOR HYDROCARBON EXPLORATION AND PRODUCTIONINVESTMENTS IN PETROLEUM INFRASTRUCTURE IN STRATEGIC AREASREDUCED EXTRACTION FEES FOR MARGINAL FIELDSTARIFF EXEMPTIONS ON IMPORTS OF MACHINERY FOR THE INDUSTRYTAX DEDUCTIONS FOR RESEARCH AND EXPLORATION EXPENSES	MECHANISM Direct Direct Direct Indirect Indirect Indirect



Following the filtering process presented in the third step of the methodology, a comparison was made between the following three direct subsidies: Tax Incentives for the Exploration and Production of Hydrocarbons, the National Strategy for the Hydrocarbons and Natural Gas Sector, and the Deferred Investment Projects in the Expenditure Register (PIDIREGAS by its acronym in spanish).

FIGURE 3. COMPARISION OF SELECTED DIRECT SUBSIDIES FOR MEXICO

FISCAL INCENTIVES FOR HYDROCARBON EXPLORATION AND PRODUCTION	NATIONAL STRATEGY FOR THE HYDROCARBONS AND NATURAL GAS SECTOR	DEFERRED INVESTMENT PROJECTS RECORDED IN THE FEDERAL BUDGET (PIDIREGAS)
REPRESENTS 0.23% OF GDP	ESTIMATED AT ~0.28% OF GDP	REPRESENTS 0.59% OF GDP
<ul> <li>Aims to encourage private and foreign participation in crude oil exploration and produc- tion.</li> <li>Grants a 100% tax credit equivalent to the monthly payment for shared-pro- fit extraction rights.</li> </ul>	<ul> <li>Seeks to strengthen hydrocarbon and natural gas production and distribution, reduce import dependency, and reinforce Pemex.</li> <li>Applies a single tax rate for Pemex: shared-profit rights for exploration and extraction.</li> </ul>	<ul> <li>Finances energy sector infrastructure projects.</li> <li>Allows federal spending to be recorded over longer periods than the project implementation timeframe.</li> </ul>

In this case, all three subsidies analyzed are directed towards the production of fossil fuels; therefore, the selected subsidy for the cost-benefit analysis is the one that takes up more space within the national budget. This subsidy is the Deferred Investment Projects in the Expenditure Register, also called PIDIREGAS by its name in Spanish, which accounts for more than double the public expenditure than each of the other two subsidies being compared.

The cost-benefit analysis reveals a mismatch between the historical focus of the PIDIRE-GAS, aimed at consolidating strategic sectors such as fossil energy, and the current reality, where their low contribution to GDP and high environmental costs make them incompatible with a just energy transition (JET). When comparing the costs and benefits associated with subsidies in the oil sector, the outcome is unfavorable: costs outweigh benefits.

During the 2015–2023 period, for every dollar the fossil fuels sector received in

investment, it is estimated that USD 0.33 is lost due to the subsidy; when losses in value added are included, the loss increases to USD 0.60, and when environmental costs from climate damages are factored in, the loss rises to USD 0.77. This outcome reveals inefficiency in spending: through just one of the eight subsidies identified in the inventory, 33% of all foreign investment directed to oil and gas extraction is being spent, despite one of the main goals of the subsidy being to attract investment to the sector. Moreover, when also accounting for value-added losses and environmental costs, only 23% of the foreign investment remains. This highlights the importance of explicitly incorporating impacts, including environmental costs, when considering the provision of subsidies. The monetary flows taken into account are as follows:

 Direct investment in the sector has been volatile: It reached a low of <u>USD</u> <u>349M in 2020 and a peak of USD 1,728B</u>



in 2021. In 2023, investment aligned with the average trend, amounting to USD 3,780B. However, the lack of sustained growth suggests instability in sectoral investment flows.

- Spending on subsidies for PIDIREGAS projects has shown a contrasting pattern. Although they remained at zero between 2015 and 2018, they peaked at <u>USD 8,692M in 2022</u>, representing a fiscal cost of 0.59% of GDP. While spending decreased to USD 2,302M in 2023, the persistence of these subsidies highlights the need to reassess their justification and targeting
- An average annual loss in value added of USD 7.5B is estimated, implying a negative impact of 0.55% to 0.76% of GDP. These losses may be related to project inefficiencies, cost overruns, or the failure to achieve expected benefits.
- The environmental costs attributable to activities in the hydrocarbon sector are estimated to be <u>1,7% of Mexico's</u> <u>annual GDP</u>, approximately \$20–30B USD annually.

Based on the analysis of investment and employment multipliers, where oil sector holds an investment multiplier of 1.25 and an employment multiplier of 25.4, sectors such as **electricity**, **construction**, **and manufacturing industries**, were identified as potentially key not only for boosting Mexico's economy, due to their capacity to generate added value and employment, but also for advancing a just energy transition in the country through renewable energies, energy descentralization, diversification of the economy and increased efficiencies. The comparative data is shown below:

• Electricity: Investment multiplier of 1.79 and an employment multiplier of 22.8.

- **Construction**: Investment multiplier of 1.66 and an employment multiplier of 24.
- Manufacturing Industries: Investment multiplier of 1.6 and an employment multiplier of 20.6.

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# Chapter 5. Key Findings and Recommendations





## Definition of Inefficiency and Subsidy Prioritization

The term "inefficiency" in fossil fuel subsidies has been controversial, as some developed countries have used it to delay reform despite being better positioned to eliminate them. Civil society organizations in Latin America and the Caribbean (LAC) criticize the term's economic bias and misalignment with ecological justice. However, applying the criteria behind the definition, such as fiscal cost, environmental impact, market distortion, and lack of targeting to vulnerable populations, can help prioritize which subsidies should be phased out first, starting with those that support fossil fuel production.

## **Case Studies: Colombia and Mexico**

Both countries have historically subsidized hydrocarbon extraction through mechanisms like Colombia's petroleum infrastructure development and Mexico's PIDIREGAS. These subsidies have not led to sustained growth in the sector's GDP contribution. In Colombia, oil and gas represent 2.0-3.3% of GDP; in Mexico, the sector declined from 5.0% (2015) to 2.25% (2023). Despite public investments, both countries suffer high environmental costs (up to 1.7% of GDP) and significant losses in value added. The previous analysis underscores that phasing out fossil fuel subsidies is both an environmental necessity and a sound economic policy. Key differences include Colombia's focus on regional infrastructure with limited employment impact, and Mexico's state oil company PEMEX, which has high debt and low production multipliers despite higher employment multipliers.

In Colombia, reallocating funds could boost activities with supply multipliers above 4, such as Construction, Water and Sanitation, and Agriculture. In Mexico, priority should be given to electricity, construction, and manufacturing industries, which have demonstrated higher investment and/or employment multipliers than the oil sector.

## Measures to Support the Phasing Out of Fossil Fuel Subsidies

- Greater transparency in subsidy tracking and impact evaluation to improve information regarding existing subsidies, including their classification and fiscal, environmental, and social impacts, highlighting the demographic groups they are intended to support. Improving the data will allow a smoother phase-out for both the government and the current beneficiaries.
- Internalizing environmental costs through economic instruments that require fossil fuel companies to take responsibility for climate-related damages can help reduce the current estimated environmental costs in both countries analyzed (1.7% of GDP in Mexico and 1.59% in Colombia).
- Review existing regulatory and legal frameworks to identify constraints that may make phasing out certain subsidies more difficult than others, and to enable the reallocation of resources. This includes assessing current frameworks and economic instruments, or identifying new ones, that can help redirect resources toward specific productive sectors of the economy.
- Support for R&D in alternative sectors, including the promotion of local and sector-specific research centers focused on areas such as renewable energy and sustainable materials. This not only enhances a country's competitiveness but also fosters the creation of specialized jobs and strengthens local industry.
- The inclusion of local actors and workforce training will help integrate small and medium-sized enterprises into the value chains of green industries and facilitate the transition of workers previously dependent on the fossil fuel sector toward emerging activities in sectors with higher employment multipliers (e.g., 46 in agriculture in Colombia and 24 in construction in Mexico).



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