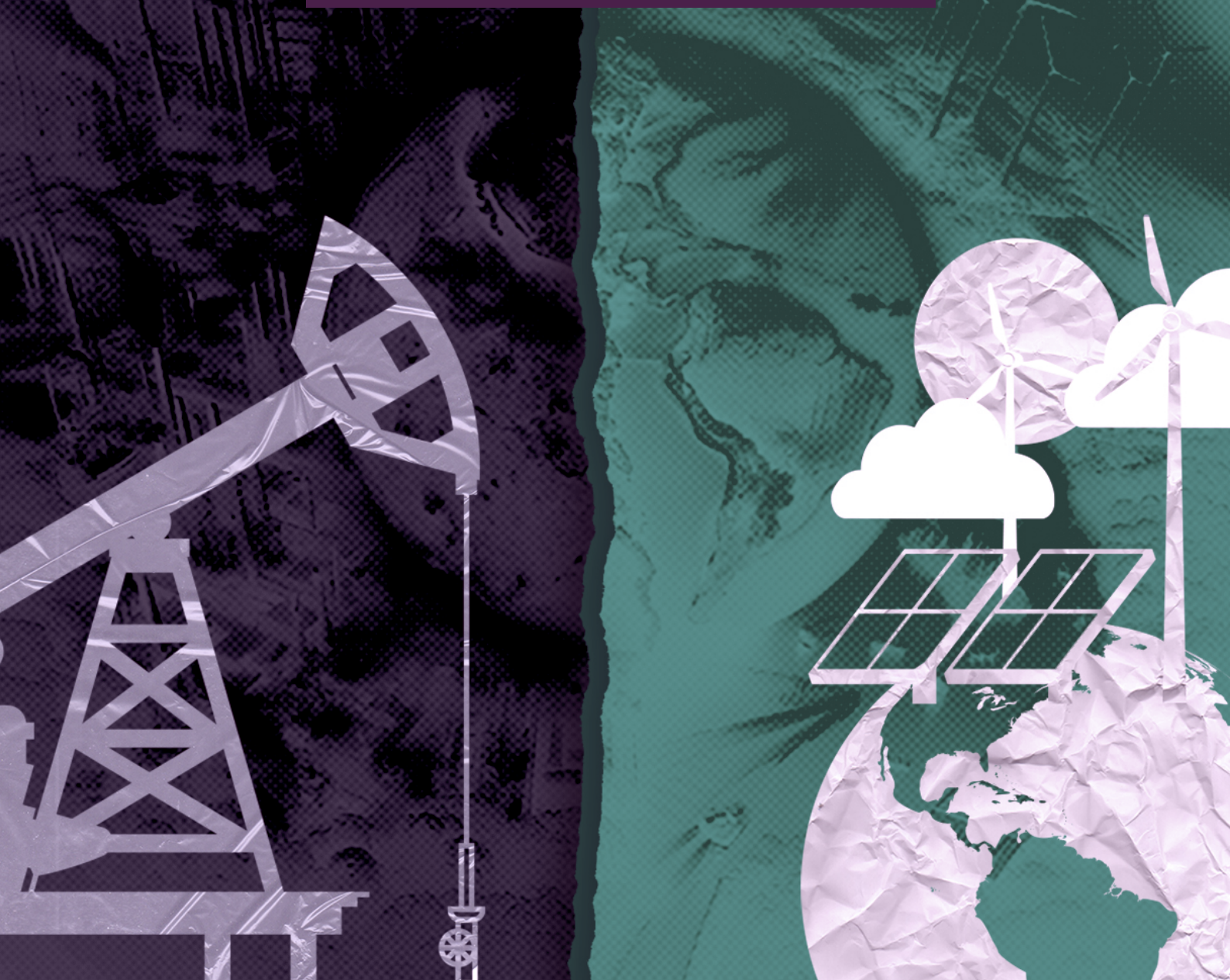
inesc

STUDY

SUBSIDIES FOR FOSSIL AND RENEWABLE SOURCES (2022-2023)

REFORMING FOR A FAIR ENERGY TRANSITION

7TH EDITION



INESC STAFF
SEPTEMBER/2024

Board of Directors
Aline Maia Nascimento
Elisabetta Recine
Luiz Gonzaga de Araújo
Roseli Faria
Romi Márcia Bencke

Fiscal Council
Enid Rocha
Mario Lisbôa Theodoro
Ribamar Araújo
Augustino Veit (*alternate*)

Management Board
Cristiane da Silva Ribeiro
José Antônio Moroni
Nathalie Beghin

Financial, Administrative and Personnel Manager
Ana Paula Felipe

Management Assistants
Marcela Coelho M. Esteves
Thayza Benetti

Communication Team
Gabriela Alves
Silvia Alvarez
Thays Puzzi

Political Advisors
Alessandra Cardoso
Carmela Zigoni
Carolina Alves
Cássio Cardoso Carvalho
Cleo Manhas
Dyarley Viana de Oliveira
Elisa Rosas
Sheilla Dourado
Thallita de Oliveira

Social Educator
Markão Aborígine

PMEL - Planning, Monitoring, Evaluation, Learning
Adriana Silva Alves

Accounting Assistant
Josemar Vieira dos Santos

Financial Adviser
Ricardo Santana da Silva

Administrative Assistants
Adalberto Vieira dos Santos
Eugênia Christina A. Ferreira
Isabela Mara dos Santos da Silva

General Services Assistant
Roni Ferreira Chagas

Trainees
Eduarda R. A. Figueiredo
Andrey Felype

INSTITUTIONAL SUPPORT

CLUA – Climate and Land Use Alliance
ETF – Energy Transition Fund
Fastenaktion
Fundação Charles Stewart Mott
Fundação Ford
Fundação Heinrich Böll
Fundar
Fundo Malala
Ibirapitanga
ICS – Instituto Clima e Sociedade
Kindernothilfe
OSF – Open Society Foundations
PPM – Pão para o Mundo
Rainforest Foundation Norway
Unfpa – Fundo de População das Nações Unidas
Wellspring
WRI – World Resources Institute

TECHNICAL STAFF

Political Coordination
Cristiane Ribeiro
José Antônio Moroni
Nathalie Beghin
(Management Board)

Technical Review
Nathalie Beghin

Editing
Alessandra Cardoso
Cássio Cardoso Carvalho

Translate
Paulo Futagawa

Graphic Design
Gabriela Alves

Inesc – Instituto de Estudos Socioeconômicos
Address: SCS Quadra 01 - Bloco L, nº 17, 13º Andar Cobertura – Edifício Márcia. CEP: 70. 307-900 - Brasília/DF ◆ Phone: + 55 61 3212-0200
E-mail: inesc@inesc.org.br ◆
Website: www.inesc.org.br

Summary

Foreword

Inesc launches the seventh edition of the monitoring of subsidies offered by the Federal Government to fossil and renewable sources[1] with data referring to the years of 2022 and 2023.

The data gathered here make up a mosaic with information from different sources, organized into two modalities (consumption and production) and three categories (tax expenditures, direct expenditures, and other waivers).[2] A portion of the subsidies classified as direct expenditures, in turn, is shared directly across society as a whole, through the so-called Energy Development Account (CDE), through the electricity tariff.

In 2023, subsidies from both sources totaled US$ 19.96 billion, which represented an increase of 9.07% compared to the 2022 figure. This increment was ensured by an increase of US$ 906.94 million (33.5%) in renewable sources, to the detriment of fossil sources, which saw an increase of US$ 746.66 million (4.79%).

Subsidies for fossil fuels totaled US$ 16.34 billion, or 81.9% of the total, while subsidies for renewables totaled US$ 3.61 billion or 18.10% of the total. These values show that for every US$ 1.00 spent on renewable energy sources, US$ 4.52 are subsidized for fossil fuels.

TABLE 1 BRAZIL: OVERVIEW OF SUBSIDIES FOR FOSSIL AND RENEWABLE SOURCES (2022 AND 2023)

Types and sources of subsidies	2022 (US$)	2023 (US$)	Variation
Fossil subsidies (production)	6,907,009,952.57	8,380,915,041.20	21,34 %
Fossil subsidies (consumption)	8,694,777,126.94	7,967,532,028.74	-8,36%
Total	**15,601,787,079.51**	**16,348,447,069.94**	**4,79%**
Subsidies for renewables (production)	2,291,334,253.90	3,185,627,923.07	39,03%
Subsidies for renewables (consumption)	415,663,154.85	428,209,198.80	3,02%
Total	**2,706,997,408.75**	**3,613,837,121.87**	**33,5%**
Total of both sources	**18,308,784,488.26**	**19,962,284,191.81**	**9,03%**

Source: Inesc (to consult the sources, check the methodology).

1 When calculating subsidies for renewable energy, the water source is not considered.
2 For a better understanding of the classification and calculation methods, please refer to our methodology.

The oscillation compared to fossil sources is due to two main factors. On the one hand, a drop of US$ 727,24 billion in waivers associated with fuel consumption, driven, in turn, by the return of the Cide and PIS/Cofins taxes on gasoline. It is worth noting that the reduction in the subsidy was not greater because the exemption for diesel was maintained and because the amounts sold were greater, resulting in an expansion of subsidies for the aforementioned fuel. On the other hand, there was an increase of US$ 1.47 billion in production subsidies, which were driven by the increase in waivers associated with Repetro, which increased by US$ 1.40 billion, compared to the 2022 values. With such behavior (which occurred in the opposite direction between production and consumption), the total value of subsidies remained relatively stable between 2022 and 2023.

Subsidies for renewables, in turn, increased from US$ 2.70 billion to US$ 3.61 billion, which is equivalent to an increase of 33.70%. This is an expansion that is exclusively attributed to the US$ 894.29 billion increase in subsidies for the production of renewable energy, due to the expansion of waivers associated with Proinfa, Reidi and distributed generation.

With increasing investments in energy generation from renewable sources, subsidies for these sources are expected to increase, which is a good sign in comparative terms. However, the incentives granted to renewable energy sources already bring with them issues and challenges that lead to questions about their necessity and effectiveness, not to mention their conditioning to safeguard measures that seek to ensure that the much-desired energy transition is in fact carried out with social justice.

To facilitate reading and to allow a more focused view of subsidies to different sources, the publication is divided into two chapters: the first is dedicated to subsidies to fossil fuels, while the second is focused on renewable sources. In each of them, the figures are presented in detail, followed by comments on the behavior of the different items that make up the framework of incentives, according to the standard modalities and categories for both sources. At the end of each chapter, a qualitative analysis is carried out with the aim of problematizing such incentives, which are diverse and pose their own challenges and complexities. Finally, some recommendations are made.

We hope that this work will help society question both itself and the government about the need for subsidies, as well as the direct and indirect consequences associated with them. The origin of the concern about incentives for energy sources is climate change, which, as we already know, is globally associated with the burning of fossil fuels. Therefore, the incentive to these sources, through subsidies for their production and consumption, is a choice that needs to be understood in its reasons and assessed in relation to its effects and implications, both domestic and global.

But the concern goes beyond the climate issue. Every incentive has a cost to society. When it takes the form of a tax waiver, it reduces the tax base, which is where the resources to invest in public policies come from—among them, adaptation policies, which are increasingly urgent in the face of climate extremes. When it takes the form of direct expenditures, through public budget, it is also a choice: to direct scarce resources to benefit a sector and

certain segments, to the detriment of others, through policies that reach the population more directly. When incentives are included in consumers' electricity bills, everyone pays directly, which increases energy poverty, which is still present in the country.

We hope that this seventh edition of the publication fulfills the mission of underscoring the dimension of subsidies to energy sources and, mainly, contribute to the reflection on such choices, which are made by governments, when granting incentives to said sources. We know that choices like these, once made, end up perpetuating themselves, because they are difficult to reverse. The political and economic pressure to maintain these subsidies creates obstacles to assessing their need and effectiveness, as well as their adverse impacts and the possibility of reform or termination. This is the case of incentives granted for oil exploration in Brazil.

Understanding the incentives and their amounts, comprehending who benefits from them and at what cost is the challenge that Inesc shares every year.

I. Subsidies for fossil energy sources

Overview

In 2023, subsidies for fossil fuels reached US$ 16.34 billion, which represented an oscillation of 4.79%, compared to R$ 15.60 billion in 2022. Last year, production subsidies were driven by the increase in tax waivers associated with Repetro (which rose by 60.47%) and by incentives for coal-based electricity generation (whose increase in 2023 was 31.93%).

From the point of view of consumption incentives, the data reveals that, after 2022, when the fuel tax exemption was significantly expanded as a price stabilization measure, part of the support was reversed in 2023. As a result, there was a 6.16% drop in terms of waivers granted through the reduction of PIS/Cofins and Cide. Incentives to consumption were also reduced due to the end of the Truck Driver Aid.

Table 2 presents details of the modalities and categories for each of the fossil fuel subsidies, in addition to showing the fluctuations in values between 2022 and 2023.

TABLE 2 BRAZIL: INCENTIVES FOR PRODUCTION AND CONSUMPTION OF FOSSIL FUELS (2022 AND 2023)

Names	Acronyms/ summaries	Modalities	Categories	Values in 2022 (in US$)	Nominal values in 2023 (in US$)	Nominal variations
Special Customs Regime for Export and Import of Goods Intended for Research and Mining Activities in Oil and Natural Gas Deposits	Repetro	Production	Waiver	2,317,076,706.40	3,718,444,211.40	60,47%
Deduction of amounts applied to the exploration and production of oil and natural gas to calculate IRPJ [Corporate Income Tax] and CSLL [Social Contribution on Net Profits]	Article 1 of Law No. 13,586/2017	Production	Waiver	1,520,190,000.00	1,600,200,000.00	5.26%
Special Incentive Regime for Infrastructure Development (Reidi Fossil)	Reidi (fossil energy)	Production	Waiver	33,245,863.41	39,808,495.93	19.73%
Energy Development Account/Fuel Consumption Account (CDE/CCC)	CDE/CCC	Production	Direct expenditure	2,392,800,353.19	2,261,343,315.87	-5.49%
Energy Development Account - Coal (CDE Mineral Coal)	CDE Mineral Coal	Production	Direct expenditure	170,705,393.22	225,216,276.80	31.93%
Thermoelectricity	Thermoelectricity	Production	Waiver	4,323,621.00	4,898,692.00	13.30%
Liquefied Natural Gas	LNG	Production	Waiver	468,668,015.35	531,004,049.20	13.30%
Exemptions for consumption of diesel oil, gasoline and LPG	Fossil fuel consumption	Consumption	Waiver	7,722,879,158.01	7,246,807,848.58	-6.16%
Gas Aid for Brazilians	Gas Aid	Consumption	Direct expenditure	529,245,555.13	717,839,195.00	35.63%
Payment of assistance to independent cargo transporters	Truck Driver Aid	Consumption	Direct expenditure	442,652,413.80	2,884,985.16	-99.34%
Total production incentives				6,907,009,952.57	8,380,915,041.20	21.33%
Total consumption incentives				8,694,777,126.94	7,967,532,028.74	-8.36%
Total				15,601,787,079.51	16,348,447,069.94	4.79%

Source: Inesc (to consult the sources, please refer to the methodology).

Analysis of incentives

Incentives granted through special regimes

Most incentives for oil and gas production come from special taxation regimes, which are a type or modality of taxation through which a specific sector or activity has a different taxation in relation to that imposed on other taxpayers.

The main regime, which is also specific to the sector, is the Special Customs Regime for Export and Import of Goods Intended for Research and Mining Activities in Oil and Natural Gas Deposits (**Repetro**). Through it, companies in the oil and gas chain, authorized by Repetro, benefit from: (1) zero percent rate of PIS/Pasep and Cofins on domestic purchases and imports of products; and (2) exemption from Import Tax (II) and Tax on Industrialized Products (IPI).

According to data from the Federal Revenue Service, presented in table 3, **in 2023, exemptions granted through Repetro totaled US$ 3.71 billion**, which is equivalent to an increase of US$ 1.40 billion compared to 2022. Below, Table 3 details the exemptions associated with Repetro by tax types.

TABLE 3 BRAZIL: REPETRO-RELATED TAX WAIVERS (2022 AND 2023)

Years	IPI exemption values in reais (R$)	II exemption values in reais (US$)	PIS exemption values in reais (US$)	Cofins exemption values in reais (US$)	Total Repetro (US$)
2022	75,461,059.49	110,960,293.00	200,998,160.80	931,014,555.90	2,317,076,706.40
2023	459,284,178.00	8,836,962,593.00	1,651,952,240.00	7,644,022,046.00	3,718,444,211.40

Source: Brazilian Federal Revenue Service/Access to Information Law (LAI).

As evidenced in previous editions, Repetro was modified and expanded following the approval of Law No. 13,586/2017, so that it now benefits all companies in the chain, provided they are authorized by the Brazilian Federal Revenue Service, in accordance with regulations established by the Ministry of Finance.

This is the same law that reformulated and expanded the scope and duration of Repetro. It established, in its article 1, tax benefits for the taxation of income of companies operating in the exploration and production of oil and natural gas, allowing full deduction of the amounts applied, in each computation period, in the exploration and production activities of oil and natural gas deposits, from the calculation basis of the Corporate Income Tax (IRPJ) (real profit) and from the calculation basis of the Social Contribution on Net Profit (CSLL).

Article 1 and its paragraphs bring comprehensive benefits, from which all oil companies can benefit, especially with regard to expenses with oil and natural gas production, which can be fully deducted in each computation period, in addition to other amounts

(royalties, for example), such as expenses with equipment and instruments that make up the companies' assets. Full deductibility, mentioned in art. 1 of the law, covers some requirements and is thus presented in the text of the Normative Instruction (IN) No. 1,778/2017, of the Federal Revenue of Brazil (RFB):

> The amounts applied to the activity referred to in the *caput* include expenses with operations or activities that aim to discover, identify oil or natural gas deposits and the assessment of possible discoveries of oil or natural gas to determine its commercial viability, carried out in the geographic area that includes the exploration blocks for which the taxpayer holds the grant of the exploration right as a result of concession, sharing or onerous assignment contracts, individually or in a consortium regime (paragraph 1, article 2, of IN RFB No. 1,778/2017).

On the other hand, according to the text of the same IN, exploration expenses include expenses with the following activities:

> I - acquisition and processing of geological and geophysical data;
>
> II - topographic, aerial, geological and geophysical studies and surveys, including their interpretation;
>
> III - drilling for the evaluation and identification of deposit areas and respective acquisition of equipment;
>
> IV - abandonment of exploratory wells;
>
> V - execution of formation and production tests to evaluate the discovery; and
>
> VI - implementation of the facilities necessary to support the activities provided for in items I to V, including expenses with civil engineering services and works and infrastructure in the onshore exploration phase (paragraph 3, article 2, of IN RFB No. 1,778/2017).

As discussed in previous editions, Inesc continues to methodologically choose to record, in identical and constant values, the last official record of the waiver associated with article 1 of Law No. 13,586/2017, which was made as an estimate for the year 2020. It is worth noting that the estimates presented by the Federal Revenue Service in "instituted exemptions" for the years 2018, 2019 and 2020 were due to the obligation brought by article 14 of Complementary Law (LC) No. 101/2000, known as the Fiscal Responsibility Law (LRF):

> the granting or expansion of an incentive or benefit of a tax nature that results in a waiver of revenue must be accompanied by an estimate of the budgetary-financial impact in the fiscal year in which it is to come into effect and in the following two [...] (article 14 of LC No. 101/2000).

As has been warned, the aforementioned waiver disappeared from official information bases as of 2021, but not its real effect on tax revenue regarding CSLL and IRPJ. Therefore, in this edition, as in the two previous ones, it was decided to repeat the same number, recorded at US$ 1.6 billion per year. The choice reflects the intention that the aforementioned waiver (whose real value is unknown) is not set aside from the methodological and political horizon of reflection on the incentives granted to oil and gas production in Brazil.

Another regime that encompasses incentives for the oil and gas sector is the Special Incentive Regime for Infrastructure Development (**Reidi**).[3] It suspends PIS/Pasep and Cofins contributions for the acquisition, lease and import of goods and services linked to the projects covered, benefiting infrastructure works in the sectors of transport, ports, basic sanitation, irrigation as well as energy.

Over the last few years, Reidi has been contributing to leveraging the diversification of the Brazilian electrical matrix through the inclusion of renewable sources. However, in addition to renewable sources, the exploration of oil and natural gas, in addition to the construction of thermoelectric plants, has also been receiving incentives from Reidi, even though the expansion of these sources is producing an unnecessary increase in emissions from the electricity sector, compromising Brazil's level of ambition under the Paris Agreement.

Within the upstream segment of the oil and gas sector, Reidi is important for the oil and natural gas transportation infrastructure, especially in the construction of pipelines (oil and gas pipelines), but it is also used in other downstream segments. It is important to note that, according to regulations, projects must be subject to permission, authorization or concession. In other words, these are not entirely private projects.

In 2023, Reidi corresponded to **US$ 39.80 million in tax waivers for fossil fuels**, which is equivalent to a **higher amount than the US$ 33.24 million granted in 2022**. It must be registered that Inesc's analysis in relation to Reidi includes data provided by the Brazilian Federal Revenue Service, through Ordinance No. 319/2023, which are related to PIS/Pasep and Cofins exemptions attributed to the import of goods and services to projects in the oil and gas (O&G) sector.

Table 4 below shows the projects in the O&G sector that received tax waivers through Reidi throughout 2023. Such projects were not approved in the year in question, but gradually receive subsidies throughout their implementation.[4]

It should be noted that the numbers are at odds with the Energy Research Office (Empresa de Pesquisa Energética – EPE), when it states, in a study on the role of the oil and natural gas sector in the energy transition,[5] that Reidi has only provided for the "incentive for the implementation of pipelines for fuels and natural gas and for the infrastructure for the production and processing of natural gas," while natural gas thermoelectric projects are being included in the regime in addition to pipelines.

3 Established by Law No. 11,488/2007 and regulated by Decree No. 6,144/2007.

4 Following a question raised by Inesc to the Ministry of Mines and Energy (MME), an explanation was given that the Reidi ordinances approved by the MME throughout the year will be included and the waivers will be applied over a period of five years. Available at: <https://buscalai.cgu.gov.br/PedidosLai/DetalhePedido?id=7440207>. Accessed: 19 Jul. 2024.

5 ENERGY RESEARCH OFFICE (EPE). *O Papel do Setor de Petróleo e Gás Natural na Transição Energética* [The Role of the Oil and Natural Gas Sector in the Energy Transition] (online publication). Available at: <https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/o-papel-do-setor-de-petroleo-e-gas-natural-na-transicao-energetica>. Accessed: 11 Sep. 2024.

TABLE 4 BRAZIL: COMPANIES AND FOSSIL FUEL WAIVERS LINKED TO REIDI IN 2023

Corporate Name	Name in project	Source	State	Total Waiver (US$)
ENEVA S.A.	Natural gas extraction	Natural gas	AM	3,105.60
ENEVA S.A.	Natural gas extraction	Natural gas	AM	411,832.64
Azulão Geração de Energia S.A.	UTE Azulão	Natural gas	AM	47,146.96
Azulão Geração de Energia S.A.	UTE Azulão	Natural gas	AM	781,518.42
CELBA 2 - Centrais Elétricas Barcarena SA	UTE Novo Tempo Barcarena	Natural gas	PA	306,068.05
Marlim Azul Energia S.A.	UTE Marlim Azul	Natural gas	RJ	19,204,419.78
Parnaíba II Geração de Energia S.A	UTE Parnaíba II	Natural gas	MA	299,181.41
Portocem Geração de Energia S.A	UTE Portocem I	Natural gas	CE	5,663.97
SPARTA 300 SPE S.A.	UTE Azulão II e IV	Natural gas	AM	4,037.40
Azulão I Geração de Energia S.A	UTE Azulão I	Natural gas	AM	1,177.17
UTE GNA I Geração de Energia S.A.	UTE GNA I	Natural gas	RJ	69,460.04
UTE GNA II Geração de energia S.A.	UTE GNA II	Natural gas	RJ	18,674,884.46
Total waivers				39,808,495.93

Source: Inesc, with data from of Ordinance No. 319/2023, of the Federal Revenue Service of Brazil.

Incentives paid directly by consumers: CDE/CCC and CDE Coal

Electricity consumers pay various charges grouped together under the Energy Development Account (CDE), which includes some subsidies directed at fossil fuels. The Fuel Consumption Account (CCC), present within the scope of the CDE, has been showing increasing values year after year, as can be seen in the Account's own reports and in the Subsidiometer, published by the National Electric Energy Agency (Aneel), and even in the reports released by the Electric Energy Trading Chamber (CCEE).

It is important to highlight that Inesc improves the data published by Aneel regarding the CCC. Our methodology consists of observing the three operations that make up the CCC and subtracting the values destined for subrogation, within the scope of which renewable source projects are included. Thus, it is possible to achieve the real magnitude of the amounts paid by electricity consumers for the supply of electrical energy in isolated systems, in whose regions the dependence on energy generation by fossil fuels is still latent.

In 2023, the values reached US$ 2.26 billion, which is lower than those observed in 2022 (US$ 2.39 billion), equivalent to a 5.43% decrease. The decrease is explained by

the interconnection of the Itacoatiara, Juruti and Parintins systems, in Amazonas, to the National Interconnected System (SIN), through the Tucuruí Transmission Line. The interconnection of these systems marked the launch of the Energias da Amazônia Program [Amazon Energies Program], which aims to improve the quality and security of energy supply for communities in the region and reduce CCC expenses, relieving the burden on electricity consumers. Even so, the operations used to reimburse the generation costs of the current 196 isolated systems, whose demand is mostly (90.7%) met by fossil fuels (fuel oil and natural gas, 69% and 21.7%, respectively),[6] represent 97.42% of the total outflows from the Account.

The incentive for mineral coal within the scope of the CDE, in turn, is expressed from the exploration of the mineral up to its burning in thermoelectric plants. Yes, Brazil still burns coal to generate electricity, even though it has great renewable energy potential. This is an energy policy for the use of national coal, which provides an economic subsidy for the entire production chain, for a specific group of plants that were in operation in 1998.

The duration of the aforementioned incentive has been extended, with the last extension being guaranteed by Law No. 12,783/2013, with the expected end date in 2027. However, through an amendment ("*jabuti*") inserted in Bill No. 11,247/2018, currently being processed by the National Congress, which originally addressed the regulation of offshore wind farms, the subsidy for coal may be extended until 2050, with the maintenance of the operation of coal-fired thermoelectric plants (UTE) in the south of the country.

In 2023, incentives for coal under the CDE reached US$ 225.21 million, which represents a growth of 31.93% compared to 2022, when they totaled US$ 170.70 million. The increase occurs despite the supply of electrical energy from coal-fired thermoelectric plants, which represented 1.2% of the total generated in the country. However, in 2023, the increase in generation from these UTEs grew by 9.65%, rising from 7,998 GWh to 8,770 GWh,[7] which helps to explain the increase in subsidies.

Incentives for fuel consumption through revenue reduction

In 2023, there were changes in the Cide, PIS/Pasep and Cofins rates applicable to the consumption of type C gasoline, type B diesel and liquefied petroleum gas (LPG). With the expiration, on December 31, 2022, of the Complementary Law No. 194/2022, which fully exempted the collection of Cide, PIS/Pasep and Cofins for gasoline and maintained the exemptions for diesel and LPG, the Federal Government published some measures throughout the year to gradually resume charging some rates. This was established in Provisional Measure No. 1,157/2023 (which kept all rates at zero until February) and in

6 Information Collection for Planning the 2024 Cycle of Isolated Systems, published by Aneel. Available at: <https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-814/Apresenta%C3%A7%C3%A3o%20Workshop%20Sistemas%20Isolados%20-%20Ciclo%202024.pdf>. Accessed: 11 Jul. 2023.

7 ENERGY RESEARCH OFFICE (EPE). *Statistical Yearbook of Electric Energy 2024*. Available at: <https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-160/topico-168/anuario-factsheet-2024.pdf>. Accessed: 12 Jul. 2024.

Provisional Measure No. 1,163/2023 (which began charging US$ 93.98 in PIS/Cofins per cubic meter of gasoline consumption between March and July). As of August, Decree No. 8,395/2015 and Law No. 10,865/2004 were reinstated, which, respectively, began to charge US$ 20.00 of Cide per cubic meter and US$ 158.50 of PIS/Pasep and Cofins per cubic meter of gasoline consumption.

Such measures, taken throughout 2023, allowed the gasoline subsidy to decrease by US$ 1.57 billion, compared to 2022. The incentive for diesel consumption increased by US$ 0.68 billion, as the exemption from rates covered all months of the year, unlike 2022. As for the subsidy granted through the exemption of PIS/Pasep and Cofins to LPG, it suffered a slight reduction (of US$ 7.320), which is linked to the volume of fuel consumption.[8]

Subsidies granted as direct expenditures from the federal budget

In the division of subsidies by categories, subsidies granted through direct spending totaled US$ 3.2 billion in 2023, which represented 20% of total subsidies, with the other 80% in the form of waivers. Compared to 2022, the value is US$ 0.32 billion lower.

Within the same category, we mention here the subsidies granted through the Gas Aid and the Truck Driver Aid, both of which impacted the final value of subsidies for the consumption of fossil fuels, although in the opposite direction.

The Payment of Aid to Independent Cargo Transporters (Truck Driver Aid) was terminated in December 2022, with a portion of the resources being executed in the budget as "outstanding balances," totaling US$ 2.88 million. As was seen in the previous edition, in 2022 the values reached US$ 442.65 million, with the benefit granted in up to six installments, which could reach US$ 200, as a measure to mitigate the effects of the price hike in diesel fuel. Therefore, the Truck Driver Aid, intended for diesel consumption, was reduced by 99,35% between 2022 and 2023.

The Gas Aid has a duration established by law until 2026 (Law No. 14,237/2021), and is intended to mitigate the effect of the price of liquefied petroleum gas (LPG) on the budget of low-income families. Beneficiary families receive, every two months, an amount in cash corresponding to a portion of at least 50% of the average national reference price of a 13 kg LPG cylinder. In 2023, the aforementioned benefit amounted to a financial expenditure of US$ 717.83 million, which is higher than the US$ 529.24 million spent in 2022.

8 It is worth pointing out that the estimate made by Inesc for the calculation of the subsidy for type C gasoline does not take into account the mixture of hydrated ethanol present in the fuel sold.

Challenges and limits to the domestic review of fossil fuel subsidies

In this seventh edition of the study, launched in the year in which Brazil holds the presidency of the G20 and prepares to host COP 30, it is necessary to reflect on the limits (domestic and global) to the review of fossil fuel subsidies.

The first solution put on the table—in 2009, within the scope of the G20—to tackle the problem of emissions from the burning of fossil fuels was the reform of subsidies. The underlying logic is that, with the removal of inefficient subsidies, there would be a reduced appetite in the oil industry for new investments. This would contribute, on the one hand, to curbing supply and, on the other, to allowing energy alternatives to gain economic viability and scale. Additionally, the reform of subsidies for fossil fuels also opened up fiscal space for incentives for renewable sources to be expanded.

However, it is a fact that this agenda has not been very successful: subsidies for fossil fuels worldwide have changed little as a result of the climate agenda, especially in producing countries and for large consumers.[9] At the same time, climate negotiations within the scope of the COP were also met with many obstacles towards building objective commitments for phasing out fossil fuels. In the final text of COP 28, for the first time there was a mention, albeit vague, that countries must "transition away from fossil fuels in energy systems, in a fair, orderly and equitable manner."

The challenge of restrictions on the production side remains huge. The *2023 Production Gap Report*[10] is devastating: analysis of the oil production plans of the main producing countries reveals an expected increase in oil production. The projection is that, in 2030, production would exceed by around 110% the supply level compatible with limiting warming to 1.5°C and 69% above what would be compatible with 2°C.

In short, given the sheer power of the oil industry, as well as the global (and unequal) pattern of energy consumption (still dependent on oil as the main source), efforts around the world to put into question the subsidies for fossil fuels have met little success. In part, this also reflects the fragility of global governance spaces from the World Trade Organization (WTO) to the UN, including the G20.

Faced with this dramatic scenario, alternative and even more complex supply-side restriction paths are being debated. There is literature—still fermenting and maturing—focusing on criteria that could support an equitable and progressive global reduction in oil and gas production. Criteria based on which a sequential abandonment of producing countries would be modulated. This is a rich debate, as it recognizes and seeks to process the many dilemmas (geopolitical, economic, social, ethical and historical) involved in a sequential abandonment of production. However, it does not appear to be a politically viable construction, given the fragile state of climate multilateralism.

9 The *Fossil Fuel Subsidies Tracker* initiative gathers global and country-by-country information based on data collected by the Organization for Economic Cooperation and Development (OECD). Available at: <https://fossilfuelsubsidytracker.org/country/>. To analyze the differences between the OECD data and the numbers collected by Inesc, refer to our methodology.
10 Available at: <https://www.sei.org/publications/production-gap-report-2023/>.

In this context, what has consolidated as a global consensus agenda to tackle the problem of fossil emissions is "energy transition." On the one hand, it reflects the idea that fossil fuels will only be abandoned as an energy source when renewable sources achieve sufficient scale and profitability to replace fossil sources. On the other hand, it paves the way for new business opportunities and innovations in the area of private financing to enable and accelerate the path that will lead to a sharp drop in demand for oil.

It is no different in Brazil. Although the government signals its intention to review, in general terms, inefficient subsidies and incentives, subsidies for fossil fuels have been deemed a taboo subject. The idea behind the refusal to face the problem is that, as long as the world uses this energy source, there will be producers. Therefore, it would be a poor decision to "meddle" with the interests of the oil industry or give up on oil exploration.

Therefore, this complex political context requires an additional effort to reflect on the different categories of subsidies (production and consumption), on their different implications and on the resistances associated with the undelayable effort to review them.

Consumption subsidies, as has been shown, are concentrated on two axes that are quite distinct. The majority (91% or US$ 7.24 billion out of a total of US$ 7.96 billion in 2023) results from the reduction or exemption of taxes on the consumption of gasoline, diesel oil and LPG. Over time and by different governments, changes in the rates that apply to fuels (PIS/Cofins and Cide) were used as a measure to contain significant increases in domestic prices, which are the result, in turn, of global supply and demand contexts. In this sense, countries follow an international alignment towards increasing subsidies in contexts of strong and sustained increases in international oil prices. Another, much smaller portion of subsidies (9% or US$ 0.72 billion out of a total of US$ 7.96 billion in 2023) is granted through direct government spending to support specific groups, based on social vulnerabilities or the power to pressure governments. This is what we witnessed in 2022, when subsidies were granted to truck drivers (Aid for Independent Cargo Transporters) and also to vulnerable social groups (Gas Aid for Brazilians), both of which were maintained in 2023. It should be noted that all of the aforementioned subsidies also responded to the political difficulty of changing the pricing policy of Petrobras, the main national supplier of the aforementioned fuels.

The point to be stressed is that the difficulty in reversing subsidies is related to the high sensitivity and difficulty in changing the relative prices of said fuels, whether due to the pressure exerted by specific groups, the general antisocial nature of the measure or even the impact of the increases on the rest of the economy. In summary, subsidy reform does not appear to be economically, socially and politically viable in the short term. The medium-term solution involves the energy transition process in key sectors, such as freight transport, in addition to solutions linked to quality urban mobility that are not dependent on fossil fuels.

Production subsidies associated with fossil fuels, in turn, involve issues of a different nature, as well as other actors resistant to their review. A portion of such subsidies is

related to the **use of fossil fuels by the electricity sector** (Fuel Consumption Account, Mineral Coal, Thermoelectricity and LNG). In other words, a portion that represented 36.06% of production subsidies (US$ 3.02 billion of a total of US$ 8.38 billion in 2023). It turns out that almost all of this amount was paid directly by consumers, through their electricity bill, as already shown. In short, the reform of these subsidies involves issues related to energy planning, which must advance more quickly to reduce dependence on the use of fossil fuels.

In this direction, four paths must be followed: The first path is to accelerate the phasing out of coal-based thermoelectric generation. As shown, the aforementioned incentive expires in 2027. However, the "coal lobby " is working to try to extend it again.

The second path is to ensure the energy transition in the Brazilian Amazon with the progressive abandonment of diesel-based generation in isolated systems and to build renewable solutions for remote communities. In the case of isolated systems, the path involves interconnecting them to the National Interconnected System (SIN), making sure, however, that such a process ensures social and environmental solutions that do not violate rights. The expansion of the SIN is within the scope of the Amazon Energies Program, which aims to improve the quality and security of energy supply for communities in the region and reduce CCC expenses, relieving the burden on electricity consumers. The solution to guarantee access to energy for remote communities, in turn, is part of the scope of the Luz para Todos (Light for All) Program, which was relaunched in 2023. Rede Energia & Comunidades showed the challenges that the new Light for All Program will face in universalizing energy in isolated and remote communities in the Amazon.

The third path is to prevent the installation of new natural gas thermoelectric plants in the system. The current energy scenario shows that, even with projected water shortages, existing gas-fired thermal plants are sufficient to guarantee security of energy supply. Allowing new gas-fired power plants, even if they are flexible or inflexible, in addition to resulting in an unnecessary increase in emissions from the electricity sector and curbing the supply of renewables, will mean higher costs for consumers. According to the Brazilian Institute for Consumer Protection, if the natural gas thermoelectric plants part of the privatization of Eletrobras are contracted, there will be a cost of US$ 480 million per month in operation. The Clean Energy Coalition warns that it is necessary to "measure and make explicit the economic impacts of the natural gas chain on public coffers and on consumers' electricity bills."

The fourth path would be the reform of the Energy Development Account (CDE), as has been proposed by the National Front of Energy Consumers, so that "subsidies cease to be allocated on the CDE and are transferred to the National Treasury and paid for by all taxpayers." The solution involves migrating the cost of CDE from consumers to the government, through direct expenditure.

In short, subsidies for fossil fuels embedded in the electricity sector are, for the most part, borne today by energy consumers through the CDE. The reform of these subsidies,

as suggested here, involves different solutions, which, as a whole, in addition to guaranteeing the reduction of emissions from the electricity sector, bring a strong component of social justice, because they lead to the reduction of energy poverty, as, for example, in the case of guaranteeing access to renewable energy for thousands of communities in the Amazon devoid of this basic right.

Finally, another portion of the **production subsidies is directly related to oil exploration in Brazil**. This is the largest proportion of production subsidies. In 2023, these corresponded to US$ 5.35 billion out of a total of US$ 8.38 billion, that is, 63.46% of this category's total. These subsidies correspond to tax waivers granted to oil and gas producers, with Petrobras being the biggest beneficiary, but is not the sole one. In 2023, 250 companies were qualified by Repetro, with waivers totaling US$ 3.71 billion.

Waivers are granted without active transparency (the figures must be requested via the Access to Information Law) and without any assessment of their effectiveness from any point of view, including economic.

The Brazilian government endorses the argument—not only from Petrobras, but also from foreign oil companies and the entire oil and gas chain—that such subsidies are key for the country to sustain its competitiveness in oil production. However, this narrative does not hold up.

The competitiveness of the oil industry in the near future will be deeply affected by the trajectory and speed of the energy transition, and will fundamentally depend on expectations regarding international prices. As the International Energy Agency (IEA) has reiterated in its analyses, demand will face a structural decline as countries move away from fossil fuels in an attempt to avoid catastrophic climate change. In this context, despite being abundant, the subsidies offered to the sector in Brazil will not be the determining factor in attracting investments or in the competitiveness of the oil and gas industry in the country, and much less the success and future of Petrobras as a Brazilian energy company.

On the other hand, as they exist today, what we know is that they cost Brazilians dearly, as they entail billion-dollar waivers, which affect the country's revenue and, consequently, its ability to deliver public policies, including those that are increasingly necessary for Brazil to adapt to climate change.

However, for the debate to mature, it is important to recognize that subsidy reform cannot advance as an exclusively domestic agenda. Both from the point of view of global supply and demand, as well as from the point of view of competition between producing countries and, above all, of emissions, this is a global dynamic and problem, which is deeply marked by asymmetries of various kinds, starting with the "common but differentiated responsibilities" in relation to historical emissions. For this reason, the topic has been placed, albeit unsuccessfully, on the agenda of the G20 and COP meetings, year after year.

Given the complexity of the issue and, at the same time, the climate urgency, in addition to the inevitable collapse of the fossil fuel industry, the Brazilian government must face the challenge of refining its economic and political calculation. A more strategic view of the problem of subsidies for oil and gas exploration would help to situate the reform agenda from an international political perspective, facilitated by its leading role in the global scenario of climate multilateralism. What is expected of the Brazilian government, in short, is that it recognizes the problem of production subsidies as a **domestic problem whose solution requires global reform**. The challenge of situating the reform agenda where it should be addressed (on the international level) does not dispense with the need to carefully and officially assess the dimension of the subsidies granted to producers. On the contrary: such "homework" would help Brazil address the issue with greater authority and legitimacy on the international agenda, which will have the Amazon as the world stage at COP 30.

Recommendations

In this seventh edition of the monitoring of subsidies for fossil fuels, two issues gain more evidence in the global setting. One is the continued loss of momentum on the fossil fuel subsidy reform agenda. Another is the acceleration of the energy transition agenda.

Domestically, what we see is the federal government's attempt to hold on to an empty narrative that justifies the decision to expand oil production. However, in practice, the discourse boils down to trying to deny that it is part of the global problem of increased production of fossil fuels and the emissions resulting from their burning.

This speech helps to understand why the Brazilian government (in theory, so interested in reviewing tax waivers to balance public accounts) is so resistant to recognizing subsidies for the production of fossil fuels as an issue that needs to be better understood and evaluated, even though it must be addressed at a multilateral level. In part, this reflects the power and pressure of the oil and gas sector within public structures. But it also reflects a poorly founded and erroneous view that leaving production subsidies intact constitutes a sufficient and necessary measure to sustain investments and guarantee the expansion of oil exploration frontiers.

Given this complex and challenging setting, this edition sought to evince that subsidies are distinct and the paths to reform are equally so. In the case of subsidies for oil exploration, the main recommendations to the Brazilian government are presented as follow.

- Increase **active transparency *regarding the various tax incentives*** that benefit companies in the oil and gas sector.
- Carry out a study to **calculate the effective tax burden of the oil and gas sector**, with a comparison of the effective tax burden of countries with the greatest weight in global oil production.
- Based on its leading role in the G20 and COP 30, addressing the **challenge of global reform of fossil fuel subsidies** as a central measure to accelerate the energy transition is a fundamental measure to expand countries' fiscal capacity to finance, without debt, their growing spending on mitigation, adaptation, losses and damages.

Finally, as urgent as the multilateral reform of fossil fuel subsidies is planning a national strategy for the use of oil revenue, which depends solely on the decision of the federal government to prioritize the allocation of resources from oil revenue to the urgent energy transition and adaptation to climate change.

II. Subsidies for renewable energy sources

Overview

Subsidies for renewable sources totaled US$ 3.61 billion in 2023, which corresponds to an increase of 33.5% compared to 2022, when they reached US$ 2.70 billion. However, when compared to tax incentives for fossil fuels, those still amount to little, as they represented only 18.10% of the total federal subsidies for energy sources in Brazil, which was US$ 19.62 billion. These data indicate that, in 2023, for every US$ 1.00 subsidized for renewables, US$ 4.52 were allocated to fossil fuels.

The growth in 2023 is due to the expansion of distributed generation values,[11] which went from US$ 0.53 billion in 2022 to US$ 1.42 billion in 2023. As for the consumption side, there was a slight reduction, which can be explained by the gradual changes throughout the year in the rates of hydrated ethanol.

It is important to note that the absolute majority of incentives for the production of renewable sources (US$ 2.89 billion) come from charges in the electricity tariff itself, that is, it is the consumer who is paying, through the Incentive Program for Alternative Sources of Electric Energy, distributed generation, incentivized sources, the Mais Luz para a Amazônia [More Light for the Amazon] Program and the subrogation of the Fuel Consumption Account. Thus, the total subsidies paid by electricity consumers in 2023 represent 79.23% of the number of subsidies for renewables.

Table 5 below presents for the years 2022 and 2023 the subsidies for renewable sources, divided between production andconsumption, analyzed by Inesc according to its ownmethodology.

11 Distributed generation is the energy produced on a small scale (3 MW for dispatchable sources and 5 MW for non-dispatchable sources) at or near the site of electricity consumption. In Brazil, the energy generated by generator-consumers is compensated in credits in the electricity tariff, through the Electric Energy Compensation System.

TABLE 5 BRAZIL: SUBSIDIES FOR RENEWABLE SOURCES (PRODUCTION AND CONSUMPTION) (2022 AND 2023)

Description	Acronym/ Summary	Category	Modality	Nominal value in 2022 (US$)	Nominal value in 2023 (US$)
Incentive Program for Alternative Electricity Sources	Proinfa	Production	Direct expenditures	1,212,954,995.05	1,090,830,604.43
Special Incentive Regime for Infrastructure Development	Reidi	Production	Tax waivers	214,612,747.75	223,563,198.55
Distributed generation	Distributed generation	Production	Direct expenditures	535,733,970.29	1,428,248,120.75
Incentivized Sources - Reduction in TUST and TUSD payments (CDE)	TUST/TUSD	Production	Direct expenditures	122,757,545.71	141,849,442.14
More Light for the Amazon Program	MLA	Production	Direct expenditures	76,998,201.86	172,905,009.00
Subrogation of the Energy Development Account - (CDE)	CCC (subrogation)	Production	Direct expenditures	63,806,766.03	59,584,749.08
Support Program for Technological Development of the Semiconductor Industry	Padis	Production	Tax waivers	61,181,761.11	68,286,221.11
Wind turbines	Wind turbines	Production	Tax waivers	97,973.31	111,004.40
Biodiesel	Biodiesel	Production	Tax waivers	3,056,522.40	0,00
National Biofuel Policy - Renovabio	Renovabio	Production	Direct expenditures	37,609.70	0,00
Promotion of the participation of family farming in renewable energy chains	Renewable Energy in Family Farming	Production	Direct expenditures	41,062.59	154,018.34
Promotion of technologies applied to renewable energies and energy efficiency	Technologies Applied to Renewable Sources	Production	Direct expenditures	55,098.06	95,555.37
Exemptions for consumption of hydrated ethanol	Ethanol Consumption	Consumption	Tax waivers	415,663,154.85	428,209,198.80
Total production incentives				2,291,334,253.90	3,185,627,923.07
Total consumption incentives				415,663,154.85	428,209,198.80
Total				2,706,997,408.75	3,613,837,121.87

Source: Inesc (to consult the sources, please refer to the methodology).

Analysis of incentives

To understand the dynamics and fluctuations in subsidies for renewable sources in 2023 compared to 2022, we present clarifications about each of them, which are divided between tax waivers, direct expenses and tariff charges for electricity consumers.

Tax waivers

Tax waivers from the Special Incentive Regime for Infrastructure Development (**Reidi**) occur according to the progress of the project's execution and the number of grants and contracts from new sources in previous years in the free or regulated contracting environment. Therefore, throughout 2022 and 2023, the reduction values of the Social Integration Program/Public Servant Asset Formation Program (PIS/Pasep) and the Contribution for the Financing of Social Security (Cofins) for imported products for Reidi projects remained constant, going from US$ 214.61 million to US$ 223.56 million, reaching only centralized projects and, substantially, photovoltaic and wind power plants.

Regarding the Support Program for Technological Development of the Semiconductor Industry (**Padis**), tax incentives increased by 11.6% between 2022 and 2023, rising from US$ 61.18 million to US$ 68.28 million. This is what the estimate presented by the Brazilian Federal Revenue Service shows,[12] through the Tax Expenditure Statement. This is due to the expansion, in 2023, of the list of inputs covered by the program, including for the manufacture of semiconductors for photovoltaic panels by the national industry. Inesc questioned the Ministry of Science, Technology and Innovation (MCIT), via the Access to Information Law, to find out whether, in 2023, there was an increase in the number of companies registered in the program and whether tax incentives were expanded, since reports with economic and technological results have not been updated on the website since 2021.[13]The response was that the information presented in the reports was *"updated to the base year of 2021, the latest information available."*

Despite the modest increase in the estimated reduction in tax rates on materials and equipment for the expansion of **wind turbines**, presented in the Tax Expenditure Statement of the Brazilian Federal Revenue Service, the aforementioned subsidy does not show major fluctuations, even with the expansion of wind sources, which, according to the Energy Research Company (EPE),[14] went from 23.8 GW to 28.7 GW between 2022 and 2023, which amounts to an increase of 20.59% in its installed capacity.

12 Federal Revenue Service Tax Expenditure Statement, series from 2019 to 2024. Available at: <https://www.gov.br/receitafederal/pt-br/centrais-de-conteudo/publicacoes/relatorios/renuncia/gastos-tributarios-bases-efetivas/dgt-bases-efetivas-2021-serie-2019-a-2024-quadros.xlsx/view>. Accessed: 7 Aug. 2024.

13 The reports on the economic and technological results of the Padis can be consulted on the program's own website; however, as of the date of publication of this study, the latest report presented refers to the year 2021. Available at: <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/padis/padis_relatorios>. Accessed: 6 Jul. 2024.

14 National Energy Balance Summary Report (BEN) 2024, based on the year 2023. Available at: <https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/balanco-energetico-nacional-2024>. Accessed: 02 Jul. 2024.

According to the estimate of the Brazilian Federal Revenue Service Tax Expenditure Statement, there was no reduction in tax rates (PIS/Pasep and Cofins) applicable to the production and sale of **biodiesel** in 2023. In 2022, the value was US$ 3.05 million. The Ministry of Mines and Energy (MME), whose information was obtained through the Access to Information Law (LAI), argued that *"the budgetary issue related to biodiesel producers is not under its responsibility."*[15]

In 2023, the Contribution for Intervention in the Economic Domain (Cide-Fuels) was maintained in relation to the sale of **hydrated ethanol**. However, there were changes in the rates relating to PIS/Pasep and Cofins: in 2022, the enactment of Complementary Law No. 194 reduced this rate to zero through December 31 of that year. For the following year, Provisional Measures No. 1,157/2023 and No. 1,163/2023 fully extended the subsidy through June, when Decree No. 9,112/2017 came into force, with a rate of US$ 22.18/m³. Despite this, such measures maintained the subsidy for hydrated ethanol at a similar amount to that of 2022, when it reached US$ 415.66 million, with a slight reduction in 2023, totaling US$ 428.20 million.

Direct expenditures

Renewable energy in family farming – Between 2022 and 2023, efforts specifically aimed at promoting distributed generation for family farming were allocated to the Ministry of Agriculture, Livestock and Food Supply (Mapa), through the Budgetary Plan for the Promotion and Participation of Family Farming in Renewable Energy Chains.

It was noted that, in 2023, the financial execution of the budget plan increased by 275.08% compared to 2022, going from US$ 41.06 million to US$ 154.01 million, respectively. However, the resources allocated are far below what is needed for family farmers to even adapt to climate change. With distributed generation, they can ensure water and food security on their properties.

Technologies applied to renewable sources – The Ministry of Science, Technology and Innovation (MCTI) has been providing resources to the "Support for Applied Technologies" action, which covers renewable energies within the scope of the budget plan "Promotion of Technologies Applied to Renewable Energies and Energy Efficiency." In 2023, there was a 73.44% increase in the financial execution of the aforementioned budget plan compared to 2022, which went from US$ 55,098.09 to US$ 95,555.37.

Renovabio – When, through the Access to Information Law (LAI), we asked the National Agency of Petroleum, Natural Gas and Biofuels (ANP) about the amount of subsidies to the program, we were told that Renovabio *"has not had any subsidies of any kind since its creation, and relies on market mechanisms to establish the prices of decarbonization credits."*[16]Despite

15 The MME's response to Inesc's question via the LAI is available at: <https://buscalai.cgu.gov.br/PedidosLai/DetalhePedido?id=7267878> . Accessed: 19 Jul. 2024.

16 ANP's response to Inesc's question via the LAI is available at: <https://buscalai.cgu.gov.br/PedidosLai/DetalhePedido?id=7267813>. Accessed: 19 Jul. 2024.

the ANP's statement, the Ministry of Mines and Energy (MME) budget includes a small amount of US$ 37,609.70 for 2022, due to outstanding balances from previous years, which was not applied in 2023.

Tariff charges for electricity consumers

The reduction of 10.06% in the funding of the **Incentive Program for Alternative Electricity Sources** between 2022 and 2023 was due to the decrease in the average value of energy contracted by the program, which went from US$ 108.27 to US$ 97.37. This drop occurred even in light of the amount of energy contracted, which was the same for both years: 11,202,147.00 MWh. The main component that explains the difference is the variation in the forecast of the program's account balance, which in 2022 was negative US$ 93,337,899.11 and, for the year 2023, was positive US$ 121,646,655.60, according to the National Electric Energy Agency (Aneel).[17]

Distributed generation saw a subsidy increase of US$ 892.51 million, which represents 166.59% between 2022 and 2023. This variation is due to the enactment of Law No. 14,300/2022, which determines that projects that fall within the Electric Energy Compensation System (SCEE) until January 2023 would not be charged the Distribution System Usage Tariff (TUSD - Wire B) until 2029. In turn, projects requested after January 2023 are charged 100% of TUSD - Wire B, 40% of TUSD - Wire A, the Electric Energy Services Inspection Fee (TFSEE), Research and Development (R&D) and Energy Efficiency (EE). Therefore, there was a high demand for new projects, with the intention that they would not be subject to the new tariff rules, which resulted in an increase in the subsidy for the aforementioned generation model in 2023.

In 2023, through the electricity tariff, **incentivized sources** had an increase of 15.55% compared to 2022, which reflects the expansion of installations and contracts for wind, photovoltaic and biomass sources, which have a discount on the Distribution and Transmission System Usage Tariffs (TUSD and TUST), that in turn are collected through quotas from the Energy Development Account (CDE) from all regulated consumers, who bear the discount on the transmission and distribution system usage tariffs.

The National Program for Universal Access and Use of Electric Energy (**Light for All**) was relaunched, with, among other beneficiaries, populations located in remote regions of the Brazilian Amazon who lack access to the public electricity service or that are currently served by means of electricity generation from non-renewable sources.

In view of this, Decree No. 10,221, of February 5, 2020, regarding the More Light for the Amazon (MLA) Program, was revoked. Thus, there was a transition from the previous policy, which had two universalization programs, to the new policy, which has one single

17 The data made available by Aneel can be found in the published vote of the Agency's 46th Ordinary Public Meeting. Available at: <http://www2.aneel.gov.br/cedoc/areh20223147_1.pdf>. Accessed: 6 Jul. 2024.

program.[18]Even with the transition period, compared to 2022, the MLA increased by 124,57% in 2023, going from US$ 76.99 million to US$ 172.90 million.[19] This fact highlights the energy vulnerability to which the people living in isolated electricity systems in the Amazon are still subjected, and in 2022, less than 5% of the program's target had been met.[20]

Regarding the **subrogation**[21] **of the Fuel Consumption Account**, the allocation of resources in projects carried out in isolated systems to replace, totally or partially, thermoelectric generation was reduced by 6.61% between 2022 and 2023, going from US$ 63.8 million to US$ 59.58 million. This drop reveals that the effort to replace fossil fuels in isolated systems is still minimal, since subrogation represented only 2.58% of the total outflows from the Fuel Consumption Account (CCC), which was US$ 2.32 billion in 2023.

In addition to replacement, another factor that can reduce the need to use fossil fuel-powered generators in isolated systems is their interconnection to the National Interconnected System (SIN). In this sense, the Programa Energias da Amazônia [Amazon Energies Program] was created in 2023, and one of its goals is to extend transmission lines to the aforementioned systems.

Context and perspectives for the subsidies for renewable sources

Over the last decade, renewable sources (especially wind and solar photovoltaic) have been gaining ground in the Brazilian electrical matrix: in 2014, wind represented 3.65% of the matrix, while photovoltaic represented 0.01%. In 2023, these percentages were, respectively, 12.70% and 16.75%.[22] The growth occurred despite an installed capacity with a large contribution from hydroelectric plants, which reduces the need for supply from thermoelectric plants, especially in periods of water scarcity.

The scalability of renewable sources in the country is materializing, among other reasons, as a result of federal subsidies, which, to a large extent, are paid by electricity consumers themselves, through tariff charges. This happens thanks to the Incentive Program for Alternative Electricity Sources (Proinfa) and the Energy Development Account (CDE), which includes, among other expenses, the subrogation of the Fuel Consumption Account (CCC), the More Light for the Amazon (MLA) Program, the support for incentivized sources

18 In response via the LAI, the MME explained the transition process in relation to the Light for All and the More Light for the Amazon Program. Available at: <https://buscalai.cgu.gov.br/PedidosLai/DetalhePedido?id=7315532>. Accessed: 19 Jul. 2024.

19 Although the composition of the cost values of the More Light for the Amazon Program includes agents from the electricity sector, sources regulated by the Ministry of Mines and Energy and also the Energy Development Account, the subsidies calculated by Inesc refer only to the CDE values, as made available by Aneel.

20 Analysis of the resources available and necessary to universalize access to electricity in the Legal Amazon. Available at: <https://energiaeambiente.org.br/produto/analise-dos-recursos-disponiveis-e-necessarios-para-universalizar-o-acesso-a-energia-eletrica-na-amazonia-legal>. Accessed: 27 May 2024.

21 Subrogation is a legal mechanism that encourages, through the allocation of CCC resources, new actions that seek to replace existing thermal generation with renewable sources, transmission lines and efficiency projects for existing thermoelectric plants.

22 Data from the 2024 Electric Energy Statistical Yearbook, base year 2023. The figures refer to the installed capacity of each source. The aforementioned percentage includes the installed capacity of distributed generation through photovoltaic panels. Available at: <https://dashboard.epe.gov.br/apps/anuario-livro/#Cap%C3%ADtulo_2:_Panorama_Nacional>. Accessed: 3 Jul. 2023.

and part of the incentive for distributed generation. Over the last five years, according to the National Electric Energy Agency (Aneel),[23] the CDE has been increasing its cost to consumers, rising from US$ 3.83 billion in 2019 to US$ 6.99 billion in 2023, which is equivalent to a nominal increase of 82,5%.

The fact that the CDE—with its various subsidies, intended not only for the electricity sector—is increasing annually has, essentially, two consequences: firstly, the suppression of energy consumption, as consumers tend to reduce their use of the service, so as not to compromise their income; and, secondly, the perpetuation of energy poverty, since families cannot afford the tariff, as revealed by research by the Pólis Institute, which highlights that "*6 out of 10 families in class D/E and with a household income of up to one minimum wage declare that their household electricity bill is past due.*"[24]

Energy poverty is worsened by the increase in tariffs resulting from the privatization of electricity distributors. It is also affected by water scarcity, which, as a result of climate change, has become increasingly present in the country, a fact that leads to the charging of "tariff flags," which further penalize electricity consumers, since Brazil is highly dependent on hydroelectric plants.

23 Estimated expenditure values to be covered by CDE resources, as presented by Aneel in the Energy Development Account Report. Available at: <https://portalrelatorios.aneel.gov.br/luznatarifa/contadesenvolvimento>. Accessed: 1 Jul. 2024.
24 Energy justice – public opinion research. Available at: <https://polis.org.br/estudos/justica-energetica-pesquisa-de-opiniao-publica/>. Accessed: 18 Jul. 2024.

The penalization imposed by tariff flags on captive consumers

Tariff flags are charged to all captive consumers of electricity, except those located in isolated systems, while "free" consumers, present in the free contracting environment (or free market), are exempt.

This is a system that signals to consumers the real costs of generating electricity, through the flags presented below.

- Green – offers favorable conditions for energy generation. There is no increase in the tariff.
- Yellow – offers less favorable generation conditions. The tariff is subject to an increase of US$ 0.377 for each 100 kilowatt-hour (kWh) consumed.
- Red (level 1) – provides more costly generation conditions. The tariff increases by US$ 0.892 for each 100 kWh consumed.
- Red (level 2) – presents even more costly generation conditions. The tariff increases by US$ 1.575 for each 100 kWh consumed.

The flags are charged when, based on a signal from Aneel, there is a water shortage or the risk thereof. However, with climate change, the rainfall delay in river basins becomes increasingly continuous. In 2021, for example, Brazil experienced a severe water shortage, concentrated in the Southeast and Midwest, regions responsible for 70% of the country's hydroelectric storage, which required the creation, for the first time, of the water scarcity flag, when the severity is greater than the red flag level 2.

In 2024, the yellow flag was activated as of July, since the rainfall forecast for the year is below average (around 50%), in addition to there being, according to Aneel, an expected growth in energy consumption, precisely because winter has temperatures higher than the historical average for the period. Therefore, such a scenario of scarce rainfall and increased load allows thermoelectric plants, which have more expensive energy than hydroelectric plants, to operate more to meet demand.

The fact is that the practice that only captive consumers pay for the tariff flag subsidy should be reviewed, as the causes and challenges posed by climate events are collective and will be increasingly acute, extreme and frequent, which means that, in this case, the charging of flags will be increasingly present in consumer tariffs.

At the same time that subsidies for renewables have been increasing electricity prices, the direct budget forecast by the Federal Government is still not very ambitious, at least when compared to that allocated to fossil fuels. When analyzing the Multi-Year Plan 2024–2027, Inesc revealed[25] that the Energy Transition Program foresees a value of US$ 187.56 million over the period, which represents only 0.2% of the resources allocated to the Oil, Gas, Derivatives and Biofuels Program.

25 Fact Sheet Energy transition: Lack of resources in the federal budget: Evaluation of the PPA (Multi-year Plan) 2024–2027 and the PLOA (Annual Budget Bill) 2024 presented by the Lula administration. Available at: <https://inesc.org.br/wp-content/uploads/2023/09/nt-ploa_ppa-energia-inesc.pdf?x69356>. Accessed: 2 Jul. 2024.

It is important to note that federal budgetary resources are far below what is desired in relation to the advancement of the energy transition, especially with regard to actions and programs that contribute, for example, to the expansion of distributed generation for urban and rural populations, who demand the aforementioned technology to address energy poverty. The budget of the Ministry of Mines and Energy (MME), for example, had, until 2023, only one budgetary action: "Incentive for the Generation of Renewable Electricity", which could contribute to the expansion of renewable sources, as shown by an análise do Inesc.[26]

Even so, in 2023, US$ 105.06 million were authorized for the aforementioned action, and not a single cent was spent, which reveals the MME's lack of priority, at least with regard to the execution of initiatives and projects associated with the energy transition. In 2022, no resources were allocated for this action.

Furthermore, the oil and gas (O&G) industry makes little effort to advance the transition and mitigate the impacts that hydrocarbon exploration causes to the planet. According to the Energy Research Company (EPE), in the study The Role of the Oil and Natural Gas Sector in the Energy Transition, the investments of the O&G sector in technologies related to the energy transition reach research, development and innovation projects, without yet constituting executed projects, and did not exceed, in 2023, US$ 198 million.[27]

The figures gathered here show that the growth of incentives for the renewable electricity sector in Brazil has been funded by electricity consumers. In this sense, three issues involving incentives for renewables should guide the debate. (I) Are subsidies necessary? (II) Who should pay this bill? (III) Do the incentives granted to companies take into account the social rights of the communities impacted by the projects?

Although there is no intention to exhaustively answer such questions in this study, a few observations must be made. In the article "More subsidies for renewables, against the trend of tariff affordability,"[28] published by the Electric Sector Study Group (Gesel), it is shown that "*the subsidy should be withdrawn when production reaches a scale that reduces the final cost and makes them competitive. In other words, the nascent industry is the starting point, which, with subsidies, gains scale and moves on to the mature industry phase, no longer needing subsidies, as its product has already become competitive.*" In this sense, considering wind and solar photovoltaic sources, at least the Brazilian wind sector has been achieving a profitable balance of local development, with gains in scale, technological expertise and a consolidated industry.

According to the Brazilian Wind Energy Association (Abeeólica), the "rapid development of a local and efficient production chain achieved the manufacture in national territory of

26 The Federal Budget Balance, published by Inesc, contains a chapter on the budget allocated to distributed generation. Available at: <https://inesc.org.br/orcamentodauniao2023/>. Accessed: 6 Jul. 2023.

27 In the study prepared by EPE (The Role of the Oil and Natural Gas Sector in the Energy Transition), the value shown by Inesc is published in the executive summary and covers hydrogen, biofuels and others. Available at: <https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/o-papel-do-setor-de-petroleo-e-gas-natural-na-transicao-energetica>. Accessed: 2 Jul. 2024.

28 Available at: <https://gesel.ie.ufrj.br/publicacoes/page/3/>. Accessed: 2 Jul. 2024.

80% of a wind turbine",[29] not requiring a technology import policy. On the other hand, the photovoltaic industry still lacks import policies. According to the Brazilian Association of Photovoltaic Solar Energy (Absolar), the Brazilian industry supplies "less than 5% of what the market needs, with prices that are up to 50% more expensive than international products", as it produces only a part of the equipment used in a photovoltaic solar generation system, even though it is the second largest source in terms of installed capacity of electrical energy in Brazil, with 37.8 GW.[30]

In this sense, the Federal Government has been adopting policies to strengthen the photovoltaic industry in the country and reduce dependence on imports. The Executive Management Committee of the Foreign Trade Chamber approved a measure that establishes, starting in 2024, for the purchase of modules in the foreign market, an import tax of 10.8% by the Common External Tariff (TEC) of Mercosur, which benefits the national production of photovoltaic modules and wind turbines.[31]

At the same time, since 2023, the Support Program for Technological Development of the Semiconductor Industry (Padis), which stimulates the manufacture of components, parts and equipment used in the manufacture of photovoltaic panels, from plant implementation to the commercialization of the product, was strengthened with the extension and the addition of new items to the list of inputs covered by the program.[32]

As the renewable energy industry (wind and solar photovoltaic) gains scale and strength nationally, the cost of generating this energy becomes cheaper for contracting within regulated and free settings, although the subsidies intrinsic to the Energy Development Account still substantially impact the final value of the tariff. According to the Energy and Environment Institute (IEMA), wind and solar sources have been achieving the lowest average prices in recent auctions,[33] systematically remaining the two cheapest options among all types of sources marketed. However, the rapid growth of such sources, the technical difficulty of dispatching generation and the lack of demand from the electricity sector have been creating a bottleneck, at least for centralized sources, in which, according to Abeeólica, "there is an excess of energy in the domestic market, which inhibits the construction of new wind farms."

These are facts that show that the electricity sector no longer depends on strong public support, through subsidies, to leverage its energy transition, replacing thermoelectric

29 Data published by Abeeólica on its website. Available at: <https://abeeolica.org.br/energia-eolica/o-setor/#>. Accessed: 1 Jul. 2024.
30 National Energy Balance Summary Report (BEN) 2024, based on the year 2023. Available at: <https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/balanco-energetico-nacional-2024>. Accessed: 2 Jul. 2024.
31 "Tariff adjustment drives national production of solar panels and wind turbines." Article published by the Ministry of Development, Industry, Commerce and Services. Available at: <https://www.gov.br/mdic/pt-br/assuntos/noticias/2023/dezembro/recomposicao-tarifaria-estimula-producao-nacional-de-paineis-solares-e-aerogeradores>. Accessed: 2 Jul. 2024.
32 "Decree includes photovoltaic inputs in the Padis, which will be valid until 2026." Article published by the Ministry of Science, Technology and Innovation. Available at: <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/noticias/2023/03/decreto-inclui-insumos-fotovoltaicos-no-padis-que-valera-ate-2026>. Accessed: 2 Jul. 2024.
33 "Solar and wind power plants are contracted and at the best price in the last energy auction: Analysis of the 37th New Energy Auction A-5." Article published by the Energy and Environment Institute (IEMA). Available at: <https://energiaeambiente.org.br/usinas-solares-e-eolicas-sao-contratadas-e-pelo-melhor-preco-no-ultimo-leilao-de-energia-20221014>. Accessed: 1 Jul. 2024.

plants with renewable sources. Evidently, the historical factor facilitated this process, as the Brazilian electricity sector is made up of a hydrothermal system, with a large presence of hydroelectric plants compared to other countries. However, it is necessary to chart paths beyond this sector, as the energy transition is not limited to the electricity sector.

To this end, considering the medium and long-term, the country must think and understand how renewables can contribute beyond the electricity sector. Firstly, the country's enormous potential stands out: according to Abeeólica, there are 160 GW of power under analysis at Ibama for offshore wind projects, which could reach 700 GW for exploration. For comparison purposes, currently, with all its diversity of sources, Brazil's installed electricity generation capacity is 206 GW.

Furthermore, in addition to the electricity sector, the situation of the energy sectors that most demand fossil fuels in Brazil is analyzed. This is the case in the transport and industry sectors. According to the Energy Research Company (EPE):[34] (I) in the transportation sector, the demand for fossil fuels represents 76.5%, with the renewable portion coming from biodiesel and ethanol, which configures a scenario that tends to remain even with the increase in the blend of biodiesel in diesel oil or the investment in hybrid fleets; (II) in the industrial sector, where 34.6% of energy consumption is met by fossil sources (mineral coal, diesel oil, fuel oil, LPG, naphtha and kerosene), there are energy-intensive activities (steelmaking, cement, chemical, among others), for which there is a greater bottleneck and challenges for the introduction of renewables.

In such sectors, especially in energy-intensive activities, there is a window of opportunity, despite the limits and challenges for the inclusion of renewables to occur. Therefore, the energy to be produced by Brazil's great renewable potential—without failing to mention here the social dilemmas that these sources have been perpetuating for communities—could become a vector for the country's reindustrialization, which is why it will not be just another export commodity. To this end, it will be necessary to create mechanisms, including fiscal ones, through subsidies, to develop transport infrastructures for energy vectors (such as green hydrogen), restructure the industrial sector, promote a local content policy and train workers, among other purposes.

In short, renewable sources for generating electricity no longer require as many subsidies. However, on the demand side, efforts are still needed, including fiscal ones, so that we can advance towards energy transition throughout its entire chain.

Finally, it is important to recognize that Brazil's historical experience of granting incentives without compensation and social and environmental safeguards contributes to violating human rights. It is known that the country, despite robust environmental legislation, has chronic deficiencies in the implementation of social, environmental and socio-territorial policies, since environmental licensing is very fragile. This reality results in the fact that large-scale, high-impact projects have always led to rights violations, which is

34 National Energy Balance Summary Report (BEN) 2024, based on the year 2023. Available at: <https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/balanco-energetico-nacional-2024>. Accessed: 2 Jul. 2024.

no different today with large wind and photovoltaic projects. An example of this can be seen in the abusive contracts between companies and communities for land leasing, as shown by an analysis by Inesc.[35] Therefore, it is urgent to deepen and broaden the debate on safeguards for the renewable energy sector, so that it can be understood that increasingly greater incentives are granted to such sources, boosting the sector's profits, which leads to numerous violations of the rights of the communities affected by the projects. Although the energy is renewable, the production model reproduces the social and environmental problems of any enterprise in Brazil.

It is essential that public authorities act as the inducing and regulating agents of this sector, so that they can prevent the perpetuation of injustices for the sake of energy transition.

Recommendations

Coupling the guarantee of human rights, the eradication of energy poverty and environmental preservation is a challenge for the advancement towards an energy transition with socio-environmental justice. Subsidies for renewable sources should serve as instruments to corroborate such issues, and not serve as yet another mechanism that contributes to perpetuating and aggravating social problems for the sake of energy transition. Furthermore, these tax incentives should not further penalize the electricity consumer. In that regard, INESC, we recommend that the Brazilian government implement the measures presented below.

- Promote greater transparency to subsidies for renewable sources, particularly with regard to the methodology for calculating tariff charges.
- In calculation methodologies and in the disclosure of information, separate subsidies for fossil fuels from subsidies for renewables. To achieve this, Aneel needs to adjust its Subsidiometer methodology.
- Implement a public policy for energy transition with social justice that has public resources from oil revenues as one of its sources of financing. This way, the costs would no longer be borne by electricity consumers, through tariff charges.

35 Inesc published the study: "Legal aspects of the contractual relationship between companies and communities in the Brazilian Northeast for the generation of renewable energy," pointing out contracts for large projects on private properties that are advantageous to companies and detrimental to smallholders. Available at: <https://inesc.org.br/aspectos-juridicos-da-relacao-contratual-entre-empresas-e-comunidades-do-nordeste-brasileiro-para-a-geracao-de-energia-renovavel/>.

www.inesc.org.br

OTHER DOCUMENTS :

METHODOLOGICAL NOTE

EXECUTIVE SUMMARY