CHANGES IN THE ENERGY SECTOR IN NORTHEASTERN BRAZIL AND THEIR IMPACTS ON THE WORLD OF WORK

Executive summary

ineep

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Introduction

There is no ready-made solution for the climate crisis. There is, however, a dispute over which measures should be taken to transform the current economic and production model. Several sectors of society have criticized how some responses are merely the same recipe that created the current situation in the first place.

For years, the CUT Brasil has been working to defend the environment and the adoption of a sustainable development model based on the interests of the working class, while incorporating feminist and anti-racist struggles and the need for structural changes to the economic model.

A just transition is the trade union movement's main demand on facing climate change. It recognizes the need for a transition towards a low carbon economy – one that does not adversely affect the working class in the process.

To achieve this, the movement proposes a set of policies to guarantee that the transition to a low-emission production and consumption model offers decent living and working conditions, respect for human rights, and equal opportunities to all workers and communities involved, especially those in the Global South.

A just transition is not a new concept for unions. What is new is the fact that the term has reached a broader audience, and various political and corporate actors who play an important role at the global decision-making level are attempting to capture or use the term improperly by stripping it of the precepts of climate justice and the defense of the working class.

Through its National Environment Secretariat (SNMA for its acronym in Portuguese) and its International Relations Secretariat (SRI), the CUT has been developing studies and analyses with the goal of fostering the debate on a fair transition, and all the issues that intersect with it, which is all part of the process to build a development model centered on the working class.

In this publication, we present the findings of a study on the energy transition in northeastern Brazil and if or how it relates to a just energy transition. This study is a partnership between the CUT and the Instituto de Estudos Estratégicos de Petróleo, Gás Natural e Biocombustíveis Zé Eduardo Dutra (Ineep, or the Zé Eduardo Dutra Institute of Strategic Studies on Oil, Natural Gas, and Biofuels), with the support of the Just Transition Center of ITUC. The following report gives an overview of investments, job creation, and the quality of employment in the energy sector and presents recommendations from the trade union movement's point of view.

1 Changes to the energy model and the importance of a just transition

THE CAPITALIST DEVELOPMENT MODEL IS RESPONSIBLE FOR GLOBAL WARMING AND THE CLIMATE CRISIS

In partir this context, most countries, including Brazil, signed agreements and made commitments to address these challenges and guarantee the social and environmental sustainability of the planet. Migrating from a high emission, fossil-fuel based model to clean and renewable alternatives is urgent. The demand for the inclusion of workers' rights in this global agenda is a priority of trade union organizations all around the world, including here in Brazil. A just energy transition is urgently required.

The energy industry is one of the sectors affected the most by this need for change and which requires the most attention and effort to ensure a just transition. In recent years, a series of technical, economic, and geopolitical changes in this sector have had unique impacts on the dynamics of social and environmental development, both locally and globally. At the global and local level, the energy sector is undergoing a process of digitalization and transition to new energy sources. The 2015 Paris Agreement, of which Brazil is a signatory, is inserted in this process. Under this agreement, the majority of countries of the world have committed to reduce their greenhouse gas emissions from 2020 on and neutralize their emissions by 2050.

The technical report **Changes to the energy sector in northeastern Brazil and the impacts on the world of work**[1] seeks to analyze changes to the energy sector in the northeastern region of Brazil and the socioeconomic impacts on workers between 2015 and 2021, with a special focus on the state of Bahia.

1 Available at transicaojusta.cut.org.br

2 Transitions in the energy sector in northeastern Brazil

Brazil is the biggest electricity producer in Latin America, accounting for approximately 50% of the total energy supply in the region. The Brazilian electricity system is essentially hydropower-based, as it relies heavily on the country's hydroelectric power plants. Even though hydropower's overall share of the national power grid has decreased, it is still the main energy source, representing 59% of total installed capacity in 2021.

The energy transition is already underway; it is a complex process involving multiple actors from the public and private sectors. The speed and effectiveness of the changes produced by the energy transition are marked by uncertainties and are associated to the technological, social, and environmental particularities of each national and regional power grid. To mitigate these uncertainties, national governments have a key role in developing public policies and coordinating among multiple interests and civil society sectors in order to generate the social and economic conditions needed for a just energy transition.

Over the last two decades, the Brazilian state has sought to increase the renewable energy sources' contribution to the country's power grid by adopting sectoral public policies and using state-owned enterprises in the energy sector – primarily, Eletrobras and Petrobras – as vectors of change. However, Petrobras's business strategy was altered significantly in 2016, steering it in the opposite direction. Petrobras went from a company with a nation-wide structure present throughout the entire production chain to one restricted almost exclusively to the exploration and production of oil in the pre-salt polygon in the southeastern region of the country. In addition, Eletrobras was privatized in 2022. Under this new logic, disinvestment in the northeast reduced Petrobras's weight in local economies, in terms of both income and employment and the volume of investments and operational capacity in the region.

Yet, even in this scenario, because of its great potential, the northeastern region has attracted projects and investments in the wind and solar/photovoltaic energy sector. This means that the region is in a position to lead the debate and promote public policies on a just energy transition. Moreover, the existence of a consortium of state governments in the Northeast that are concerned with building more sustainable energy alternatives favors the creation of forums and initiatives to mitigate the impacts of this energy transition on the workforce.

Although it is difficult to find data that fully converge on the number of jobs generated by the renewable energy sector in Brazil in recent years, several studies confirm that there has been an increase in jobs in the wind and solar power sectors, especially in the northeastern region. The 2020 annual report of the International Renewable Energy Agency (IRENA) estimated that the Brazilian renewable energy sector (biodiesel, solar, and wind) generated in 2019 alone close to 351,000 direct and indirect jobs. Of this total, the biodiesel, solar, and wind segments created 264,000, 43,000, and 44,000 positions, respectively. Ineep indicates that new investments made between 2013 and 2020 in these sectors in the northeastern region led to the creation of a total of 222,000 new jobs, both in Brazil and abroad.

Government incentives for renewable energy development led to not only significant growth in employment, but also a substantial increase in the productive capacity of these two energy sources in Brazil. Between 2010 and 2020, the installed capacity of centralized power generation from wind and solar/photovoltaic sources rose from 927 megawatt (MW) to 17,131 MW and from 1 MW to 3,285 MW, respectively. During this same period, the country's biodiesel production capacity jumped from 3.4 million m^3 to 6.4 million m^3.

Currently, the northeastern region produces 10.7% of all wind power generated in Brazil and this number is expected to climb to 13.2% by late 2025, according to the Operador Nacional do Sistema Elétrico (ONS, National Electricity System Operator)[2]. When both wind and solar power are considered, the northeastern region accounts for 45% of all energy generated in the country from these sources – a level reached in 2020, which is when the region went from an importer to an exporter of electricity, according to a report published by the Ministry of Mining and Energy (MME)[2] in February 2022. Also according to the MME, over the last decade, the energy transition has accelerated, and hydropower has lost part of its share in power generation to other sources, namely wind, solar, and bioenergy. This can be seen, for instance, in the southeast and southern regions, which were responsible for almost 70% of hydroelectric power in Brazil in the 2000s, but now account for only 48%.

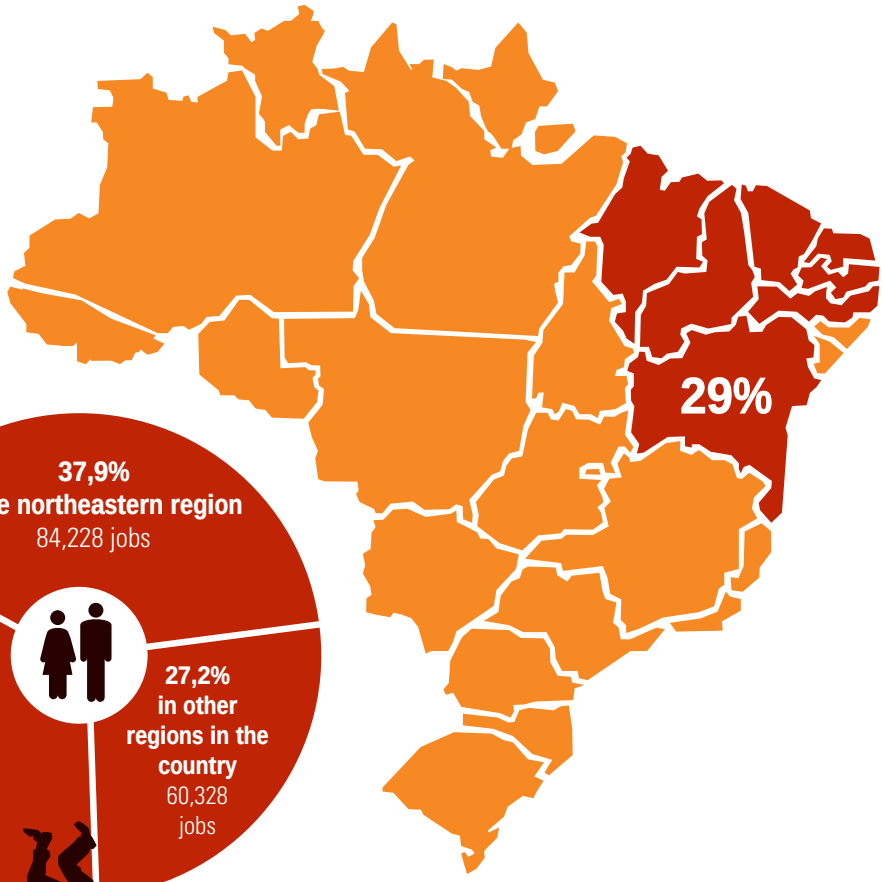
In this scenario, Bahia deserves special attention. Today the energy grid in Bahia is mostly renewable, about 88%, and the state is the largest national generator of energy through solar and wind sources. In 2021, hydroelectric plants produced 41% of the electricity generated in the state, followed by wind power (with 38%) and solar/photovoltaic power (9.3%).

Over the next few years, the Bahia Energy Plan aims to attract investment in the wind sector and to offer incentives for new renewable energy products by building ties between the public and private sector. The wind and solar park is projected to grow at Bahia. It is estimated, as of now, contracts for 176 wind and 130 solar/photovoltaic farms, which will require approximately R$47 billion in new investments.

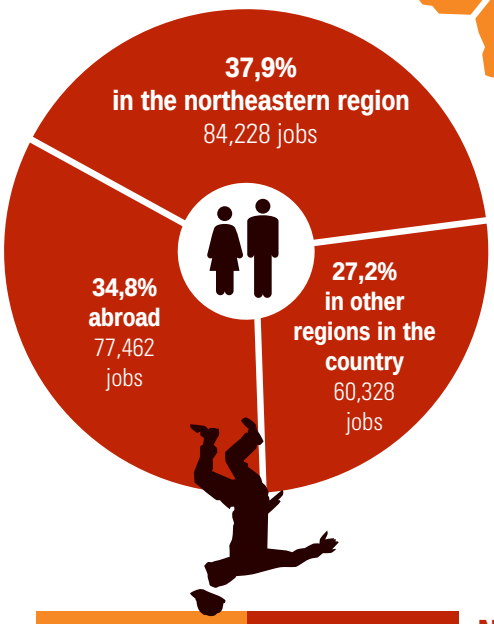
2 Source: http://www.ons.org.br/Paginas/Noticias/20210712-nordeste-registra-novo-recorde-eolica-atendendo-mais-de-100-porcento-da-demanda.aspx

3 Source: https://www.gov.br/mme/pt-br/assuntos/secretarias/spe/publicacoes/indicadores-de-60-anos-do-ministerio-de-minas-e-energia/oferta-e-demanda-regional-de-energia-eletrica

The Northeast (NE) was home to 86% of installed capacity in wind and solar power*. Bahia alone accounted for 29%.



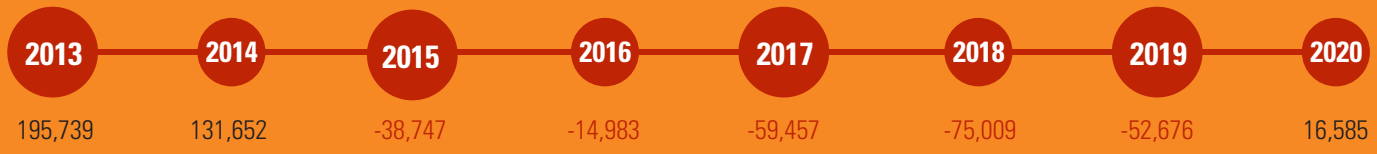
BETWEEN 2013 AND 2020, INVESTMENTS IN THE RENEWABLE ENERGY SECTOR (SOLAR, WIND, AND BIODIESEL) IN THE NE GENERATED A TOTAL OF **NEARLY 222,000 JOBS IN BRAZIL AND ABROAD.**



HOWEVER, BETWEEN 2017 AND 2020, **OVER 51,000 JOBS WERE LOST.**

*ANEEL Auction/Public Service and Independent Producers
Source: Instituto de Estudos Estratégicos de Petróleo, Gás Natural e Biocombustíveis (Ineep)

BALANCE OF JOBS CREATED OR LOST PER YEAR (2013-2020)



BETWEEN 2017 AND 2020, JOB CUTS OUTWEIGHED JOB CREATION IN BRAZIL. THIS WAS MAINLY DUE TO THE REDUCTION OF INVESTMENTS IN WIND POWER FROM 2015 ON, WHICH AFFECTED JOB CREATION AND INCOME GENERATION SIGNIFICANTLY IN THE NE REGION.

3 The impacts of renewable energy investments on employment and income in northeastern Brazil

Investment is a key variable in the economic dynamics of any sector. This is because it is capable of first fueling demand for products and services in a given production chain and then, driving the expansion of the productive capacity of this sector, thus stimulating job and income generation. Over the last decade, the northeastern region has been one of the main destinations of new investments in renewable energy in Brazil and responsible for most of the growth of the installed capacity in wind and solar power generation in the country. Between 2010 and 2020, the aggregated installed capacity of wind and solar power generation in the Northeast grew by 2,294%, jumping from 724 megawatts (MW) to 17,329 MW. At the national level, capacity expanded by 2,098%, going from 929 MW in 2010 to 20,418 MW in 2020.

Between 2013 and 2020, investments in renewable energy (wind, solar, and biodiesel) in the northeastern region followed a rather particular course and had significant impacts on job and income generation in other regions of the country and abroad.

One study found that during the 2013-2020 period, new investments in renewable energy in Brazil led to the creation of approximately 222,000 new jobs in the solar, wind, and biodiesel sectors in the country and abroad. Of this total, close to 84,200 new positions were generated in the Northeast, another 60,300 in other regions of Brazil, and, finally, around 77,400 new jobs in other countries. The study observed two different phases in this process. The first, between 2013 and 2016, was characterized by significant job creation in the renewable energy sectors, with close to 273,600 new jobs. The second, between 2017 and 2020, partially cancelled out the positive results from the previous phase, since approximately 51,600 jobs were lost in the renewable sectors. Not even the strong growth in investments and job creation in the solar power sector from 2016 on was enough to reverse the negative impacts of the decrease in investments in the wind sector between 2015 and 2020.

The negative balance between job creation and job cuts in these sectors between 2017 and 2020 is primarily due to the slowdown in investments in wind energy. The northeastern and national wind sector was essentially affected by four factors

- THE CANCELLATION OF THE SECOND ENERGY RESERVES AUCTION SCHEDULED FOR DECEMBER 2016;
- THE REDUCTION IN BNDES FINANCIAL INCENTIVES FOR THE WIND SECTOR;
- THE LACK OF GOVERNMENT PLANNING FOR THE RENEWABLE ENERGY SECTOR
- THE FALL IN THE COST OF INSTALLING NEW SOLAR/PHOTOVOLTAIC ENERGY UNITS, WHICH MADE THIS SEGMENT MORE ATTRACTIVE TO NEW INVESTMENTS THAN THE WIND POWER SEGMENT.

Many countries have adopted ways to increase renewable energy sources' contribution to the electricity sector as a strategy for reducing their emissions and, consequently, curbing global warming. The study shows that the energy transition underway and the consolidation of a new energy paradigm are a slow process marked by disputes and uncertainties related to

technology and financing. Thus, the state has an important role in mitigating these uncertainties and coordinating with civil society actors in the process of elaborating and planning an energy policy capable of addressing the challenges of the energy transition and ensuring that it is just – that is, able to increase the generation of clean energy and decent jobs at the local and national level. An integrated, national energy policy is essential to upgrade the Brazilian and northeastern energy sector and expand renewable energy sources' share in our power grid.

Investments in renewable energy sources in Brazil

The impact of investments in renewable energies (wind, solar, and biodiesel) on job creation in the NE and in Brazil

2013

In the 2013-2014 biennium, there was a significant increase in investments in wind power in the NE region and in Brazil. During this period, close to 326,000 jobs were generated in the wind sector in Brazil and abroad, of which around 144,000 were in the NE region, 103,000 in other parts of the country, and close to 78,000 abroad.

2015

Starting in 2015, the decrease observed in the volume of investments in the wind power sector provoked job losses. This downward trend in investment and employment continued until 2020. In the solar power segment, however, in 2015, investments resumed and grew by R$92 million that year alone. This upward trend continued until 2020, marked by a record R$7.8 billion in new investments in 2017 and the creation of over 90,000 jobs.

2016

Even though no new investments in the biodiesel sector were reported in 2016, during the period analyzed, from 2016 to 2020, over 1,500 new jobs were created, of which 55.6% were in the northeastern region, and investments totaling R$62 million were mobilized for the sector.

2017

The year 2017 had the highest volume of new investments in the solar/photovoltaic segment, which totaled approximately R$7.8 billion. That year, over 90,000 new jobs were created in this sector, of which 35,500 were in the northeastern region, 16,100 in other parts of the country, and 38,400 jobs in other countries (abroad).

2018

In 2018, investments in the wind sector took a major downturn. Between 2018 and 2020, the balance was negative, as investments fell by around R$13.9 billion. This resulted in the loss of nearly 170,000 jobs in Brazil and abroad. In the Northeast alone, more than 82,000 jobs were eliminated only in the wind power sector.

2020

In 2020, the year marked by the COVID-19 pandemic, both the wind and biodiesel sectors reported a sharp decrease in the volume of new investments and the number of jobs created. There was good news, though, in the solar/photovoltaic sector, where there was a R$7.2 billion-increase in investments, and 88,000 new jobs were created in 2020 alone.

SOLAR POWER

FROM 2013 TO 2020

Investment (Brazil): balance of R$13.510 billion

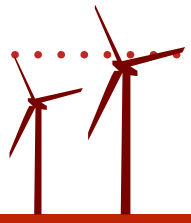
NORTHEAST: R$5.382 BILLION (40

Investment in construction: R$1.237 billion

Investment in the manufacture of electrical machinery and equipment: R$4.1 billion

A SIGNIFICANT PORTION OF INVESTMENTS IN THE SOLAR SECTOR IN THE NORTHEAST "LEAKED" TO OTHER REGIONS OF THE COUNTRY AND ABROAD IN THE FORM OF IMPORTS, GENERATING EMPLOYMENT AND INCOME IN OTHER TERRITORIES, ESPECIALLY IN FOREIGN COUNTRIES (43%)

WIND POWER



FROM 2013 TO 2020

Investment (Brazil)*: balance of R$1.335 billion

NORTHEAST: R$1.925 BILLION

Investment in construction: R$385 billion

Investment in the manufacture of electrical machinery and equipment: R$1.540 billion

THE POSITIVE BALANCE OF INVESTMENT AND JOB CREATION REFLECTS TWO DIFFERENT TRENDS: ON ONE HAND, STRONG GROWTH IN THE WIND SECTOR IN THE 2013-2014 BIENNIUM AND, ON THE OTHER, THE CONTRACTION IN THE SECTOR IN THE POST-2015 PERIOD.

*The investment balance for BR in this segment was lower than the one in the NE region

BIODIESEL

FROM 2016 TO 2020

Investment (Brazil): Not available

NORTHEAST: R$61.9 MILLION

Investment in construction: R$21 million

Investment in the manufacture of electrical machinery and equipment: R$8 million

A NEW INVESTMENT CYCLE IS NEEDED TO RELAUNCH THE BRAZILIAN BIODIESEL SECTOR. PETROBRAS BIO COMBUSTÍVEIS (PBIO) IS AN ESSENTIAL TOOL FOR STIMULATING GROWTH IN THIS SECTOR.

Privatization in Bahia and its impacts on the national energy sector

Bahia has a history of producing and exploiting fossil fuels and, its current power grid is mostly run on energy from renewable sources (close to 88%). In 2021, hydroelectric plants accounted for 41% of the electricity generated in the state, followed by wind, with 38%, and solar/photovoltaic, with 9.3%. Thermal power plants were responsible for nearly 12%. The state's experience in the biofuels segment merits attention, especially biodiesel. The transformation of its energy grid, and the privatization of large companies, has directly affected job creation and retention in the state and in the entire northeastern region.

The northeastern region play an important role in natural gas and hydroelectric power generation in the country. However, the contribution of the region to natural gas-based energy production fell in comparison to 2019 and 2020, as did the use of oil. This is largely due to Petrobras's withdrawal from the region and the consequent decrease in oil and natural gas production in the Northeast.

Approximately 80% of oil and natural gas production in Bahia is concentrated in the hands of Petrobras, which has a vast production, supply, refining, and distribution structure. With natural gas production in decline, the state currently imports natural gas to meet local demand. With the strategic change in Petrobras's operations in 2016, the state enterprise is moving to privatize several of its assets in the northeastern region. This strategy caused the state enterprise to downsize its operations in other energy-related areas and concentrate on crude oil production.

The sale of Petrobras's assets in Bahia reduced its weight in the local economy, which had negative impacts on both income and employment. Between 2010 and 2020, Bahia's oil and gas sector reported a 38%. In the northeast region and in Brazil, the number of jobs in the sector fell by 46.5% and 16.7%, respectively.

The impact of this change in Petrobras's strategy is also reflected in the growing number of small and medium-sized operators in the sector in recent years. Despite the possibilities they offer in the area of job creation, raises new negotiating challenges for union representatives, especially in relation to the goal of preserving the quality and quantity of the jobs that used to be offered by Petrobras.

In Bahia, the privatization of Eletrobras threatens the state hydroelectric power system, one of the pillars of the Brazilian energy system. The Companhia Hidrelétrica de São Francisco (Chesf) played a decisive role in the installation of the basic infrastructure for electricity in the northeast and, in the early 2000s, it expanded its operations. Chesf currently owns 20% of Eletrobras's installed capacity – a complex of 12 hydroelectric dams with the capacity to generate nearly 10 GW of energy and owns 38% of Eletrobras's transmission lines.

The privatization of Eletrobras, and consequently of Chesf, may directly affect the work in this sector by opening the door to precarious employment contracts, an increase in occupational hazards, and salary reductions, among other problems. Privatization also means that the state will lose control over an energy asset and a public policy tool that is essential for guaranteeing the national supply and energy sovereignty. This runs counter to building a just, participatory, public energy transition process focused on renewable energy and offering services and tariffs that are accessible.

The impacts of the cuts in investments in PBio in the northeastern region

Brazil is the second largest biofuel producer in the world, with an expected growth of 20% by the end of this decade. This leading position is due to Brazil's pioneering work on technology for the production of ethanol (currently 30% of world production) and biodiesel (third in the world). In this context, Petrobras, through its subsidiary Petrobras Biocombustível (PBio), has a fundamental role to play in the consolidation of Brazil's position in the biofuels market. What we see, however, are cutbacks in investments in this line of national energy production, which affects the company's image and the dynamics of the economies of the cities where its plants are being dismantled.

The creation of PBio in 2008, which is dedicated to biofuel production, was one of Petrobras's first interventions in the renewable energy market. PBio is a leading biodiesel producer in the country.

PBio's innovative nature goes beyond the energy sector. It contributes decisively to attracting investments and to local and regional socioeconomic development in the states in which it operates. Aligned with the decarbonization and energy transition process, the company represented incentives for family farming, reducing pressure on the agricultural frontiers and from soy monocropping, and making it feasible for farmers to produce both biofuels and food. In recent years, it also invested in research and development projects in the biofuels segment.

Despite its innovative character, PBio has suffered directly from the disinvestment process that Petrobras has been undergoing in recent years. In 2016, PBio's plant in Quixadá (CE) was shut down, which had impacts on the municipality's economy – ranging from an increase in unemployment among factory workers to the departure of companies that offered services.

In 2017, Petrobras launched the disinvestment process with the Petrobras Strategic Plan and 2017-2021 Business and Management Plan. The plan contained measures for optimizing its business portfolio, including its full withdrawal from biofuels production. This marked the beginning of the state enterprise's move to exit the biofuel production, LPG (cooking gas) distribution, and fertilizer production sectors and reduce its shares in the petrochemical sector.

In July 2020, Petrobras announced the sale of PBio, including the three biodiesel plants. However, the process has been suspended up until now (2022) due to legal proceedings.

The possible sale of PBio contradicts the Petrobras's sustainability reports, which identify projects and investments in low-carbon technologies as a priority. And it will bring losses to Petrobras itself, since the company will eliminate an entire team of specialized workers who possess strategic knowledge on the development of new technologies. Moreover, the PBio disinvestment process causes severe impacts on regional and national development and interrupts both the construction of development tools and the transition towards a cleaner national energy grid. Finally, it reduces Petrobras's profile to one of a company specialized in oil exploration and production.

4 Recommendations for trade union action

Based on the data above, we can see that an energy transition is underway, but it is not necessarily a just one. Given the trends in the sector, which indicate that the transformation process will continue, we present below recommendations in various areas to ensure that this process moves forward on the path to a just and sustainable energy model. In view of this scenario, the CUT's recommendations for action are:

ON THE ELABORATION OF PUBLIC POLICIES:

01 Promote the active participation of trade unions in debates about public policies for the energy transition in the country to guarantee public planning, financing, the promotion of decent work, and universal and democratic access to energy.

02 Demand that just energy transition strategies and policies be built and implemented at the local and national level through a tripartite social dialogue.

03 Promote the state as a central actor in the energy policy and the construction of a transition model for the sector. The union movement needs to establish an active dialogue for the elaboration of a national content policy and to guarantee workers' rights.

04 Demand that the public sector resume investments – for example, through the Brazilian Development Bank (BNDES) – with local content requirements.

05 Resume the discussion on the energy policy for energy security, incorporating the issue of the energy transition and, as a fundamental element, the debate about renewable energies.

06 Rebuild and strengthen social security and social protection policies and restore legal frameworks that protect workers' rights.

FOR THE TRADE UNION MOVEMENT:

07 Elaborate action plans for a just energy transition in Brazil, investing in training and organizing workers and the promotion of decent work.

08 The active participation of trade unions, social movements, and civil society organizations in debates is essential for building actions aimed at democratizing access to energy and fighting against privatizations in strategic sectors for national sovereignty, such as energy, gas, oil, etc.

09 Trade unions should listen carefully to and take up the demands of workers from the renewable energies sector and create strategies to build closer ties with this group of workers who are exposed to precarious working conditions.

10 Develop proposals for collective agreements that dialogue with demands for a just transition.

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