Gender equality, employment and green transition: policies for inclusive development

Brazil in the «Fair transition energy and green job creation» study

COUNTRY

BRAZIL

The energy transition in Brazil is underway. In 2024 it submitted its Second Determined Contribution at the National Level (NDC), reaffirming its commitment to emission reduction targets. The country has the cleanest electricity generation among G20 members and has experienced a significant increase in wind and solar generation in recent years. In this context, significant progress has been made in mainstreaming a gender perspective into energy and employment policies. Brazil's Multiannual Plan (PPA) 2024-2027 incorporates a Women's Transversal Agenda, functioning as a planning instrument with a gender focus. In addition, the Green Transformation Plan has been launched, which sets targets for reducing gender inequalities through the creation of green jobs.

However, challenges remain in the full inclusion of women in the energy sector. According to data from the International Energy Agency, women represent only 22% of the workforce in the energy sector, and their participation in leadership and decision-making positions is declining. To address this gap, various initiatives are emerging at the national level, such as the National Pact for More Women in Energy and Mining which seeks to encourage training and promote gender equity in leadership and management positions. Organizations such as the Brazilian Network of Women in Solar Energy (MESol) are actively working to increase female participation in solar energy by providing support, training and visibility for women in this field.

1. Public Policy Review

1.1. National policies for a fair and energy transition:

* **National Energy Transition Policy (PNTE):** Established in 2024, it directs the transformation of the energy matrix towards low-carbon sources. It has an explicit focus on a just and inclusive transition, with principles of equity, social participation, gender and combating poverty.

* **National Energy Plan 2050:** is a long-term strategy designed to guide the expansion of the energy sector towards a cleaner, safer and more sustainable matrix. Approved in 2024 by the National Energy Policy Council (CNPE), the 2050 National Energy Plan sets clear goals for the country's energy transition, including the expansion of renewable energies, improving energy efficiency and reducing emissions.

* **Second Determined Contribution at National Level (NDC):** it is part of the objective to achieve climate neutrality by 2050 and is supported by the Climate Plan, which includes sectoral mitigation and adaptation plans. The implementation of this NDC seeks to promote a sustainable development model that reconciles economic prosperity with climate justice, generating employment and technological innovation.

* **Low Carbon Hydrogen Act:** passed in 2024, provides a comprehensive regulatory framework for the development, production and use of hydrogen as a clean energy source, contemplating measures to ensure that the

benefits of hydrogen development reach vulnerable communities, contributing to a just energy transition.

* National Plan for Adaptation to Climate Change: formalized in 2016, establishes strategies to reduce climate risks and increase resilience by integrating adaptation measures with a focus on vulnerable groups, including indigenous populations, quilombolas and riverbanks, based on gender and race sensitive criteria.

1.2. Planning tools and instruments

* Brazil's Ecological Transformation Plan: government strategy launched in 2024, which seeks to reorient economic development towards a green, inclusive and low-carbon economy. The plan prioritizes the promotion of renewable energy, energy efficiency and industrial decarbonization and sets targets to reduce gender, race and regional inequalities through the creation of green jobs and equitable distribution of wealth.

* Energy Expansion Plan 2034: is a key tool of the Government of Brazil to plan the growth of the energy sector. Highlights the importance of a fair and inclusive transition, with attention to energy poverty and territorial and social equity.

* **Plataforma de Inversiones en Transformación Climática y Ecológica (BIP):** esta iniciativa del gobierno, lanzada en 2024, reúne proyectos orientados al desarrollo y la transición climática del país, creando un ecosistema de inversiones para acelerar la descarbonización de la economía y fomentar la reindustrialización verde.

* National Green Growth Program: launched in 2021, this program offers financing and subsidies for sustainable projects, prioritizing the generation of green jobs in areas such as forest conservation, sanitation, regenerative agriculture and clean energy.

* Multiannual Plan (PPA) 2024-2027: defines goals, guidelines and programs to promote sustainable and inclusive development in Brazil. Aims to reduce structural inequalities through intersectional policies and gender-sensitive targets.

* **National Pact for More Women in Energy and Mining**: signed in 2024 by the Ministry of Mines and Energy (MME) and the Ministry of Women of Brazil. This agreement aims to promote gender equity in the energy and mineral sectors, focusing on increasing women's participation in leadership and management positions, as well as promoting technical and managerial training for women in these areas.

1.3. Inclusion of the gender dimension in public policies

Brazil's Multiannual Plan (PPA) 2024-2027 for the first time explicitly incorporates a Women's Transversal Agenda, which functions as a planning tool with a gender focus. The APP highlights the need for a just energy transition, including women's active participation in strategic sectors such as energy, technology and infrastructure.

The National Policy Plan for Women (PNPM) is the main state strategy to promote gender equity in Brazil. It was developed from the 1st National Policy Conference for Women in 2004 and has been updated at subsequent conferences. The **National Conferences on Public Policies for Women in Brazil** are key events for the construction and evaluation of public policies aimed at women in the country. These conferences promote the active participation of women in policy-making and seek to ensure their rights in various areas. The

5th National Women's Policy Conference will take place in September 2025.

The National Plan for Equal Pay and Work for Women and Men 2024-2027, launched in September 2024 by the Brazilian government, is a key initiative to address gender inequalities in the workplace.

2. Analysis of opportunities and potential

2.1. Identification of policies that favor the integration of women in green jobs

The energy transition represents a key opportunity to promote a sustainable development model that, in addition to contributing to the fight against climate change, can generate green jobs and transform Brazil's economic structure. However, the full inclusion of women in this process remains a challenge. Despite progress in job creation in sectors such as renewable energy and energy efficiency, women continue to be under-represented in these fields, especially at decision-making levels and in technical areas.

Policies implemented in Brazil have begun to address these inequalities, seeking to create more equitable conditions for women's participation in the energy transition.

- ▸ **National Green Growth Program (2021)**
- ▸ **Multiannual Plan (PPA) 2024-2027**
- ▸ **Brazil's Ecological Transformation Plan**

2.2. Recommendations to improve the inclusion of gender in public policies

Brazil has made progress in integrating gender principles into its energy transition and promoting green jobs. To ensure that energy matrix development strategies incorporate gender equality measures at all stages, from planning to implementation, it is necessary to include gender indicators in their objectives and the allocation of resources for specific programmes aimed at women. In this context, one of the key areas for progress towards greater equity is the active participation of women in decision-making spaces:

To ensure that women are actively involved in the formulation of energy and climate policies, it is recommended that specific leadership spaces for women be created within government and private institutions in the energy sector.

Practices to highlight

BloombergNEF's Brazil Transition Factbook 2025 highlights the crucial role of Brazil in the global energy transition, highlighting both its advances and remaining challenges, serving as a key tool to guide public policies that support both decarbonization and social inclusion, particularly of women in the energy sector.
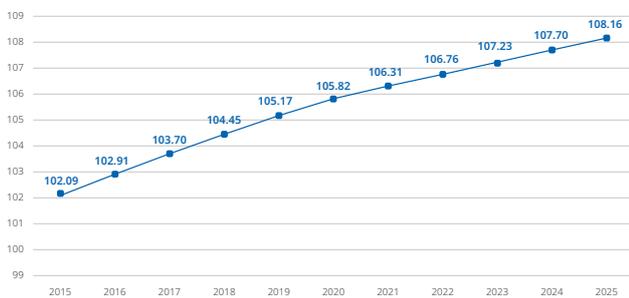
3. Statistical data

A. Demographic data

Population distribution statistics

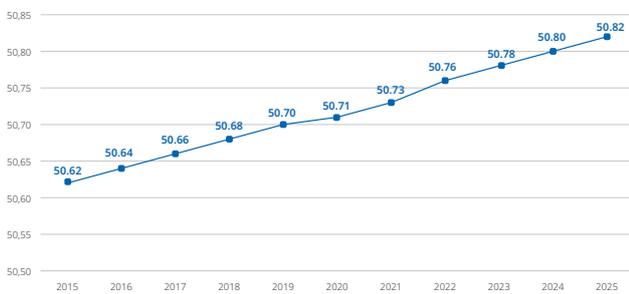#### Number of woman, millions

Percentage of woman

Age distribution statistics

Age distribution of the female population

Population distribution statistics by age

Age distribution by sex, percentage
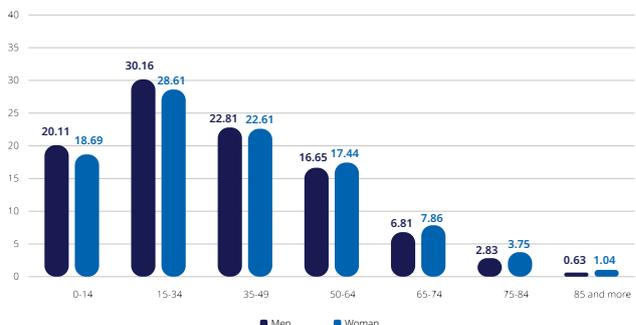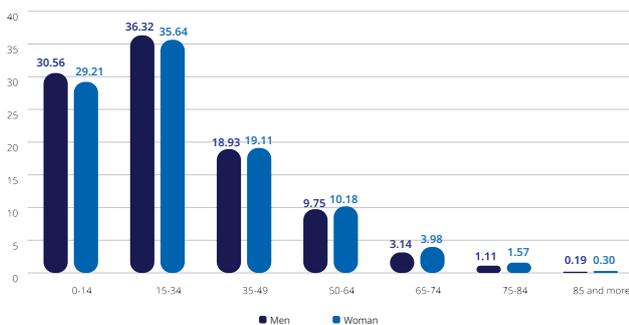
Ages	Women			Men		
	2000	2025	Difference in percentage points	2000	2025	Difference in percentage points
0-14	29.21	18.69	-10.52	30.56	20.11	-10.45
15-34	35.64	28.61	-7.03	36.32	30.16	-6.16
35-49	19.11	22.61	3.5	18.93	22.81	3.88
50-64	10.18	17.44	7.26	9.75	16.65	6.90
65-74	3.98	7.86	3.88	3.14	6.81	3.67
75-84	1.57	3.75	2.18	1.11	2.83	1.72
85 and more	0.3	1.04	0.74	0.19	0.63	0.44

Interpretation of demographic data

Distribution of the population by age and sex (2000 vs. 2025): Brazil is undergoing a demographic transformation marked by an ageing population. In 2000, 29.2% of women and 30.6% of men were in the 0-14 age group. By 2025, these proportions will decrease to 18.7% and 20.1% respectively, representing a fall of more than 10 percentage points in both cases.

At the same time, there are substantial increases in older age groups. For example, the segment of women between 50 and 64 years will grow from 10.2% to 17.4%, while men will grow from 9.7% to 16.7%. The increase is also visible in groups aged 65 and over, which will have significant implications for health, pension and long-term care systems.

Evolution of the percentage of women in the total population (2015-2025): the proportion of women in the Brazilian population shows a slight but sustained upward trend, rising from 50.62% in 2015 to 50.82% projected for 2025. This growth reflects both increased female longevity and a slight feminization of the older cohorts.
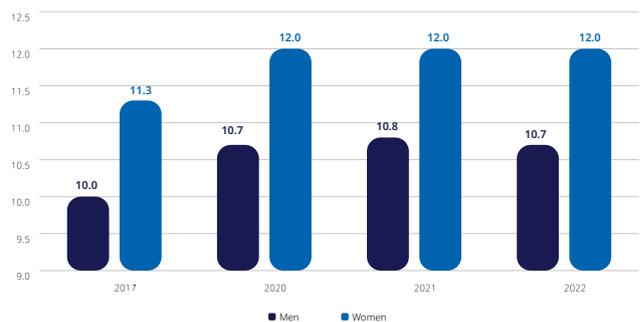
B. Education level data

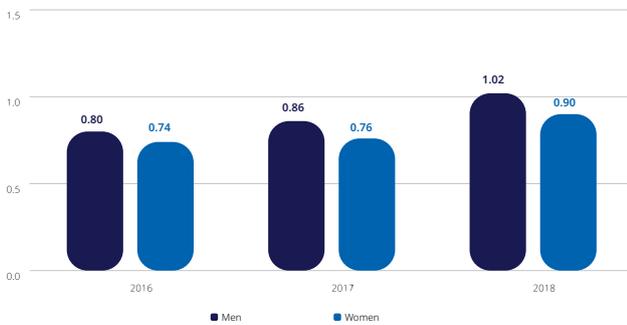### Educational attainment statistics

Percentage of bacherol, population 25+
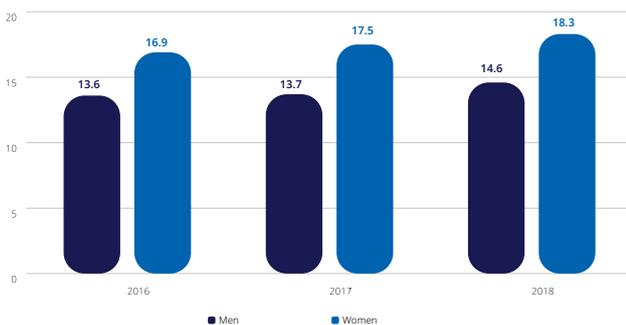
Statistics on years of study
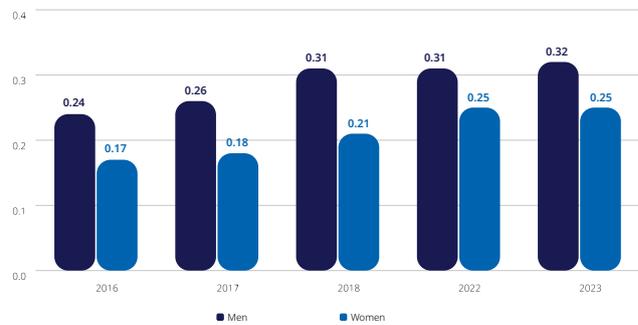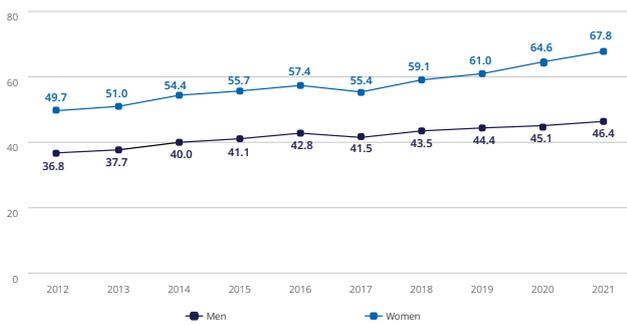
Years of education

Percentage of master, population 25+

Percentage of PhD, population 25+

Gross tertiary enroment rate, percentage

Interpretation of training data

Access to tertiary education: The gross enrolment rate in tertiary education has increased steadily for both sexes, although with a substantial advantage for women. In 2021, women achieved an enrolment rate of 67.8%, compared to 46.4% for men, showing a gap of more than 20 percentage points.

Level of education achieved (bachelor's, master's, doctorate): women have outperformed men in obtaining bachelor's degrees since at least 2016. This trend is also mirrored in master's degrees, with increasing participation of women in postgraduate programmes. As far as doctorates (PhD) are concerned, the gap is narrowed, but men still have a slight advantage in some years.

Average years of formal education: the average educational gap between men and women has been considerably reduced. Since 2020, women have reached similar and even higher levels, with an average of 12 years of schooling in 2022, compared to 10.8 years for men. This reflects substantial progress in equity of access to formal education.

C. Employment data

Employment statistics

Economic participation rate, percentage

Economic participation rate data:

Year	Occupational participation Men	Occupational participation Women
2015	60.0	40.0
2016	59.4	40.6
2017	59.5	40.5
2018	59.4	40.6
2019	59.4	40.6
2020	59.3	40.7
2021	59.2	40.8
2022	59.0	41.0
2023	58.8	41.2
2024	58.6	41.4
2025	58.4	41.6

Unemployment rate, percentage

Year	Men	Woman
2013	5.8	9.1
2014	5.8	8.5
2015	7.3	10.4
2016	10.1	13.7
2017	11.2	14.9
2018	10.8	14.5
2019	10.1	14.4
2020	11.8	16.3
2021	10.7	16.5
2022	7.5	11.5
2023	6.6	9.7

Income Statistics

Average income, in multiples of the poverty line

Year	Men	Woman
2014	6.2	4.5
2015	5.8	4.3
2016	5.8	4.4
2017	5.8	4.4
2018	5.9	4.6
2019	5.9	4.5
2020	6.0	4.6
2021	5.5	4.3
2022	5.4	4.2
2023	5.8	4.5
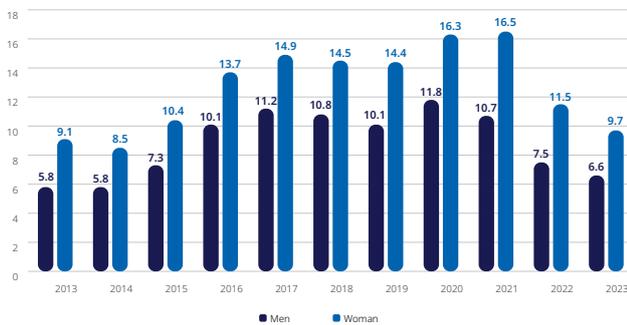
Percentage of adult women dedicated exclusively to unpaid work

Year	Urban	Rural
2016	15.8	26.9
2017	14.9	26.0
2018	14.2	25.7
2019	13.3	24.6
2020	13.7	24.2
2021	13.6	24.7
2022	13.3	25.3
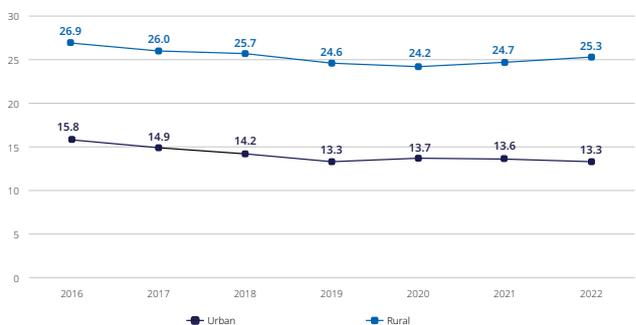
Interpretation of employment data

Economic participation rate: despite educational advances, the participation of women in the Brazilian labor market remains lower. By 2025, it is estimated that 41.6% of women will be economically active compared to 58.4% of men. This gap of almost 17 percentage points reflects persistent structural barriers to female labour market integration.

Unpaid work: The majority of unpaid work continues to fall on women. In 2021, approximately 25.3% of adult women reported engaging exclusively in unpaid domestic and care work, while among men this practice is marginal.

Unemployment rate: unemployment rates are consistently higher among women. In 2023, the female rate was 16.5%, compared to 10.7% of men. This difference is amplified in contexts of economic crises and highlights the structural labor vulnerability of women.

Income: in terms of average income, women remain below men. In 2023, the income of men was above 5.8 times the poverty line while that of women was around 4.5, reflecting a persistent gap even among people with similar educational levels.
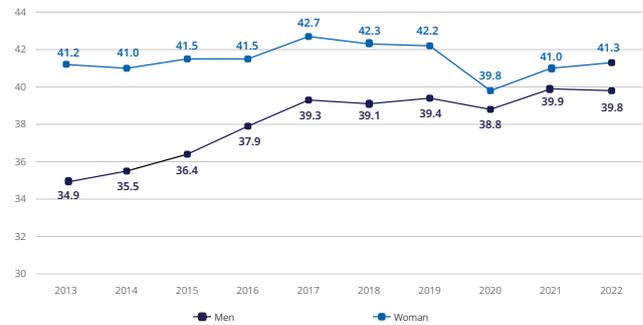
D. Poverty data

Statistics on poverty and extreme poverty
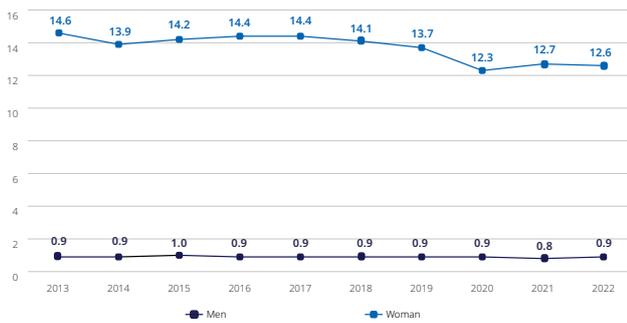
Poverty gap coefficient, percentage

Legend: Poverty female boss — Extreme poverty male boss — Extreme poverty female boss — Poverty male boss
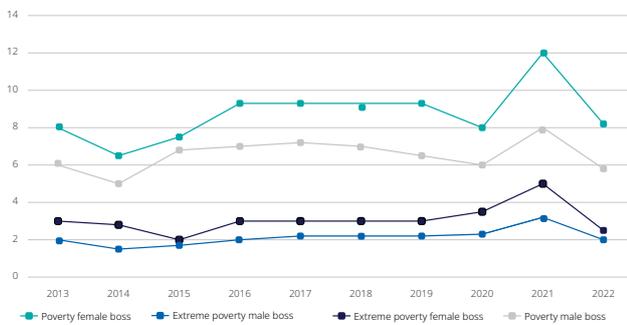
Employment and vulnerability statistics

Total employed in low-productivity jobs, percentage of urban employed population

Legend: Men — Woman

Employment in domestic work, percentage

Legend: Men — Woman

Interpretation of poverty and vulnerability data

Low productivity jobs: women are over-represented in low productivity jobs. In 2022, 41.3% of employed urban women were in such occupations, compared to 39.8% of men. This precarious integration limits access to social security, economic stability and career opportunities.

Poverty gaps by type of household head: the poverty gaps between male and female headed households persist. Between 2013 and 2022, female-headed households have higher rates of both poverty and extreme poverty. This pattern is related to the overburden of care, lower incomes and precariousness of women's employment.

Integration into paid domestic work: Paid domestic work is a feminized activity. In 2022, about 12.6% of women worked in this sector, compared to only 0.9% of men. This type of employment is characterized by high informality and low social protection.

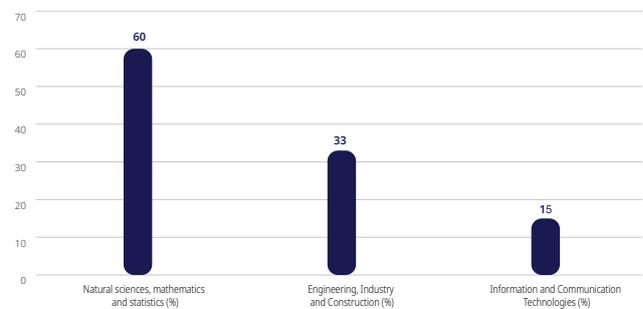## E. STEM education and employment data in the energy and transportation sectors

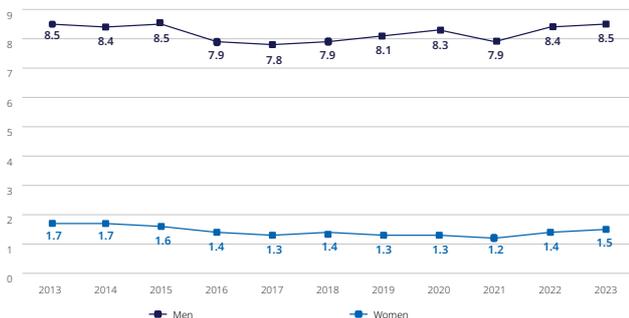### Graduate Statistics

Percentage of STEM graduates

Student statistics by STEM major

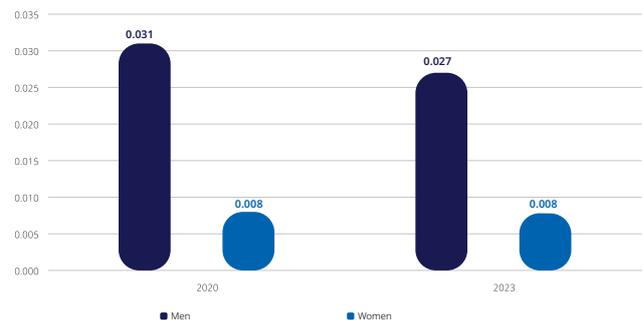#### Participation of female graduates in STEM careers (2018)

Transportation employment statistics

Population employed in transport, percentage

Energy employment statistics

Population employed in energy, gas and water, percentage

Interpretation of training and employment data in STEM and strategic sectors

Female participation in STEM degrees: the participation of women in STEM races is around 36.6% for 2017. While there is an upward trend, strong disparities persist in specific areas. In 2018, only 15% of those studying Information and Communication Technologies (ICT) were women, compared to just 33% in Engineering and Manufacturing.

Graduates in STEM disciplines: the proportion of graduates in STEM areas has shown some stability, with figures ranging from 34% to 37% between 2014 and 2017. This figure shows the persistence of barriers to entry and permanence for women in technical and scientific disciplines.

Employment in strategic sectors (energy and transport): female employment in strategic sectors remains low. In the energy sector (electricity, gas and water), women accounted for only 1.5% of the total in 2023. In transport, although the share is slightly higher, it barely reached 8.5% for the same year, which reveals a deep sectoral inequality.

General conclusions

Persistent structural inequality: women have outperformed men in schooling and access to higher education, but these advantages do not translate proportionately into employment or income.

Occupational segmentation and precarization: the female workforce continues to be concentrated in informal, low-productivity and poorly paid sectors, with little presence in strategic sectors of high added value.

Overburden of care and unpaid work: women's commitment to household and unpaid care tasks continues to limit their professional development and economic autonomy.

Feminization of poverty: women heads of households and informal workers face greater economic vulnerability, a situation aggravated by the lack of public policies that recognize and redistribute care tasks.