

# GREEN AND SUSTAINABLE JOBS IN BRAZIL

September/2022

# DIEESE

DEPARTAMENTO INTERSINDICAL DE  
ESTATÍSTICA E ESTUDOS SOCIOECONÔMICOS



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D419e Green and Sustainable Jobs in Brazil /DIEESE.  
São Paulo: DIEESE, 2022.

25p.

ISBN 978-85-87326-93-5

1. Green employment. 2. Labor Market. 3. Working hours. I.  
Title II. DIEESE.

CDU 331.5:502.1(81)

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# 1. Introduction

**T**he labor market in Brazil is characterized by high unemployment rates, falling wages and high informality, among other problems. The public policies of Bolsonaro Government do not put into perspective a change in this picture. The fragility is also accompanied by environmental denialism, translated among other actions, by increasing deforestation, dismantling of environmental policies, expansion of illegal activities in native people territories.

SUMMARY



The resumption of job generation with quality and environmental care may be one of the strategies for a different political scenario after the October Elections. The combination of the environmental agenda with the labor market agenda involves the generation of green and sustainable jobs, as a policy to face climate change and the accelerated digitalization process in Brazil.

According to ILO (2009), the concept of green employment “summarizes the transformation of economies, enterprises, work environments and labor markets towards a sustainable economy that provides decent work with low carbon consumption”<sup>1</sup>. Over the years, the concept has been captured by exclusive economic interests, to the detriment of its social and environmental focus.

This study, elaborated by DIEESE, with the support from ICS – Instituto Clima e Sociedade (Climate and Society Institute), seeks to dimension the evolution and characteristics of green jobs in Brazilian labor market, highlighting the possibilities of expansion, but without losing the perspective around the quality of the job, environmental dimension and social inclusion. The databases for this survey were the IBGE surveys, RAIS (2006 to 2020) for the formal market and PNAD (2019-2021) to include the informal one, and the analysis of the result was focused on the most recent years.

The methodology developed in this report by DIEESE converges between the studies by Muçouçah (2009) and Caruso (2010). The sectors selected were those indicated by Muçouçah (2008) as to economic activities which contribute to reducing emissions and/or improving/preserving environmental quality. In those sectors, herein called “green sectors”, occupational families were divided into two groups: “green occupations” and “occupations supporting green activities”.

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<sup>1</sup> MUÇOUÇA, Paulo Sérgio. Green Jobs in Brazil: how many are they and how they will evolve within the next years. Work International Organization. Brazil, 2009.



## 2. Evolution of Green Sectors

Between 2018 and 2020, the number of formal jobs in Brazil decreased by 0,8%, from 46.6 million ties to 46,2 million.

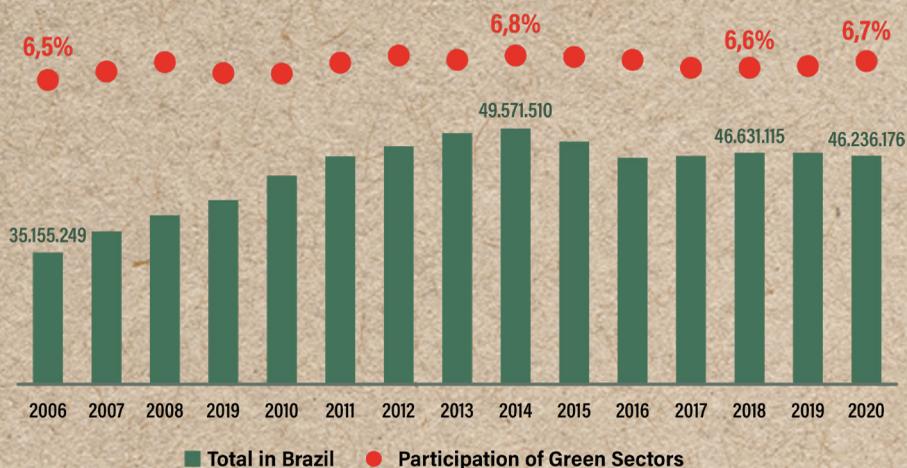
This performance is due to the 2020 result, when employment retreated 1,0%.



The formal jobs in the green sectors performed slightly better in the analyzed period, increasing 0,5% in 2019 and decreasing 0,3% in 2020. With this, the share of green sectors, in total formal employment in Brazil, varied positively, from 6,6% in 2018 to 6,7% in 2019 and 2020, representing about 3,1 million jobs. In any case, these results were below the maximum proportion of 6,8%, observed in 2012, 2014 and 2015.

### Graph 1

Number of formal employment relationships and participation of green sectors. Brazil, 2008 to 2020.



Sources: RAIS/MTE, RAIS/ME and RAIS/MTP.  
Elaboration: DIEESE.

SUMMARY

In 2019, the number of formal jobs in the green sectors increased by 16,100, while in 2020, it decreased by 10,000. That is, the change of 0,2% between 2018 and 2019, represented an increase of 6,1 thousand formal green jobs. (Chart 2)

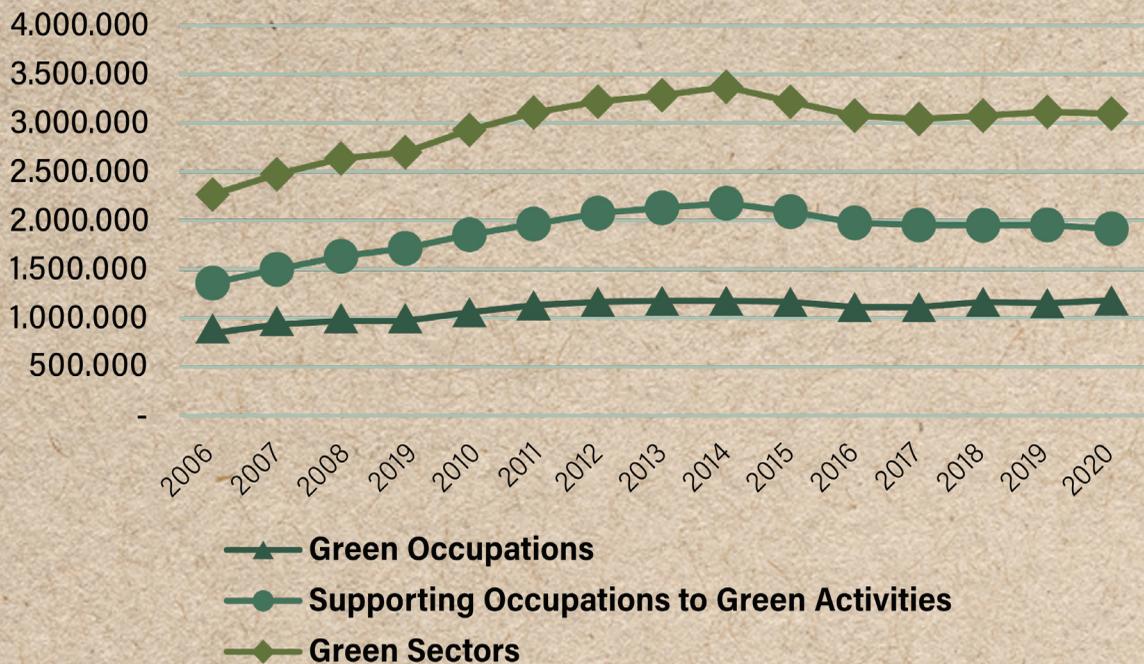
Compared to the peak of green jobs observed in 2014, the 2020 level was 7,8% lower. However, compared to the start of the historical series in 2006, the number of formal jobs in 2020 was 35,4% higher.

It is worth noting that the number of jobs in green occupations grew by 2,9% between 2018 and 2020, equivalent to 34,100 more jobs. With this, the green occupations reached the highest level of the historical series, almost 1,2 million jobs.

On the other hand, green activities support occupations had shrunk between 2018 and 2021, -1,5%, equivalent to minus – 28,100 jobs.

## Graph 2

Number of informal employment links in the green sectors.  
Brazil, 2008 to 2020



Source: RAIS/MTE, RAIS/ME and RAIS/MTP  
Elaboration: DIEESE.



With this proportion of green occupations in green sectors went from

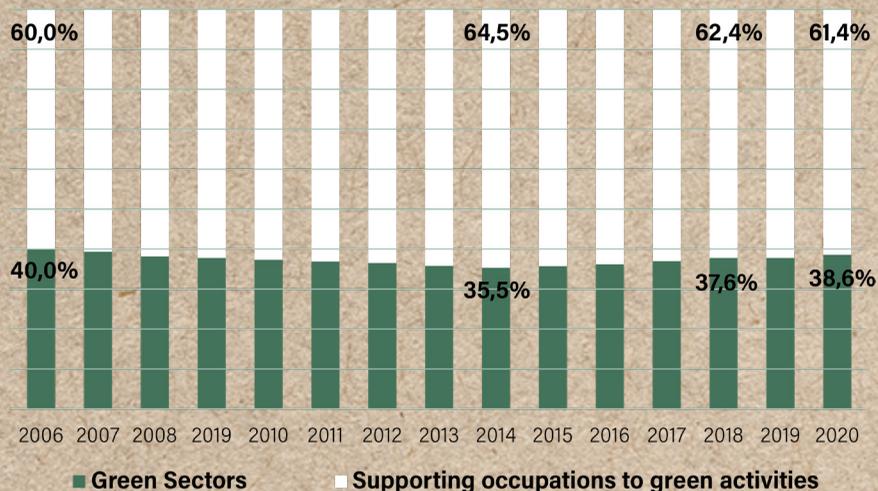


**37,6%,**  
in 2018 to  
**38,6%,**  
in 2020.

This percentage is the highest, since 2007(39,2%), being that the highest proportion observed was in 2006 (40,0%). Between 2006 and 2020, green occupations grew 30,8%, while those supporting green activities grew 38,4%.

### Graph 3

Distribution of formal employment ties in the green sectors.  
Brazil, 2006 to 2020.



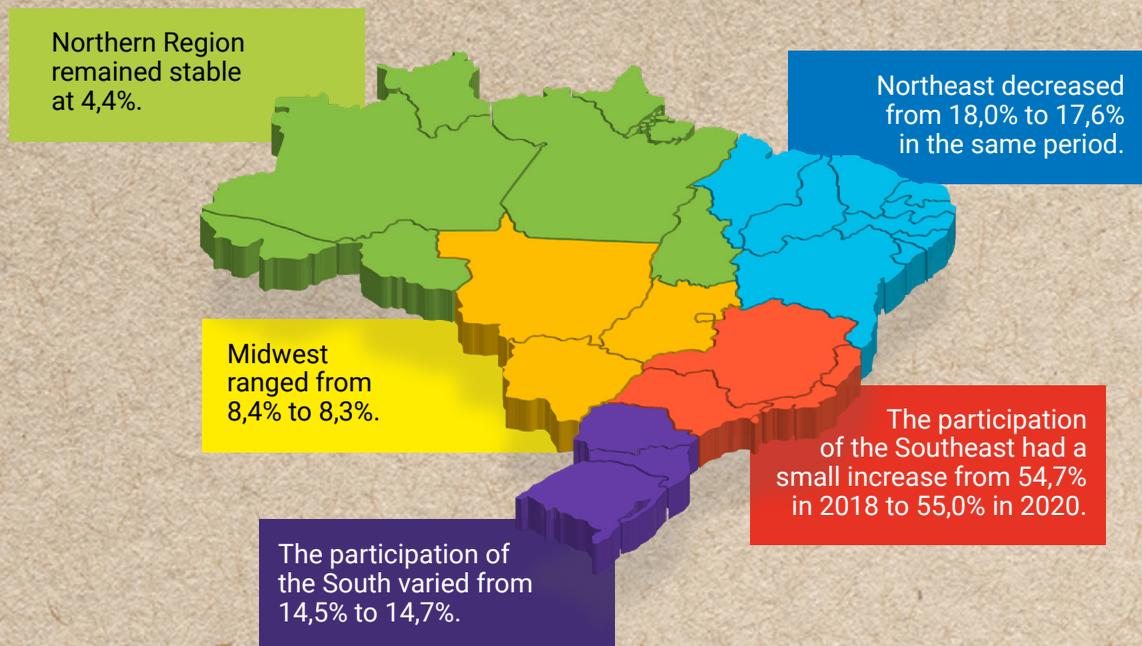
Source: RAIS/MTE, RAIS/ME and RAIS/MTP

Elaboration: DIEESE.

SUMMARY

In the last two years analyzed, there has been little change in terms of the geographical distribution of employment in the green sectors.

Check data by region:

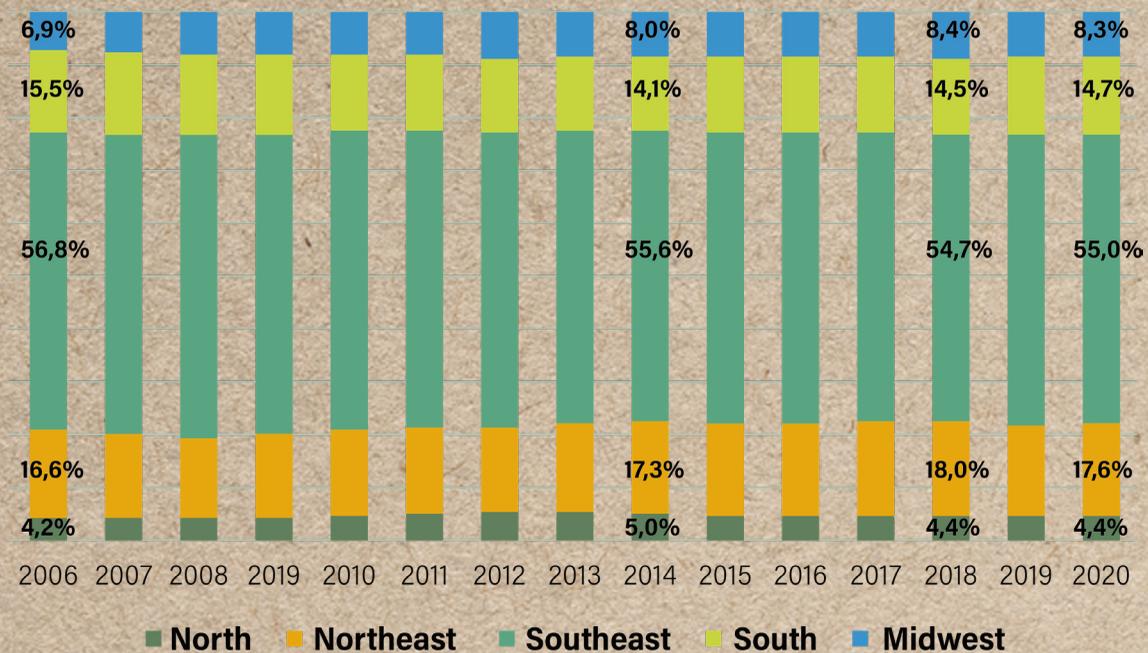


Interestingly, the state of São Paulo, increased its share of employment in the green sectors from 30,7% to 31,3%, reaching its highest level in the historical series. On the other hand, Rio de Janeiro reached its historical minimum with 10,5% in 2020

In the Northeast, Bahia had, in 2020, the highest share of the region, with 5,0%. In the South, Paraná continued to have the highest proportion (6,3%). In the Midwest, Goiás (3,7%), and in the North, Pará (1,7%).

### Graph 4

Distribution of formal employment ties in the green sectors. Large Regions, 2006 to 2020.



Source: RAIS/MTE, RAIS/ME and RAIS/MTP  
Elaboration: DIEESE.

In terms of remuneration, total formal employment in Brazil decreased by 7,2% between 2018 and 2020, after discounting inflation. The green sectors, in addition to maintaining an average remuneration lower than the country's total, had a drop of 11,2% in the same period.

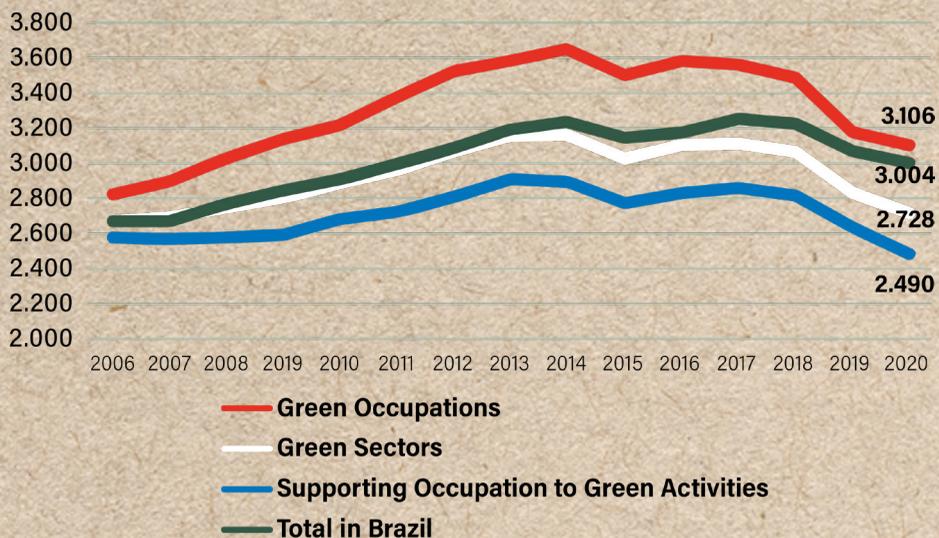
**In 2020, the average remuneration of formal jobs in the country was R\$ 3,004, while, in the green sectors, it was R\$ 2,728 (Graph 5)**



In the green occupations, compensation remained higher than the average of the green sectors and of the country as a whole. However, a reduction of 11,0% was noted, ending 2020 at R\$ 3,106. Support occupations had a slightly more intense reduction (-11,8%), reaching the lowest level of the historical series in deflated values.

### Graph 5

Remuneration of formal employment relationships (in R\$ as of December 2020). Brazil, 2006 to 2020.



Source: RAIS/MTE, RAIS/ME and RAIS/MTP  
 Elaboration: DIEESE  
 Deflator: INPC-IBGE



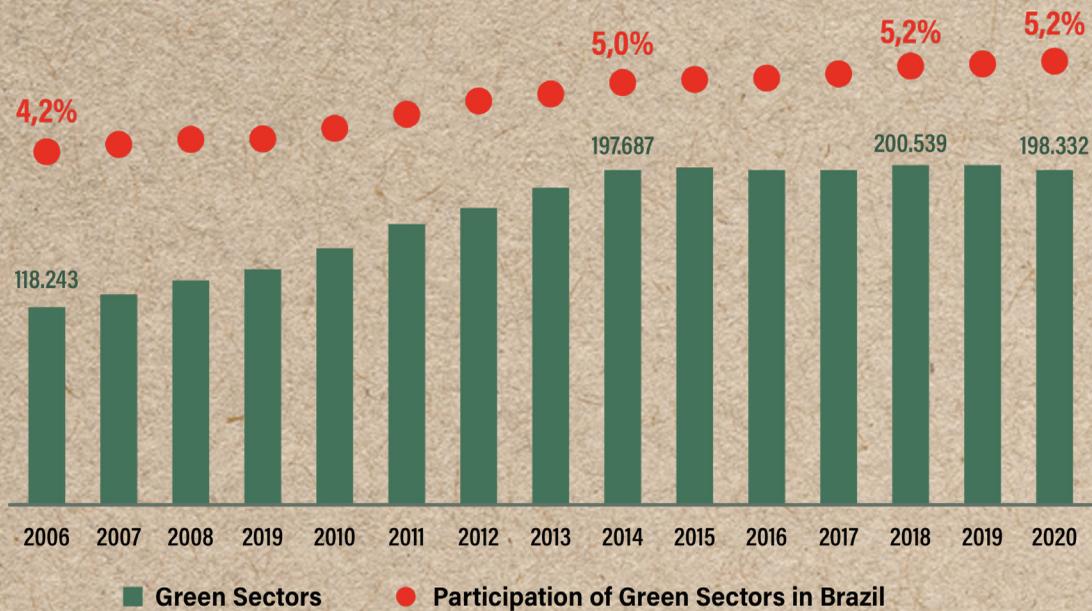
The number of establishments in the green sectors had a small reduction, between 2018 and 2020, by going from 200,5 thousand to 198,3 thousand (-1,1%). This variation was less intense than that of the total number of establishments in the country, which decreased by 2,2%.



Despite this, the share of green sector establishments in the total remained stable at 5,2%. In any case, the trend continued, albeit slowly, to increase this percentage since the start of the historical series in 2006.

### Graph 6

Number of formal establishments and share of green sectors. Brazil, 2006 to 2020



Sources: RAIS/MTE, RAIS/ME and RAIS/MTP  
Elaboration: DIEESE.

### SUMMARY



Between 2018 and 2020, it was noted the increase in the proportion of establishments, in the green sectors, that had between 10 and 49 employees, from 11,9% to 12,6%. Even so, this percentage was much lower than that observed in 2006.

**TABLE 1**

Distribution of establishments in the green sectors, by number of employees (in %).  
Brazil, 2006 to 2020.

Year	Up to 5 employees	From 5 to 9	From 10 to 49	From 50 to 99	From 100 to 499	500 or more	Total
2006	66,6	14,5	14,1	2,0	2,1	0,7	100,0
2007	66,7	14,6	14,0	2,1	2,0	0,7	100,0
2008	67,1	14,4	13,8	2,0	2,0	0,7	100,0
2009	67,7	14,2	13,5	2,0	1,9	0,7	100,0
2010	67,9	14,3	13,4	1,9	1,9	0,6	100,0
2011	68,5	14,2	13,1	1,9	1,8	0,6	100,0
2012	69,1	14,0	12,8	1,8	1,7	0,6	100,0
2013	70,0	13,7	12,4	1,7	1,6	0,6	100,0
2014	70,9	13,4	12,0	1,6	1,5	0,6	100,0
2015	71,2	13,4	11,8	1,5	1,5	0,6	100,0
2016	71,5	13,4	11,6	1,5	1,4	0,5	100,0
2017	71,4	13,4	11,7	1,5	1,4	0,5	100,0
2018	70,8	13,7	11,9	1,6	1,5	0,5	100,0
2019	70,2	13,9	12,3	1,6	1,5	0,5	100,0
2020	70,1	13,6	12,6	1,7	1,5	0,5	100,0
Brazil-2020	67,7	15,9	13,5	1,5	1,1	0,3	100,0

Sources: RAIS/MTE, RAIS/ME and RAIS/MTP  
Elaboration: DIEESE.





Compared with the profile of the total number of establishments in the country, the green sectors had, in 2020, a slightly higher proportion of establishments with a maximum of five employees (70,1% and 67,7%). However, it is worth noting that, considering the proportion of establishments with no more than 10 employees, the percentages of participation are practically the same: 83,7% in the green sectors and 83,6% in the country as a whole.

### 3. Green Employment Profile

Between 2018 and 2020, there was a small increase in the proportion of women in green sector jobs, especially in support occupations. This movement contrasted slightly with jobs in the country, which went from 44,1% to 43,6% in the same period. (Graph 7).

In the green sectors, the participation of women

rose from **24,3%**  
to **24,8%**, between  
**2018** and **2020**,

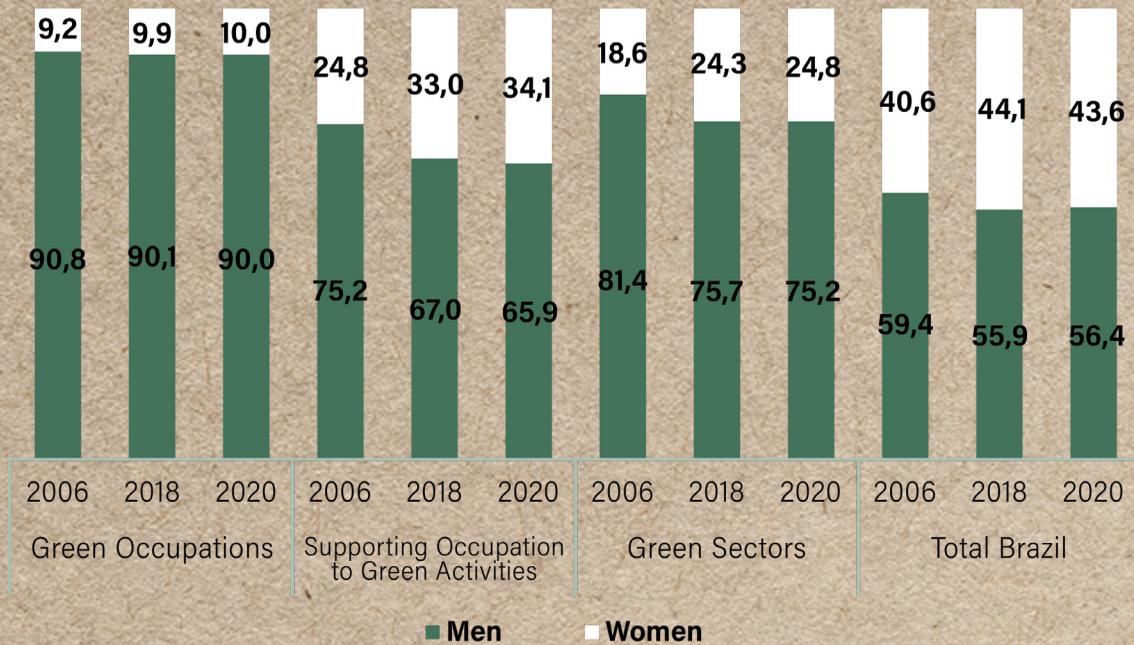


when, at the beginning of the series, in 2006, it was 18,6%. In green occupations, it varied from 9,9% in 2018 to 10,0% in 2020, up from 9,2% in 2006. While, in support occupations, it increased from 33,0% to 34,1%, between 2018 and 2020, up from 24,8%, in 2006. Thus, although still a minority, female participation in green sectors in 2020 was higher than at the beginning of the series in 2006.

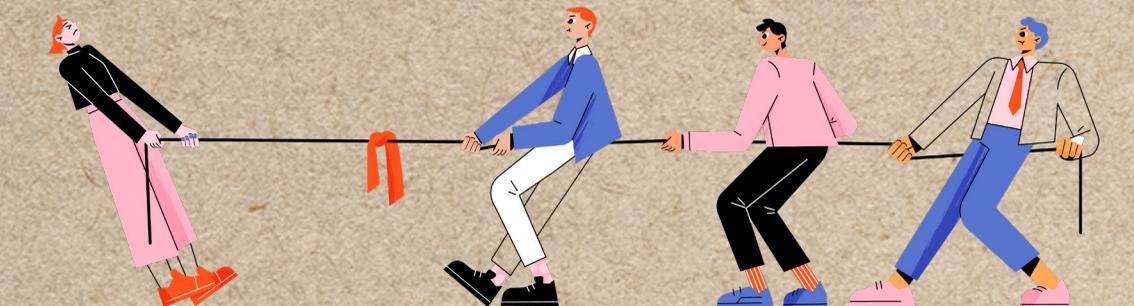


## Graph 7

Distribution of formal employment ties in the green sectors, according to sex and occupational groups. Brazil, 2006, 2018 and 2020.



Source: RAIS/MTE, RAIS/ME, and RAIS/MTP  
Elaboration: DIEESE.



SUMMARY

Women's payment remained, between 2018 and 2020, lower than men's, both in the country as a whole and in green occupations. What was noted in this period is that women had a slightly smaller reduction than men.

In the country as a whole, women's remuneration in formal jobs decreased 6,1%, while men's decreased 8,1%. In green occupations, the reduction in women's payment was 9,0%, while men's was 11,2% (Chart 8).

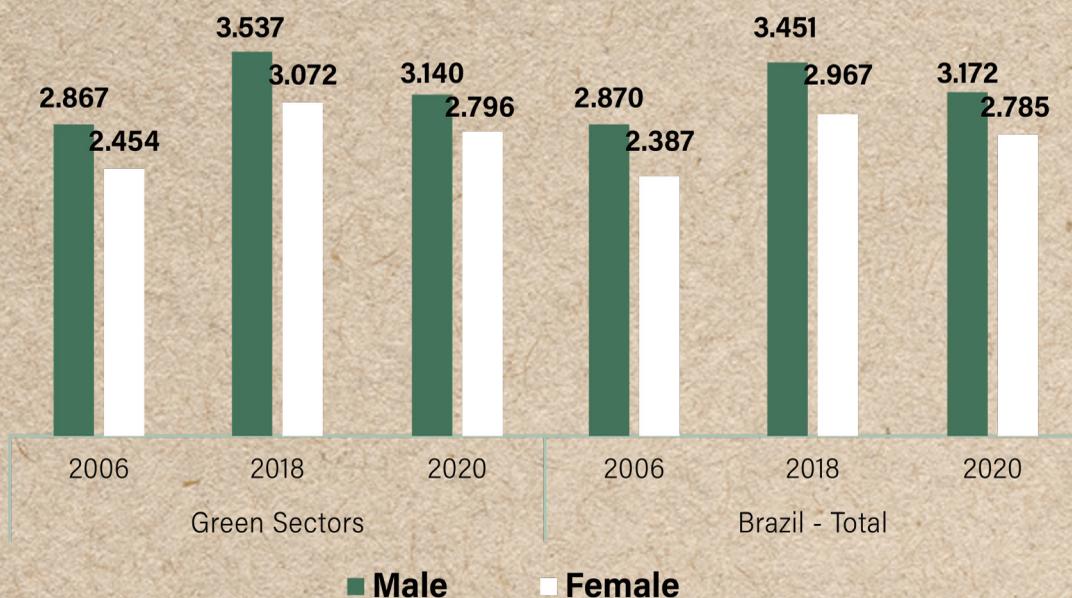
As a result, the remuneration differential has decreased.

**In green occupations, women received the equivalent of 86,9% of men's payment in 2018 and 89,0% in 2020. In the country's total formal jobs, the percentages were 86,0% and 87,8%.**

### Graph 8

Remuneration of green occupations and total occupations, by gender (in R\$ as of December 2020).

Brazil, 2006, 2018 and 2020



Source: RAIS/MTE, RAIS/ME and RAIS/MTP

Elaborator: DIEESE

Deflator: INPC- IBGE





Between 2018 and 2020, a continuation of the downward trend in the participation of young people up to 24 years old in the total number of formal jobs in the country was noted (from 13,9% to 13,4%), including in green sectors (from 16,3% to 15,6%). On the other hand, the proportion of people aged 40 years old or older in total formal jobs continued to increase (from 41,9% in 2018 to 43,5% in 2020), as well as in green sectors (from 40,0% to 41,5% in the same period).

**In green occupations, the percentage of formal job attachments for young people up to 24 years old rose from 12,3% to 11,9% between 2018 and 2020; in support occupations, it rose from 18,7% to 18,0% (Table 2).**



On the other hand, the ratio of links of people with 40 years or more of age passed of 40,9% for 42,3% in the green occupations, and of 38,9% for 40,5% in the support ones.

**Table 2**

Distribution of Formal Employment ties in green sectors and total employment by age group and occupational group (in %).  
Brazil, 2006, 2018, 2020.

Occupational Groups	Year	15 to 17 years old	18 to 24 years old	25 to 29 years old	30 to 39 years old	40 to 49 years old	50 to 64 years old	65 years old and over
Green occupations	2006	0,5	17,3	17,8	29,5	22,8	11,6	0,5
	2018	0,2	12,1	14,5	32,4	22,6	16,9	1,4
	2020	0,1	11,8	14,1	31,6	23,4	17,2	1,7
Occupations supporting green activities	2006	0,5	19,1	16,8	28,3	22,9	11,8	0,5
	2018	0,6	18,1	13,9	28,6	21,0	16,4	1,5
	2020	0,4	17,6	14,0	27,5	21,7	16,9	1,9
Green Sectors	2006	0,5	18,4	17,2	28,8	22,9	11,7	0,5
	2018	0,4	15,9	14,1	30,0	21,6	16,6	1,4
	2020	0,3	15,3	14,1	29,1	22,4	17,0	1,8
Total Brazil	2006	0,9	17,8	17,5	28,9	22,2	11,9	0,7
	2018	0,6	13,3	13,9	31,0	23,0	16,8	1,5
	2020	0,5	12,9	13,5	30,1	24,0	17,3	1,7

Source: RAIS/MTE, RAIS/ME and RAIS/MTP  
Elaboration: DIEESE.





**Finally, with regard to education in the total of the country's links, in the green sectors – both in green occupations and in support occupations, there is a reduction in the proportion of workers with up to incomplete primary education.**

In the case of green occupations, the rise in the proportion of those with complete secondary education stands out, from 48,4% to 51,2%, between 2018 and 2020, as well as in support occupations, which rose from 57,5% to 59,2%. It is worth noting that the participation of links with complete higher education did not change in this period, in these occupations in the green sectors, although in the country as a whole, a small positive variation is observed (table 3).

**Table 3**

Distribution of Formal employment ties in the green sectors, by education and occupational groups.

Brazil, 2006, 2018 and 2020.

Educational Groups	Year	Up to Elementary Incomplete	Elementary Complete	High School Incomplete	High School Complete	University Incomplete	University Complete	Total
Green Occupations	2006	42,8	15,2	7,4	25,7	2,2	6,8	100,0
	2018	20,4	11,0	7,1	48,4	2,6	10,6	100,0
	2020	18,6	10,3	6,8	51,2	2,6	10,6	100,0
Occupations supporting green Activities	2006	24,5	16,8	8,3	37,6	5,2	7,6	100,0
	2018	10,5	8,8	6,2	57,5	4,4	12,4	100,0
	2020	9,8	8,0	5,6	59,2	5,0	12,4	100,0
Green Sectors	2006	31,8	16,2	7,9	32,9	4,0	7,3	100,0
	2018	14,2	9,6	6,6	54,1	3,7	11,7	100,0
	2020	13,2	8,9	6,1	56,1	4,1	11,7	100,0
Total Brazil	2006	21,4	15,4	8,6	35,3	4,3	15,0	100,0
	2018	9,6	8,5	6,1	48,8	4,0	23,0	100,0
	2020	8,8	7,7	5,7	50,6	4,1	23,2	100,0

Source: RAIS/MTE, RAIS/ME E RAIS/MTP  
Elaboration: DIEESE

**SUMMARY**



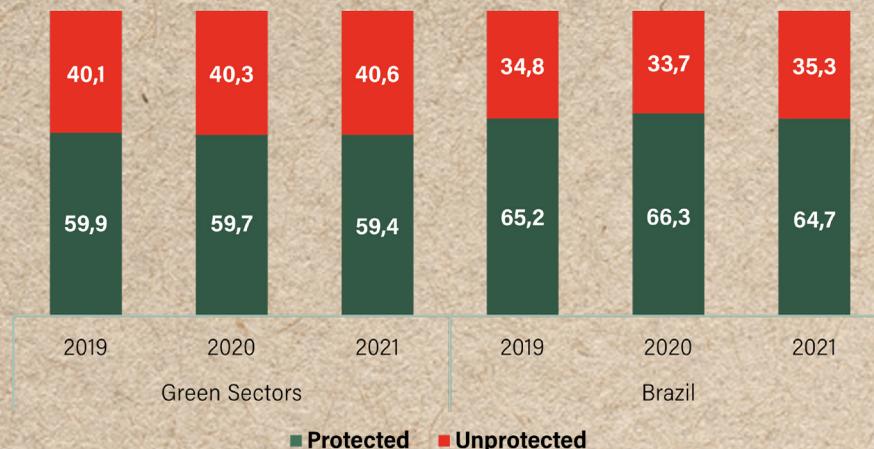
## 4. Unprotected Work, Underemployment And Working Hours In The Green Sectors

Using the National Continuous Household Sample Survey (PNAD Contínua), the green sectors have had an increase in the proportion of unprotected workers in recent years, that is, those who had no labor or social security protection<sup>2</sup>.

Between 2019 and 2021, which is the most recent data available, the proportion of unprotected workers in the green sectors increased from 40,1% to 40,6%. In the total number of workers in the country, the percentage increased from 34,8% to 35,3%, i.e. there was a higher proportion of unprotected workers in the green sectors than in the country as a whole.

### Graph 9

Distribution of employed people, according to the degree of protection. Brazil, 2019 to 2021



Source: PNAD-C/IBGE  
Elaboration: DIEESE

**Note:** Protected workers are considered to be employees in the private sector and domestic workers with signed social security cards, employees in the public sector with and without signed social security cards, military personnel and statutory public servants, employees and self-employed workers and auxiliary family workers who contribute to Social Security. Unprotected workers are considered to be employees in the private sector and domestic workers without a signed employment contract, self-employed workers and auxiliary family workers who do not contribute to Social Security.

<sup>2</sup> Protected workers are considered to be employees in the private sector and domestic workers with a signed contract, employees in the public sector with and without a signed contract, military personnel and statutory public servants, employers and self-employed workers and auxiliary family workers who have contributed to Social Security. Unprotected workers are considered to be employees in the private sector and domestic workers without a signed contract, self-employed workers and auxiliary family workers who do not contribute to Social Security.



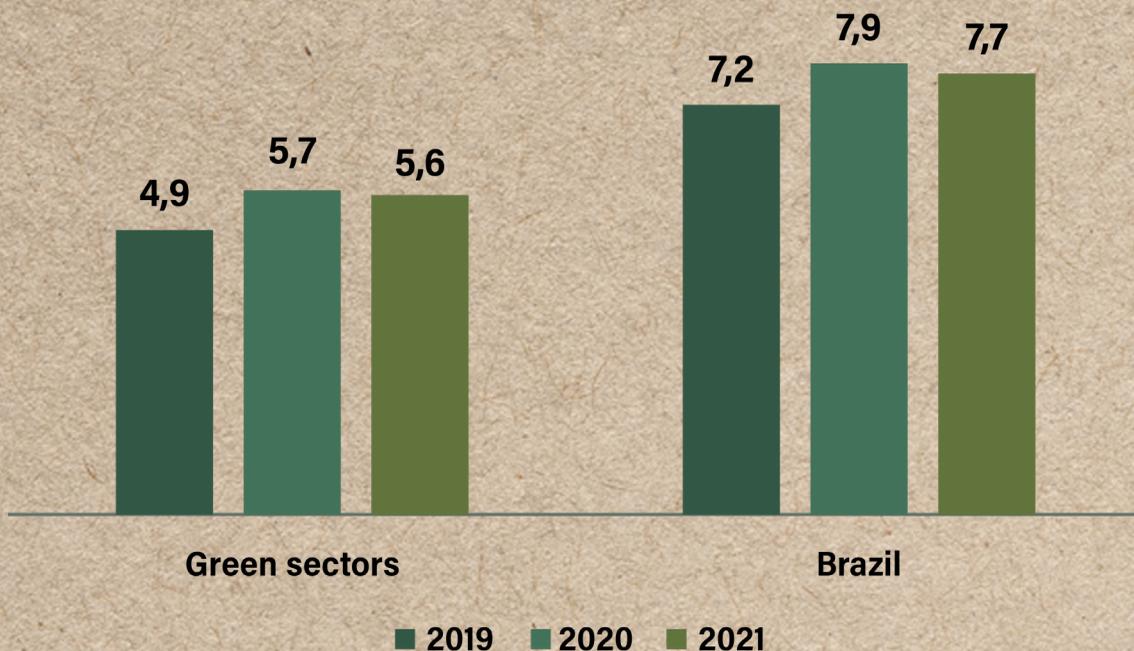


The proportion of underemployment workers due to insufficient hours worked increased between 2019 and 2021 in Brazil, from 7,2% to 7,7% of all employed workers. In the green sectors, the proportion increased from 4,9% to 5,6%.

It is worth remembering that those who are underemployed due to insufficient hours worked, are those who work less than 40 hours per week and declare that they would like to work more.

### Graph 10

Proportion of underemployed people due to insufficient hours worked in relation to the total number of employed people (in%).  
Brazil, 2019 to 2021



Source: PNDA-C/IBGE  
Elaboration: DIEESE

SUMMARY

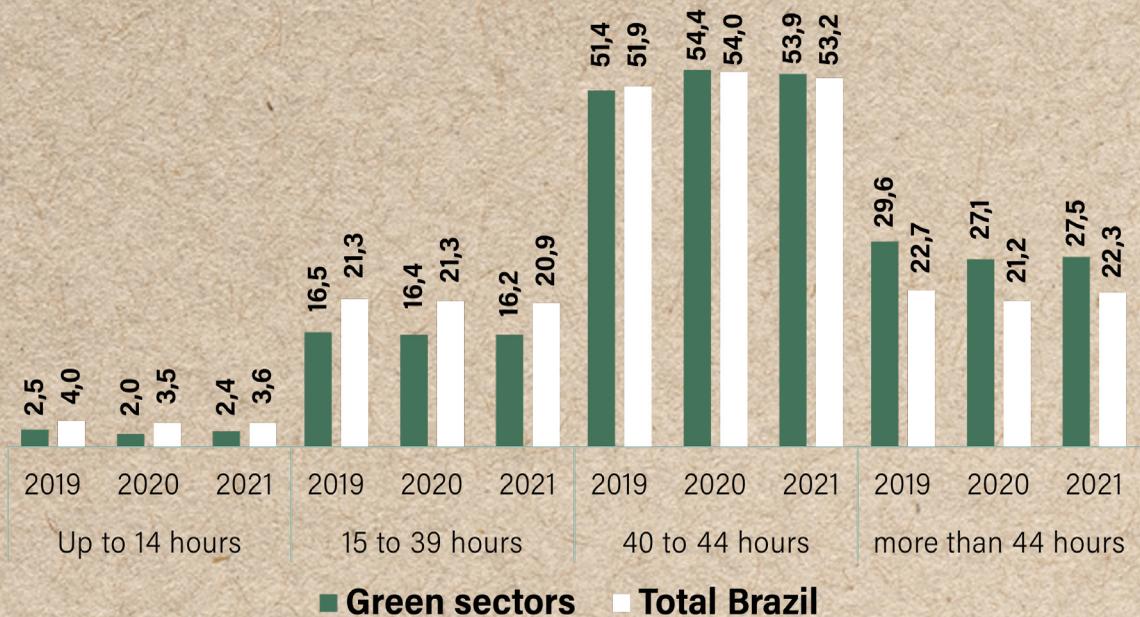


Finally, it is noteworthy that the proportion of workers in the green sectors remained higher than that of all employed people in the country regarding the workload above 44 hours per week. In the green sectors, in 2021, 27,5% of the workers had workload in this range of time, while in the total of the country, they were 22,3%.

In any case, in both groups of workers, the percentages of 2021 were lower than those observed in 2019.

### Graph 11

Distribution of employed people according to usual weekly working hours (in %).  
Brazil, 2019 to 2021.



Source: PNDA-C/IBGE  
Elaboration: DIEESE



## 5. Conclusion

The information indicates that the participation of sectors and occupations is still modest in Brazil's labor market, especially when considering the growth potential of green activities in the national productive structure.

Changing course in the Brazilian economy towards a development project with environmental care and social inclusion could encourage sustainable investments and generate decent jobs in selected sectors with low or no carbon emissions and contribute to reducing social inequalities.

**However, for the labor and environment agenda to move forward, it is necessary to promote structural changes in the Brazilian labor market, including in green jobs. In 2020, the number of formal green jobs was approximately 3.1 million which represented 6,7% of the total number of formal workers in Brazil, indicating that there is evident room for growth.**

But, this growth has to transform the current characteristics of green employment in Brazil, such as the regional concentration of jobs (55% in the Southeast Region), the lower remuneration of green sectors in relation to the national average, the predominance of men (90% in green occupations), the lower remuneration of women (they receive 89% of the remuneration of men in green occupations), the drop in participation of young workers, occupations with a higher level of labor and social security with no protection, growth of underemployment due to insufficient hours and higher workload in relation to the national average.



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**ISBN:**

**978-85-87326-93-5**



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