

HOW BRAZILIANS PERCEIVE CLIMATE CHANGE – R3

Analysis Report

Job: 221715

March 24th, 2023

METHODOLOGICAL INFORMATION

OBJECT

Research hired by ITS-Rio - Instituto de Tecnologia e Sociedade do Rio and conducted nationwide by Ipec – Inteligência em Pesquisa e Consultoria, by phone. Three rounds were carried out in this study, in 2020 (by IBOPE Inteligência), in 2021, and in 2022.

OBJECTIVE

For the third consecutive year, the study aims at collecting data about the Brazilian population's perception regarding issues related to climate, environment, and politics, addressing topics such as: forest fires in Brazil, global warming, and climate change.

METHODOLOGY

Research: Quantitative

Data collection technique: phone interviews via CATI system (Computer Assisted Telephone Interview) – the phone interviews were conducted with the support of an electronic questionnaire, in which answers are typed by the interviewer and forwarded directly to a database.

Geographic coverage: Nationwide

Target: Brazilian population aged 18 or older.

Questionnaire: The questionnaire was developed jointly by ITS and Ipec, having the project *Climate Change in the American Mind (CCAM)* as a theoretical and methodological framework, which was coordinated by the Yale Program on Climate Change Communication and by the George Mason Center for Climate Change Communication. As a result of the partnership between ITS-Rio and this project, the questionnaire was also reviewed by the Yale researchers.

Fieldwork dates:

From November 25th, 2022, to January 26th, 2023.

This report brings the results of the study's third round and includes comparisons with the previous rounds.

Obs.: Throughout the report, the third round refers to 2022, although the fieldwork period was concluded on January 26th, 2023.

Number of interviewers in the project:

126 interviewers took part in this project's third round.

SAMPLE

Universe: Brazilian population aged 18 or older.

Coverage: Nationwide

Sample design: Similar to the second round, the study's third round counted on a disproportionate sample to enable an increase in the sample in the regions of interest of the study (North and Midwest), and, therefore, ensure better result readings in these regions. Despite the change in the sample design between the first and second rounds, the samples of all three rounds

are representative of the Brazilian population aged 18 and older, thus allowing the total results of the study to be compared.

Sample selection: Both cell phone and landline numbers were randomly picked for the conduction of the interviews, whose quantity and distribution were controlled based on population quotas, so as to ensure the representativeness of the Brazilian adult population across all regions of the country, with different levels of education, genders, and age ranges. Quotas were established based on the most recently updated data from the Brazilian Institute of Geography and Statistics (IBGE).

Sample size:

Sample Design	Total number of interviews	Possible readings of the results	Margin of Error for the total sample	Confidence level
Disproportionate	2,600 interviews	Brazil Total, country's regions, and demographic variables.	2 p.p.	95%

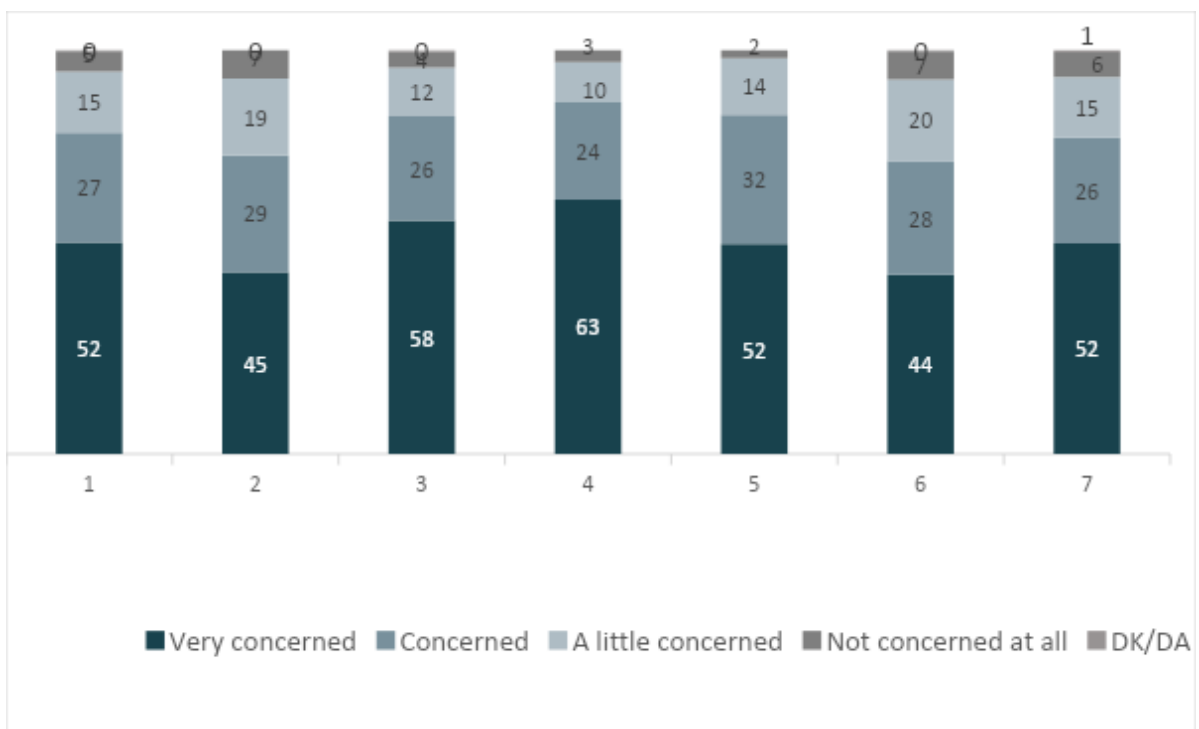
Procedures and weighting factors: Weighing factors were determined by Ipec to correct the sample design disproportion starting on the second round.

RESULT ANALYSIS

How Brazilians perceive climate change and global warming

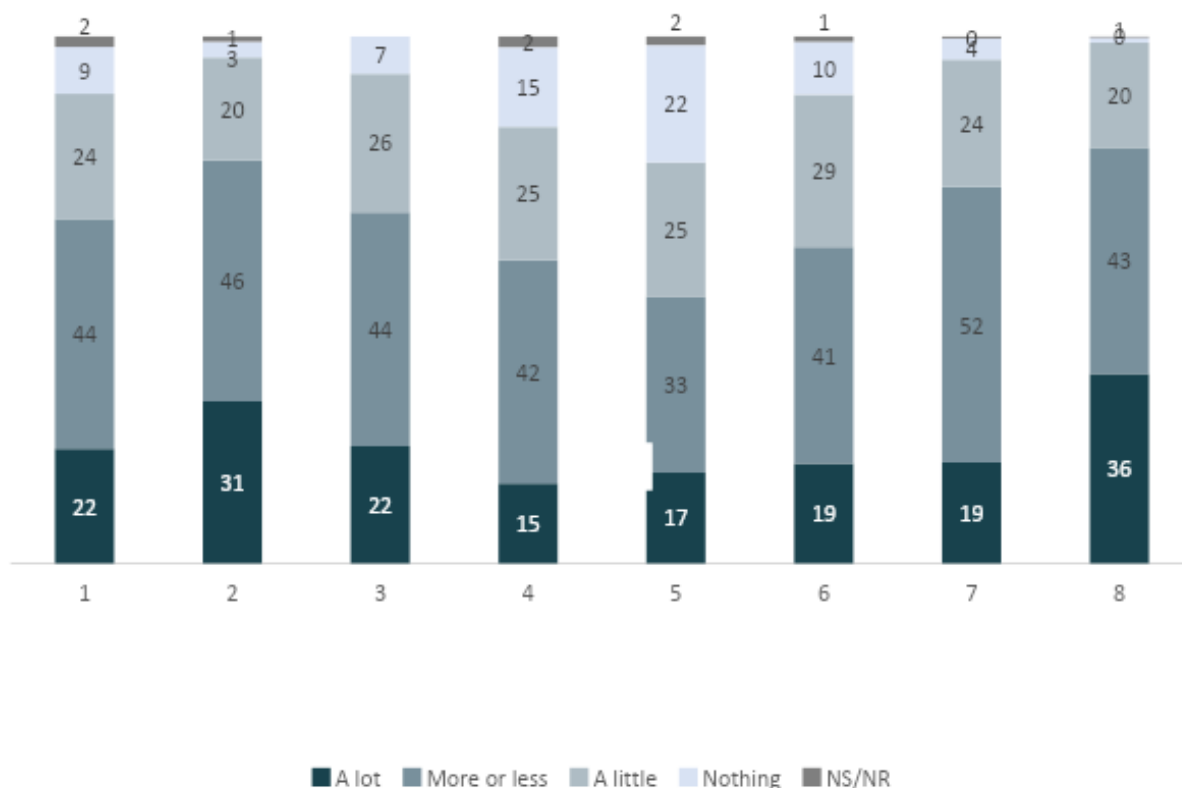
The third edition of the study How Brazilians Perceive Climate Change reveals that, despite the reduction in proportion with the Brazilian population that states to be concerned about the environment, this theme is still regarded as important by most of them, since 52% stated to currently be very concerned about it (they were 61% in 2020 and 2021). The study shows that women (58%) are more concerned about the issue than men (45%), as well as those who see themselves as politically left leaning (63%) in relation to the rest of the population. (Chart 1)

Chart 1: Level of concern about the environment by gender and political stance, in 2022 (%)



Even though the study shows that half of Brazilians are concerned about environmental issues, only two out of ten (22%) see themselves as highly aware of global warming and climate change, whereas 44% perceive themselves as having some awareness of the subject matter. These results point out that access to information on the theme is still a challenge to be overcome in the country. Brazilians with a higher level of education tend to see themselves as more aware about the topic (36%), as well as those who belong to SEC A/B (31%), as shown in Chart 2. In 2022, the proportion of Internet non-users who state to be highly aware of the subject is higher (24%) than in 2021 (11%), which shows that information on global warming and climate change also circulates outside the Internet. Within this context, the fact that 79% of the respondents claim that conversations with relatives, friends, and coworkers are their main source of information on the subject, this may indicate that this is also a means by which one can have access to information on global warming and climate change.

Chart 2: Level of awareness about global warming and climate change, per SEC, and level of education, in 2022 (%)

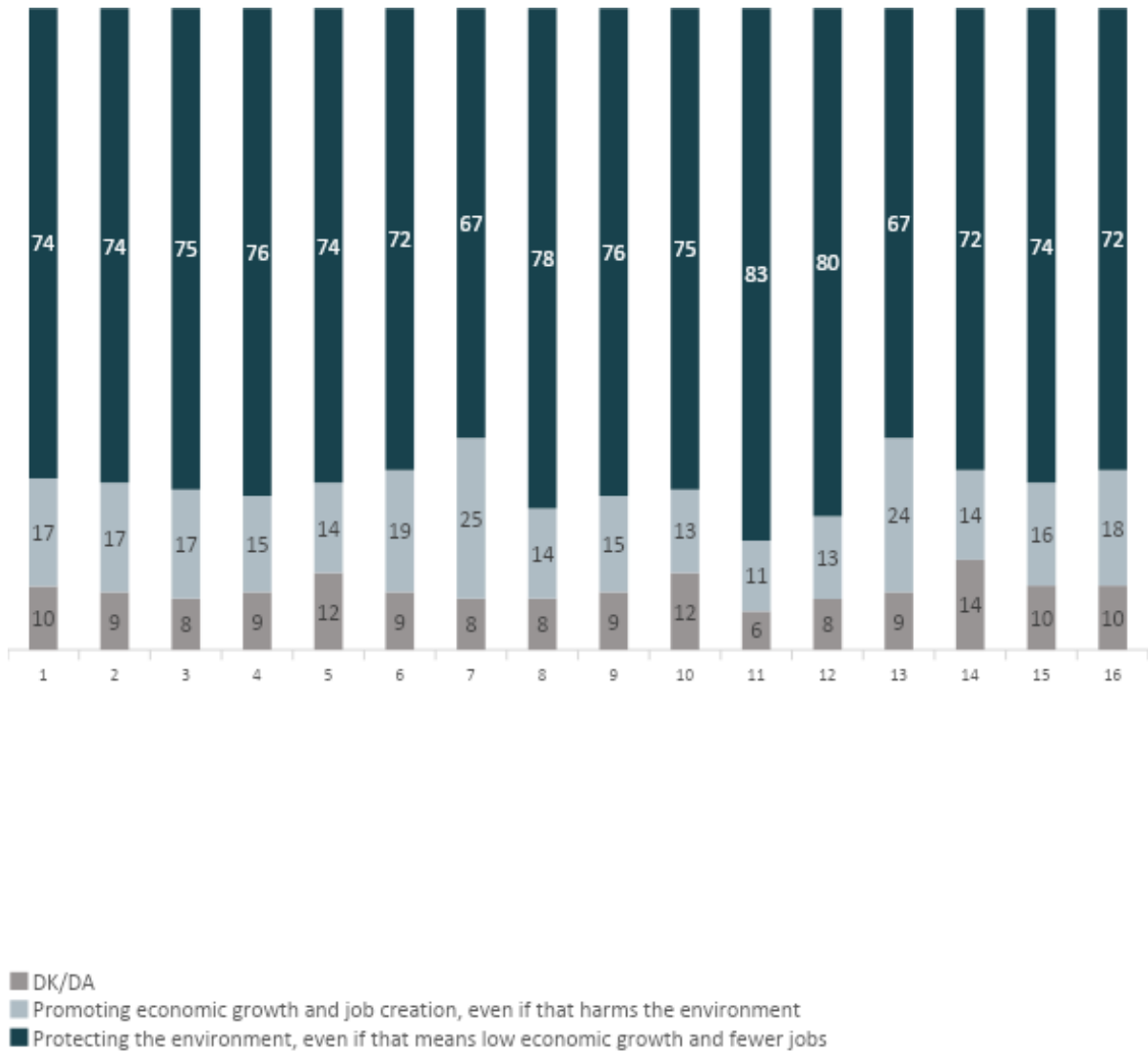


Since 1995, the Conference of the Parties (COP), which is the United Nations Framework Convention for Climate Change, has been held annually by representatives of several countries aiming at discussing climate change, finding solutions for environmental issues affecting the planet, and negotiating agreements¹. Its 27th edition, COP-27, took place between November 6th and 18th, 2022 in Sharm El Sheikh, Egypt, where topics such as sustainability and economic development were addressed². With the purpose of investigating the opinion of Brazilians on these issues, the study shows that according to 74% of them, environment protection is perceived as of utmost importance, even if that means lowering economic growth and having a depletion of jobs, whereas for 17% of them, promoting growth and creating jobs is fundamental, even at the expense of the environment. In Chart 3, it is possible to note that Brazilians with a primary level of education (25%), and those who are politically right leaning (24%) are the ones who perceive growth and job creation as most important, even at the expense of the environment.

¹ Data released at < <https://www12.senado.leg.br/noticias/entenda-o-assunto/cop> > accessed on 03/16/2023.

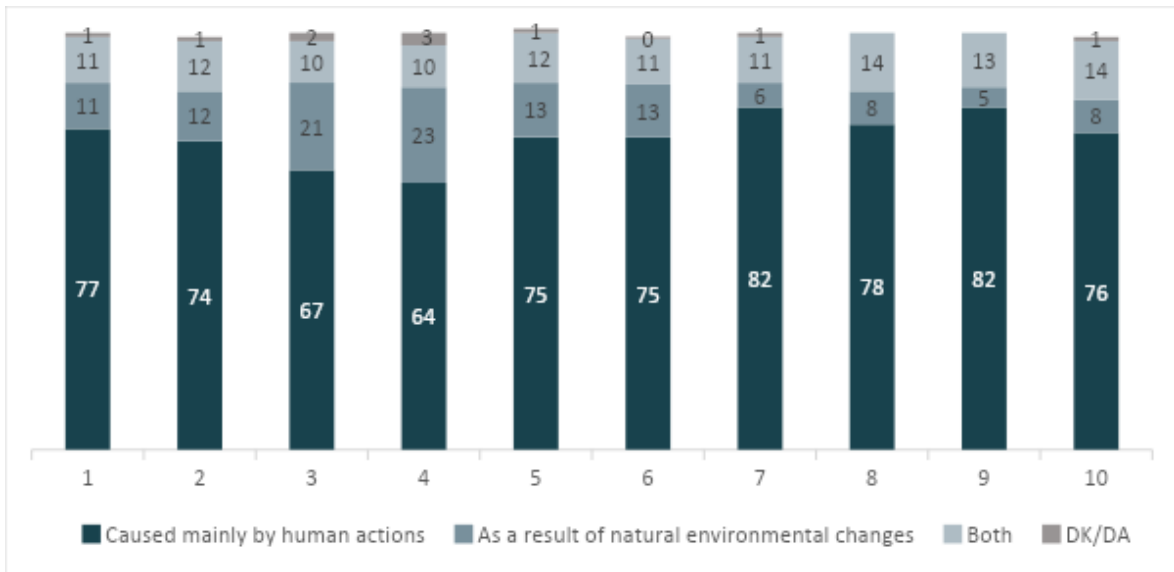
² Data released at < <https://www12.senado.leg.br/noticias/materias/2022/11/17/na-cop-27-senadores-defendem-sustentabilidade-e-protagonismo-do-brasil> > accessed on 03/21/2023

Chart 3: What Brazilians see as most important: protecting the environment vs. promoting economic growth and creation of jobs according to age range, level of education, political stance, and Internet usage, in 2022 (%)



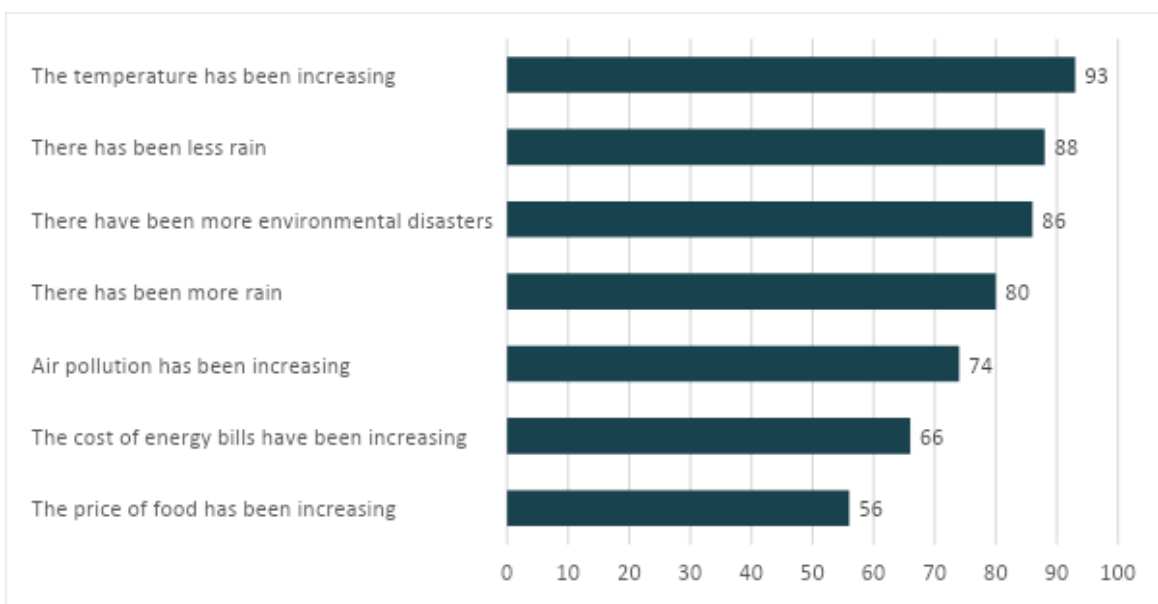
Brazilians still have a strong perception that global warming is happening (94%) and, when questioned about its main cause, 74% of them perceive human actions as responsible for the increase in the average global temperature within the past 150 years, which contributes to the planet’s climate change, furthermore, 12% of them believe it is all about natural environmental changes. It should be noted that the proportion of those who perceive natural environmental changes as the main cause of global warming (23%) among Brazilians with a primary level of education is higher than among those with a higher level of education, that is, those who have complete High School or Higher Education (Chart 4).

Chart 4: Perceptions about the causes of global warming, per level of education, in 2022 (%)



The 2022 edition of the study assessed the respondents’ perceptions about some events linked to the theme, such as the increase and reduction in rainfall, more environmental disasters, the food and electricity cost increase, and the pollution and temperature increase. It is noted that nine out of ten Brazilians perceived a recent increase in food costs (94%), increase in pollution (92%), increase in temperature (92%), increase in the electricity bill (91%), and more environmental disasters (90%). Nevertheless, as shown in Chart 5, both food and electricity costs are less associated with global warming than the increase in temperature or higher incidence of environmental disasters.

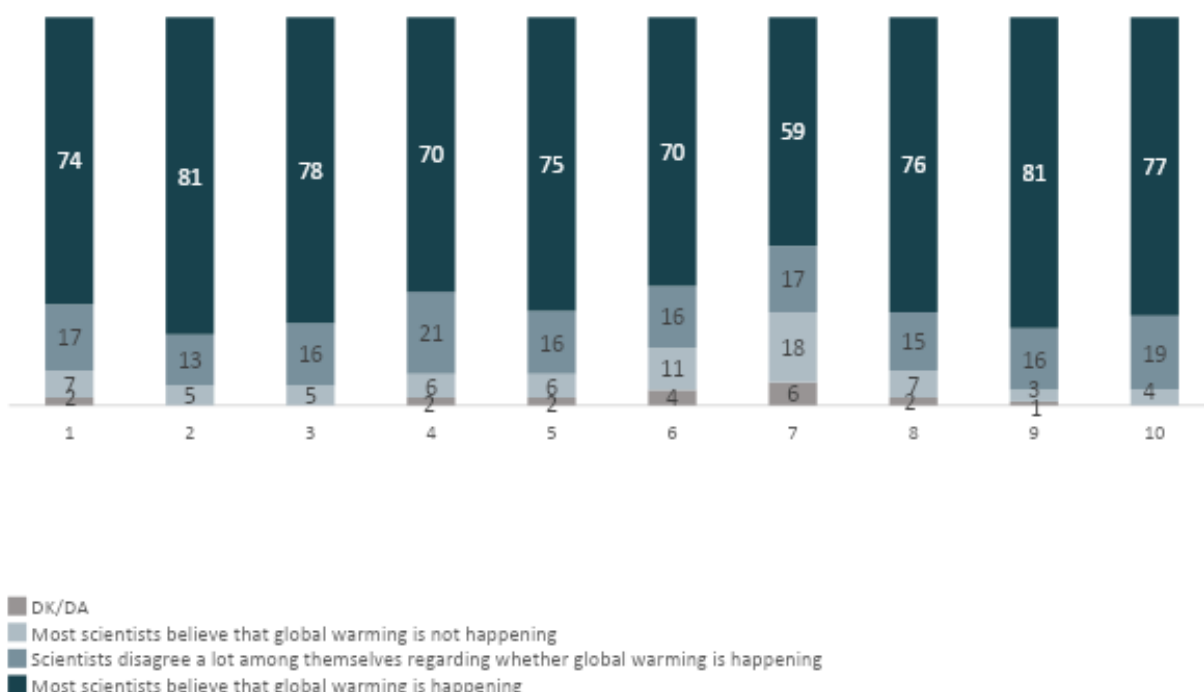
Chart 5: Impacts of Global Warming, in 2022 (%)



The opinion of Brazilians on the scientists' stance towards global warming was also investigated in the study's third round and, similar to the previous rounds, more than 70% of the population think that most scientists believe that global warming is happening (74% in 2022), whereas 17% of them think that scientists disagree among themselves about the theme, and 7% think that most scientists believe that global warming is not happening.

As shown in Chart 6, the population share that thinks that most scientists believe that global warming is happening is larger among the younger sample (18 to 24 years old), and among those with a higher level of education (complete High School and Higher Education). In turn, among adults aged 55 or older, and among those with a lower level of education (complete Primary Education), this proportion is higher among those who think most scientists believe global warming is not happening.

Chart 6: Perception of the opinion of scientists on global warming, per age range, and level of education, in 2022 (%)

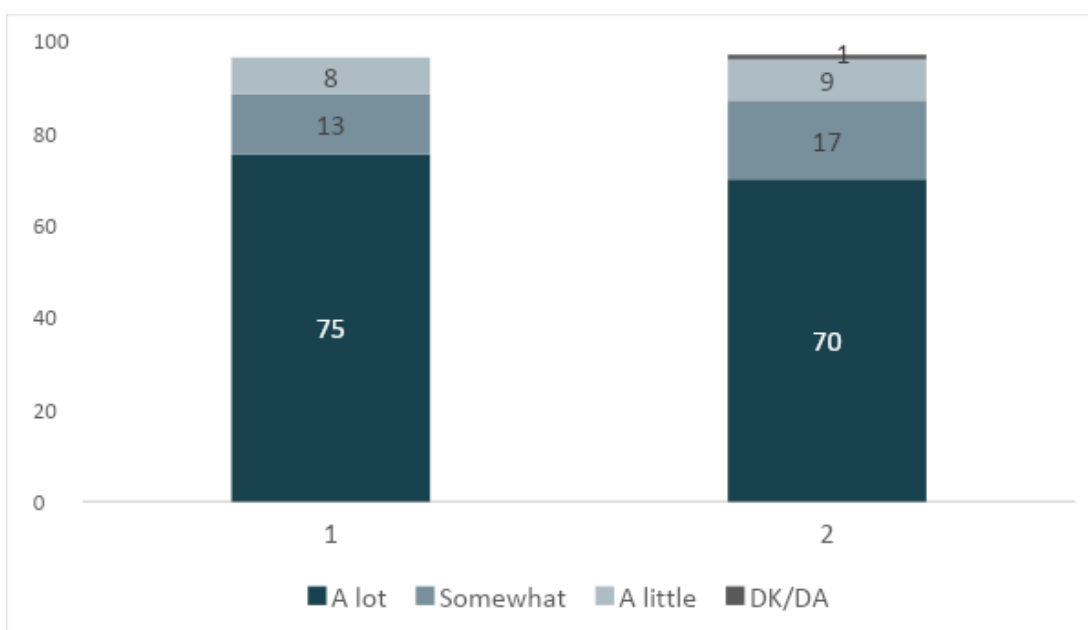


In addition to the differences per age range and level of education, the Brazilians' viewpoints on the opinion of scientists also varies according to their stated political stance. The perception that most scientists believe that global warming is happening is larger among those who take a left-leaning stance (85%) in comparison with those with a right-leaning stance (68%), or with a centrist stance (77%). However, among the right-leaning Brazilians, there is a greater share of those who believe that scientists disagree among themselves about the reality of global warming (21%), against the opinion of those who state taking a stance more towards the left (11%) within the political spectrum.

It is also worth pointing out that the differences regarding Internet access and, as a result of that, access to information, can also affect their views on the subject, since the perception that most scientists believe global warming is not happening is higher among those who do not access the Internet (17%) than among those who access the Internet exclusively via mobile device (9%), or via more than one device (4%).

Regarding the impact of global warming in the future, nearly nine out of ten Brazilians (87%) believe that global warming can greatly harm future generations. This concern is more present among women (90%), the left-leaning population (92%), and among those who define themselves as black³ (91%). Accordingly, when it comes to how much damage global warming can cause to themselves and their families, women (75%), left-leaning people (78%), and those who define themselves as black (78%) show a higher level of concern about this than the population in general (70%). It is important to highlight that the proportion of those who think global warming can greatly harm themselves and their families dropped in comparison with the study's second round, going from 75% in 2021 to 70% now (Chart 7).

Chart 7: Perception of the damage they think global warming can cause to themselves and their families, in 2021 and 2022 (%)

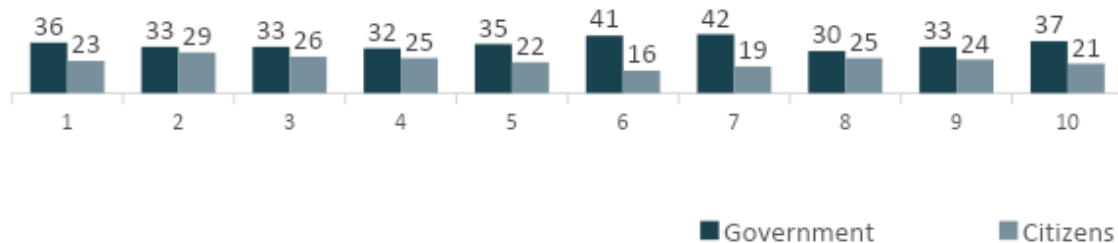


The study's third round investigated who could contribute the most to solving the climate change issue according to the perception of Brazilians. As per 36% of the population, the government is mainly responsible for dealing with that issue, followed by companies and industries (32%), citizens (23%), and NGOs performing in the environmental sector (8%). Beyond the results observed among those who define themselves as taking a left-leaning stance, and those who mentioned the government (42%) in a larger proportion, against individuals who define themselves as taking other stances within the political spectrum, it is worth observing that the younger respondents (18 to 24 years old) most commonly mention that citizens must contribute to solving climate change, whereas among individuals aged 55 or older, it is possible to notice a greater responsibility attribution to the government (Chart 8). If we also consider the sum of mentions (1st, 2nd, and 3rd places⁴), the proportion of those who believe the government must help solve the climate change issue reaches 85% of the population (considering that 88% of them belong to SEC AB) and 78% among those who believe that citizens can contribute to it.

³ As per the Brazilian Institute of Geography and Statistics – IBGE classification, respondents defined themselves according to skin color or race options: white, black, mulatto, yellow, or indigenous.

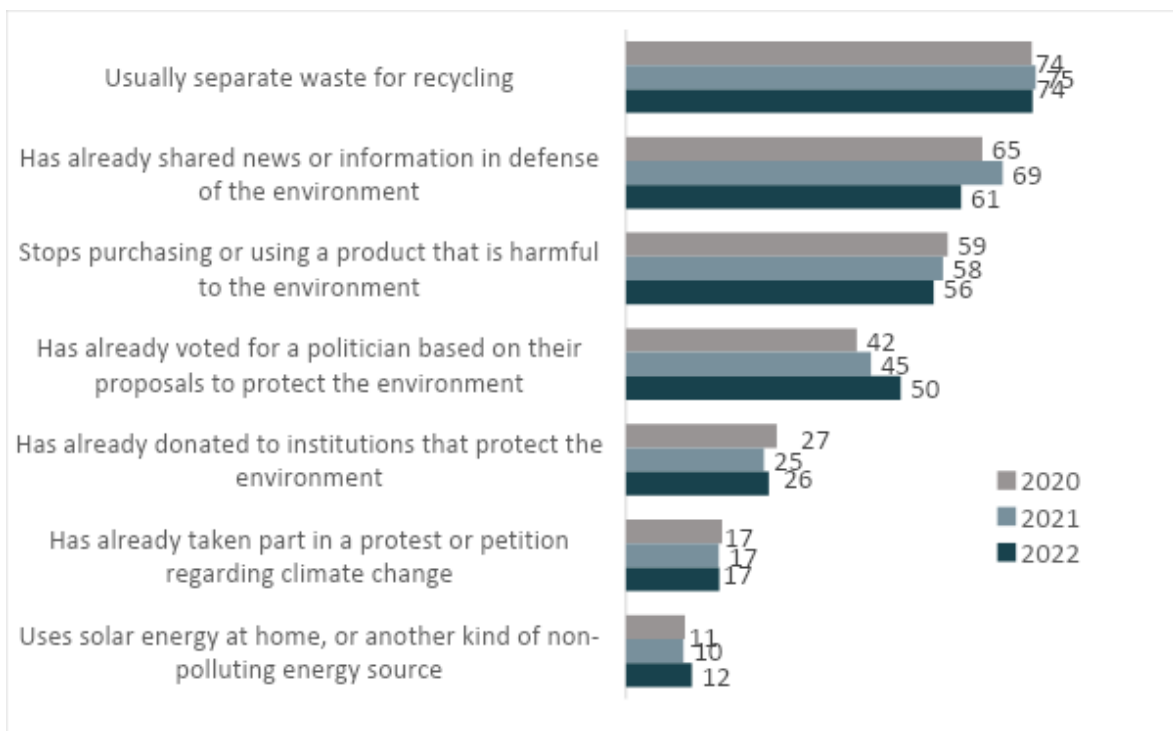
⁴ The question asks the respondent to rank order those who can help the most with solving the climate change issue from 1st to 3rd.

Chart 8: Government's contribution versus that of the population to solving the climate change issue, per age range, and political stance, 2022 (%)



With nearly eight out of ten Brazilians seeing citizens as being capable to help solving the climate change issue, the study also evaluated which activities the population usually engages in to contribute to preserving the environment. Similar to the previous editions of the study, sorting waste for recycling, sharing information or news about environmental protection, and giving up on buying environment-damaging products were the activities mentioned by most of the population (Chart 9). However, it is possible to observe a reduction in the proportion of those who stated sharing information on environment protection between 2021 and 2022, whereas there was an increase in the proportion of those who stated having already voted for a politician based on their environmental protection propositions, reaching half of the population in 2022 (50%).

Chart 9: Environmental protection activities – 2020, 2021, and 2022 (%)



The population from the South and Southeast regions is the one who sorts waste most often (85% and 77%, respectively). Waste sorting also takes place more often among women (77%), or even among adults older than 45 (79% among those aged 45 to 54, and 78% among those aged 55 or older), and among those with higher education (78%).

Among those who state having stopped buying or using any environment-damaging product, women also mentioned having adopted that procedure in a higher proportion (61%). In turn, in the case of those who state having voted for a politician based on their environmental protection proposition (50%), those who define themselves as left leaning (68%), and with a higher level of education (61%) have adopted such practice more often, as well as individuals within the 18 to 24 age range (60%), and from SEC AB (56%). This scenario is similar to those who have taken part in some climate change-related demonstration or petition (17%), a proportion that reaches 32% among those who define themselves as left leaning and have completed their higher education.

Overall, it is possible to note that the study’s set of investigated activities has a higher engagement rate among women, among those with a higher level of education, and among those who define themselves as politically left leaning. Concerning the differences in age range, some investigated activities are most commonly mentioned among adults older than 45, such as not buying environment-damaging products or waste sorting activities, whereas other political measures are most often reported by the younger population, such as voting for a politician with an environmental protection proposition or taking part in a climate change-related demonstration or petition.

Brazilians’ perception on forest fires and deforestation in the Amazon region

In view of the fact that fire outbreaks and deforested areas have been constant events within recent years in Brazil, this study also investigates the perception Brazilians have of the Amazon region forest fires and deforestation. According to the data gathered from the National Institute for Space Research (INPE), there was an increase in the number of fire outbreaks in the Amazon region in 2022, when compared to 2021 (Chart INPE).

Chart INPE: Number of fire outbreaks from 1998 to 2022: Brazil total, biomes from the Amazon and Pantanal regions (per thousands of fire outbreaks)

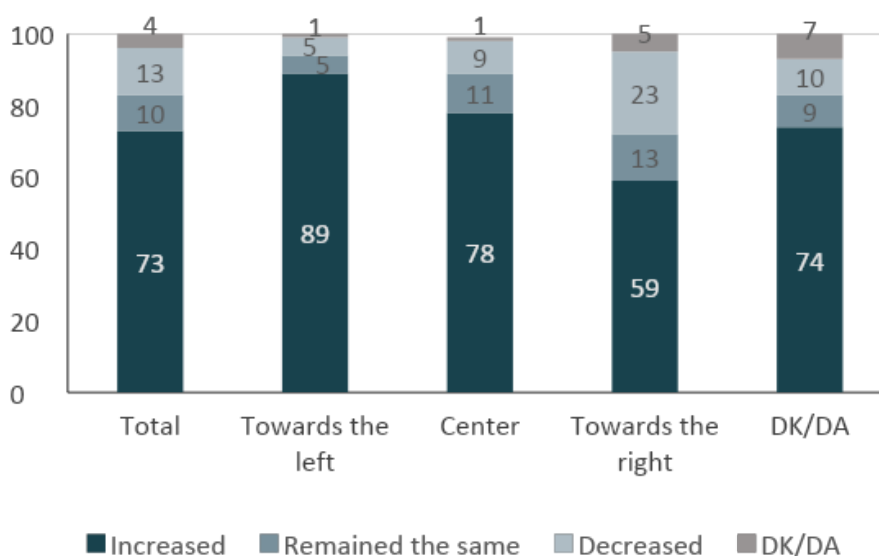


Source: INPE - Instituto Nacional de Pesquisas Espaciais. Portal do Monitoramento de Queimadas e Incêndios Florestais [Controlled fires and wildfires in Forests]⁵

⁵ Data released at < https://queimadas.dgi.inpe.br/queimadas/portal-static/estatisticas_paises/ > and https://queimadas.dgi.inpe.br/queimadas/portal-static/estatisticas_estados/ accessed on 03/17/2023.

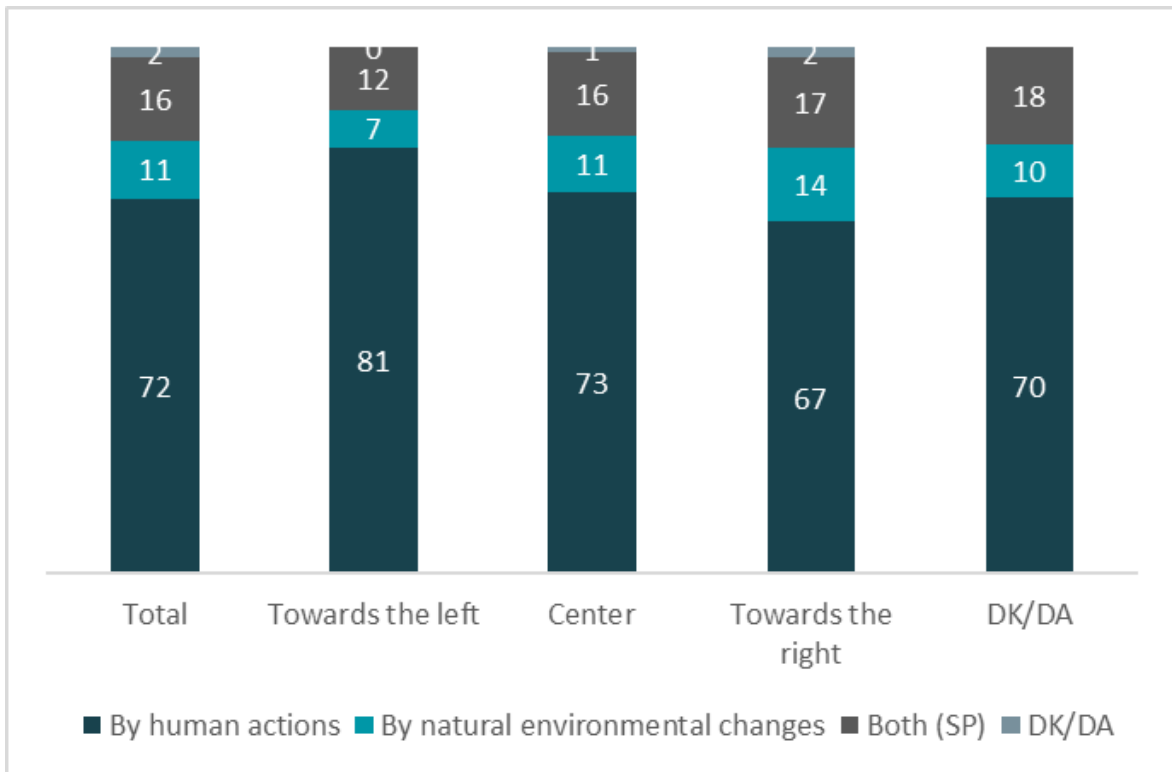
Brazilians who stated being highly aware of forest fires in the Amazon region, in 2022, correspond to 99% of the population (a stable proportion in comparison with the previous editions of the study). The study also investigated whether Brazilians believe the number of forest fires has increased, decreased, or remained the same over the past 10 years. There was an increase in the proportion of Brazilians who think that the number of forest fires has decreased (13%), in comparison with the 2020 (4%) and 2021 (7%) editions. In spite of the proportion increase in regard to those who think that the number of forest fires have decreased over the past 10 years, as well as in the previous editions, in 2022, most Brazilians believe that the number of forest fires has increased (73%). We can further notice that those Brazilians who define themselves as politically left leaning are the ones who mostly believe the number of forest fires has increased over the past 10 years (Chart 10).

Chart 10: Perception of the increase in the number of forest fires in the Amazon region over the past 10 years, per political stance, in 2022 (%)



The cause of forest fires in the Amazon region was also investigated by the study, and most of the population perceives them as caused by human activities (72%). Furthermore, 16% of them believe that both human activities and natural changes are responsible for the forest fires in the Amazon region, and 11% believe it is a result of natural environmental changes – most often among individuals who have complete Primary Education (14%), who have access to the Internet exclusively via cell phone (15%), and among Evangelicals and Pentecostal Protestants (15%). In turn, the perception that forest fires are caused by human activities is perceived more commonly among those who take a left-leaning stance (81%), as shown in the chart below:

Chart 11: Perception about the forest fire causes in the Amazon region, in 2022 (%)

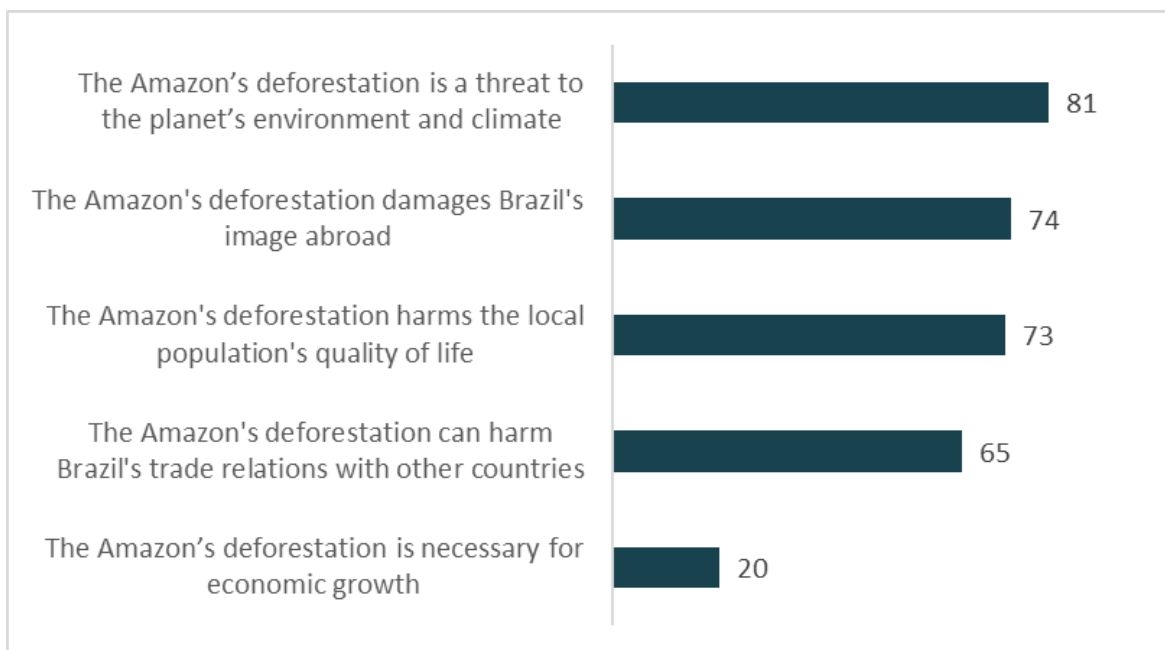


Among Brazilians who believe forest fires are caused by human activities, the study sought to identify who the main responsible parties would be for forest fires in the Amazon region. The results show that the main culprits are as follows: loggers (34%), followed by large farmers (14%), mine workers (13%), and cattle and livestock breeders (12%). If we consider the sum of mentions that ranked first, second, and third, loggers continue to be perceived as the main culprits (71%), followed by mine workers (49%), large farmers (44%), and livestock breeders (35%). In other words, the perception is that forest fires are associated with economic activities taking place in the region.

On the other hand, politicians (30%), environmental Non-Government Organizations - NGOs (8%), or the indigenous population (7%) were the least mentioned as being responsible for forest fires in the Amazon region. It is also possible to notice that among those Brazilians who believe that forest fires are caused by human activities, the perception of the responsibility on part of large farmers (57%) and livestock breeders (45%) is stronger among those with a higher education, whereas for those with complete High School (11%), and among those who take a right-leaning stance (12%), the responsibility of environmental NGOs is mentioned more often.

In addition to collecting information on the perception of the causes and of the responsible parties for the forest fires in the Amazon region in the opinion of Brazilians, the third round of the study also investigated the population's viewpoint on some aspects involving the deforestation in the Amazon region. Nearly eight out of ten Brazilians (81%) totally agree that the deforestation in the Amazon region is a threat to the planet's climate and environment, similarly to the fact that most of the population also totally agrees that deforestation jeopardizes Brazil's image abroad (74%), and the life quality of the local population (73%) (Chart 12).

Chart 12: Perception of the Amazon deforestation - totally agree, in 2022 (%)

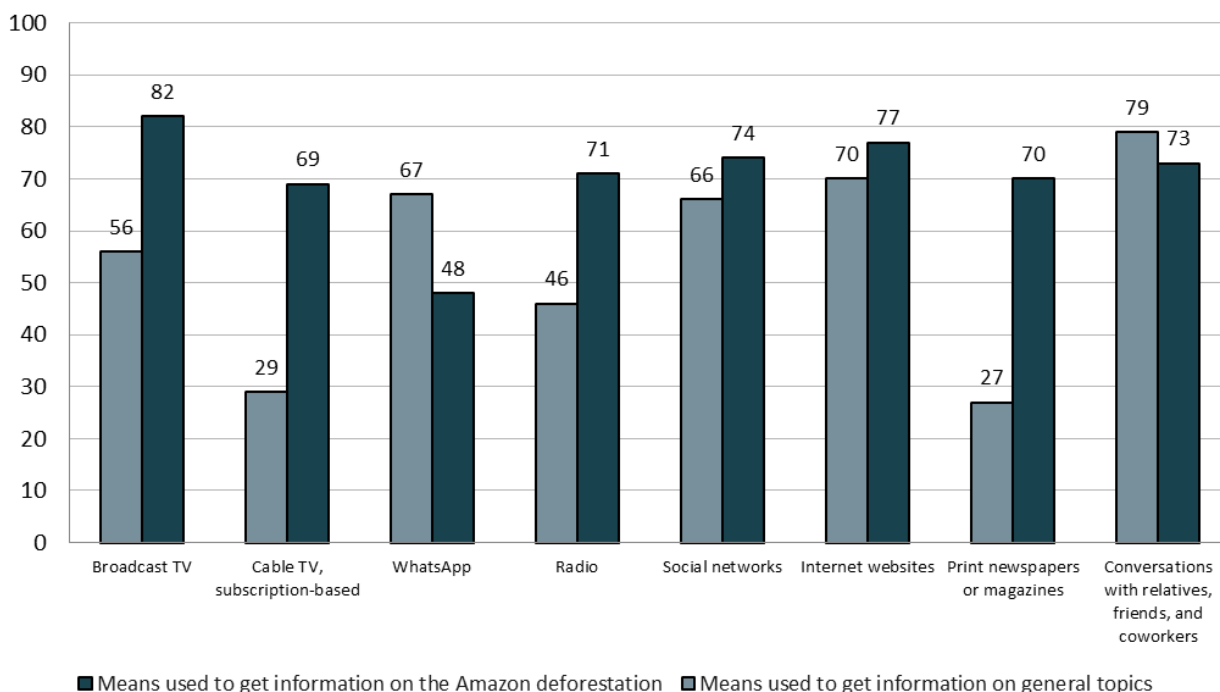


Among the investigated aspects regarding the Amazon deforestation theme, the only statement that did not count on the agreement from most of the population is the one that claims that the deforestation in the Amazon is needed for economic growth, with which, only 20% of the population totally agree. In the North (27%) and Northeast (26%) regions, for instance, this proportion was higher, similar to the states with a higher number of fire outbreaks⁶, where the (full or partial) level of agreement with this statement is also higher (34%) than in the states with a lower number of fire outbreaks (30%), a result that indicates higher acceptance because of these regions' economic dependency on activities that benefit from the Amazon deforestation (or even from other biomes), where a share of the local population lives.

The 2022 edition of the study investigated the main means of communication Brazilians turn to in order to get information on the Amazon deforestation. It is possible to notice that TV – broadcast or paid TV – is more commonly used by Brazilians to get information on the Amazon deforestation than to get information on general subject matters: 82% state that they use broadcast TV to get information on the Amazon deforestation, whereas 56% state making use of broadcast TV to get information on general topics. The proportion of Brazilians using paid TV to get information on deforestation is even higher (69%) against that to obtain information on general topics (29%) (Chart 13).

⁶ In order to define the areas with the largest number of fire outbreaks, the 10 states with the largest number of fire outbreaks within a one-year period were selected according to the INPE data. In the third round of the study, the established analysis period lasted from 09/01/2021 to 09/01/2022, and the 10 states with the largest number of fire outbreaks were: PA, MT, MA, AM, BA, PI, MG, TO, RO, and AC. The other states were classified as "Non-Resident", meaning that they are not among the 10 states with the highest number of fire outbreaks.

Chart 13: Means used to get information on the Amazon deforestation vs. Means used to get information on general topics, in 2022 (%)



How Brazilians perceive the policies for the environment and indigenous peoples

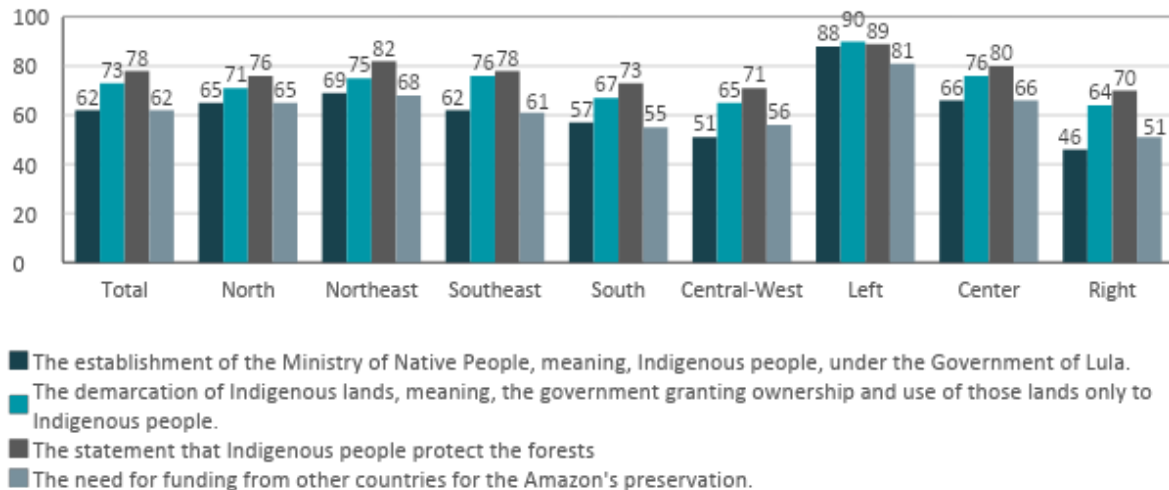
The interviews carried out in the third edition of the study after the 2022 elections⁷ and, in face of the change in the administration scenarios, new issues were addressed on how Brazilians perceive the environmental and indigenous peoples’ policies. About three out of four Brazilians fully or partially agree with the statement that the indigenous peoples protect the forest (78%), as well as with the indigenous land demarcation policy (73%). Most of the population also (fully or partially) agrees with the creation of the *Ministério dos Povos Originários* [Ministry of Indigenous Peoples]⁸ (62%), and with the need for funding from other countries for the preservation of the Amazon region (62%). Among Brazilians from the Northeast and North regions, the level of (full or partial) agreement with the creation of this Ministry reaches 69%, and 65%, respectively, and concerning the need for international funding for the Amazon region, it reaches 68%, and 65%, respectively. The level of agreement with all investigated themes in this section of the study is also higher among the left-leaning Brazilians within the political spectrum (Chart 14).

Overall, the research data reveals that most Brazilians have some level of (full or partial) agreement with the idea that Indigenous Peoples protect the forest, and with drafting and implementing public policies for that population.

⁷ The 2nd round of the election was held on 10/30/2022, whereas the fieldwork period for the study’s third round on How Brazilians Perceive Climate Change started the following month, on 11/25/2022, and was concluded on 01/26/2023.

⁸ During the questionnaire’s preparation phase, the aforementioned Ministry was called *Ministério dos Povos Originários*, however, after President Lula took office, it had its name changed to *Ministério dos Povos Indígenas - MPI*. <<https://www.gov.br/pt-br/orgaos/ministerio-dos-povos-indigenas>> Accessed on 03/16/2023.

Chart 14: Percentage of those who fully or partially agree with the following statements per Region and political stance – 2022 (%) (P2.1.5)



The third edition of the ITS-Rio study also investigated Brazilians' expectations surrounding the differences on environmental preservation between the new Lula's administration and Bolsonaro's administration. Most of the population (54%) believes that Lula's administration will be better, particularly among Brazilians from the Northeastern region (66%), and among those who take a left leaning stance and from SEC DE (88%). On the other hand, 21% believe that Lula's administration will be worse than Bolsonaro's administration when it comes to environmental preservation, with higher proportions among Brazilians from the Midwest region (32%), from those who take a right-leaning stance (43%), and from Evangelicals and Pentecostal Protestants (32%). Such profile differences are somehow associated with the voters' preferences according to their regional differences, which were observed in the election results⁹. Accordingly, it is also possible to notice a stronger feeling of optimism towards the perspective of improvement of environmental policies in President Lula's administration against that of former president Jair Bolsonaro, particularly among Brazilians who state taking a left-leaning stance.

FINAL CONSIDERATIONS

⁹ In the 2nd round of the 2022 presidential election, elected candidate Luiz Inácio Lula da Silva received more votes than candidate Jair Bolsonaro from all the states in the Northeastern region, whereas in the Midwest Region, all states and the Federal District mostly voted for Bolsonaro, according to data collected from the TSE – *Tribunal Superior Eleitoral* [Superior Electoral Court] <<https://resultados.tse.jus.br/oficial/app/index.html#/eleicao;e=e544/totalizacao>>. Accessed on 03/16/2023.

Climate change and global warming

The third edition of the study indicates a decrease in the proportion of Brazilians stating to be concerned about the environment, although the theme triggers some level of concern among most of the population. Nevertheless, only two out of ten Brazilians perceive themselves as highly aware of global warming and climate change issues. Among Internet non-users, the share of respondents who stated to be highly aware of the theme in 2022 was higher than that in 2021, which indicates that the circulation of information on global warming and climate change is not restricted to the Internet.

In its 2022 edition, the study investigated environmental events as well as how strongly the population feels about them being triggered by global warming. There is almost a unanimous perception among Brazilians that, in the past years, there has been an increase in food prices, air pollution, temperature, or in the cost of the electricity bill. However, the association of global warming with phenomena, such as food prices or the increase in the electricity bill, takes place at a lower level than the other impacts perceived as being more direct, such as the increase in temperature and the reduction in rainfall, for instance.

Women, the left-leaning population, and those who define themselves as black show more concern about the global warming impacts in the future and how global warming could harm themselves and their families. When investigating who could contribute more to solving the climate change issues, it was possible to notice a difference between age ranges: the youngest sample (18 to 24 years old) most frequently mentions that citizens should help solve climate change issues, whereas among the population aged 55 or older, there is a stronger attribution of responsibility to the government.

In turn, regarding the practices effectively adopted to help preserve the environment, waste sorting, sharing environment-related information or news, or the act of not buying environment-damaging products are attitudes mentioned by most of the population. Furthermore, from 2021 to 2022, there was a reduction in the proportion of the population that states having already shared environmental protection information, at the same time that it was possible to observe an increase in the proportion of the population who states having already voted for a politician based on their environmental protection proposition. Overall, the investigated practices show an increased engagement on part of women, on those with a higher level of education, and on those who politically define themselves as left leaning.

Forest fires and deforestation in the Amazon region

Almost the entire population states that they have already heard of forest fires in the Amazon region and, despite the increase in the proportion of those who believe that the number of forest fires has decreased within the past 10 years, most Brazilians still believe that this number has increased. Regarding the causes of forest fires, most Brazilians perceive them as being caused by human activities. The economic activities associated with the exploitation of the forest are perceived as key in establishing the responsibility for forest fires in the region.

Most of the population agrees that the Amazon deforestation is a threat to climate, jeopardizes Brazil's image abroad, and harms the quality of life of the local population. Accordingly, the idea that the Amazon deforestation is a needed activity for economic growth is not agreed by most of

the population, even though in the North and Northeast regions, and in the states with the highest number of fire outbreaks, it is possible to notice some agreement.

One of the novelties of the 2022 edition of the study was the investigation of the means of communication people usually use to get information on Amazon deforestation. Unlike what happens when the population gets information on general topics, in the case of information on deforestation, there is greater use of traditional media channels, such as broadcast TV.

Perception of policies for the environment and for the indigenous peoples

The third edition of the study investigated some aspects related to policies oriented towards the indigenous peoples and the environment in general, having in mind the context of a Government administration change. Within this scenario, most of the Brazilian population states having some level of agreement, either full or partial, with indigenous-oriented policies, such as the creation of *Ministério dos Povos Indígenas*, particularly in the Northeast and North regions, and among the left-leaning population within the political spectrum. In regard to perspectives for the future, most of the population believes that Lula's administration will be better than Bolsonaro's when it comes to protecting the environment, particularly in regions where the current president obtained the largest number of votes in the past elections.