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CHALLENGES TO ENVIRONMENTAL PERCEPTION: DEMYSTIFYING ESTABLISHED CONCEPTS

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ABSTRACT

Aims: Climate change represents one of the greatest challenges of this century. However, how it is communicated can significantly influence public perception and willingness to act. Excessively alarmist news tends to generate a feeling of hopelessness and can demotivate the population instead of encouraging them to adopt mitigation measures.
Method: In this quantitative study, we developed a set of questions to assess participants' perceptions of pre-established concepts related to the environment.

Results: The results indicate that many respondents show a sense of pessimism, unaware of significant advances in the fight against climate change. Examples include the reduction of carbon emissions in Europe, the fact that we are the greenest generation of the last 50 years, and the decrease in mortality caused by natural disasters. Some of those interviewed said they were reconsidering the decision to have children due to the perception of an unpromising future.

Findings: These findings highlight the need for more balanced climate education and communication, which, without minimizing the challenges, also highlight the progress and opportunities for a sustainable future.

Keywords: climate, education, literacy, perceptions, information, Sustainable Development Goals (SDG).

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1 INTRODUCTION

Climate change represents one of the most significant challenges of the 21st century, requiring continuous efforts to mitigate it. However, the excessively alarmist tone of some news reports can generate a feeling of helplessness, leading people to believe, albeit unconsciously, that the future is

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doomed and that their efforts will be in vain. Helm et al.'s (2021) study of 100,000 young people aged between 16 and 25 revealed that more than three-quarters consider the future frightening and believe that humanity is doomed. People less sensitive to environmental issues express 60% more desire to have children (Nattavudh Powdthavee et al., 2024). It is important to note that this work does not attempt to minimize the seriousness of climate change. The global response has been insufficient and somewhat slow (IPCC, 2014; Karatayev et al., 2021). However, narratives that portray an apocalyptic scenario often distort reality and can paradoxically strengthen denialist discourses (Pasquini et al., 2023; Ritchie, 2024).

The topic receives widespread attention - with good reason - but constant alarmist exposure can lead to information fatigue and demobilization of the public (Allianz, 2023; Lu, 2022). Robust climate education, based on solid scientific evidence, is required. Despite the challenges, there is reason to believe that we can be the first generation to leave the environment in better condition than we found. Data indicates that air quality in the UK is the best in centuries, and similar progress is being made in other countries such as the US, Canada, France, and Germany (Beloconi & Vounatsou, 2021; Eurostat, 2019). This progress demonstrates that it is possible to mitigate environmental impacts and foster a sense of hope. While it is essential to recognize the seriousness of the climate crisis, how it is communicated can directly influence society's response. Excessive pessimism can generate “eco-anxiety” and inaction, discouraging the search for sustainable solutions (Kurth & Pihkala, 2022).On the other hand, balanced approaches, based on scientific evidence and concrete examples of progress, are more effective in mobilizing the population. Studies indicate that messages incorporating hope increase risk perception and encourage pro-environmental behavior (Castellini et al., 2024; Marlon et al., 2019).

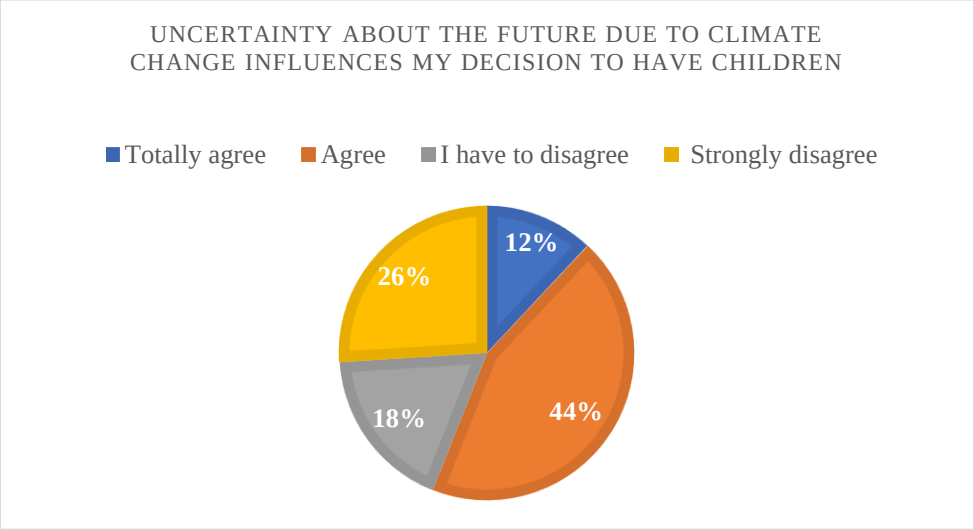
In this paper, we analyze the responses of 90 participants, and we seek to deconstruct pre-established perceptions about the environmental crisis. We aim to contribute to a more realistic and balanced view of the environmental issue and to demonstrate that, although the challenges are significant, there is room for progress and transformation.

2 METHODS

This study is based on a quantitative approach, in which we analyzed the responses of 90 random participants who answered a brief questionnaire on environmental perceptions. The questionnaire, consisting of 5 questions, multiple choice (3) and Likert scale (2), was distributed online. The data was analyzed descriptively, observing trends and patterns in the graphs generated from the responses. No inferential statistical tests were applied since the aim was to visualize the general perception of the participants without exploring relationships between variables.

Figure 1

Percentage responses to the question "Uncertainty about the future due to climate change influence my decision to have children."



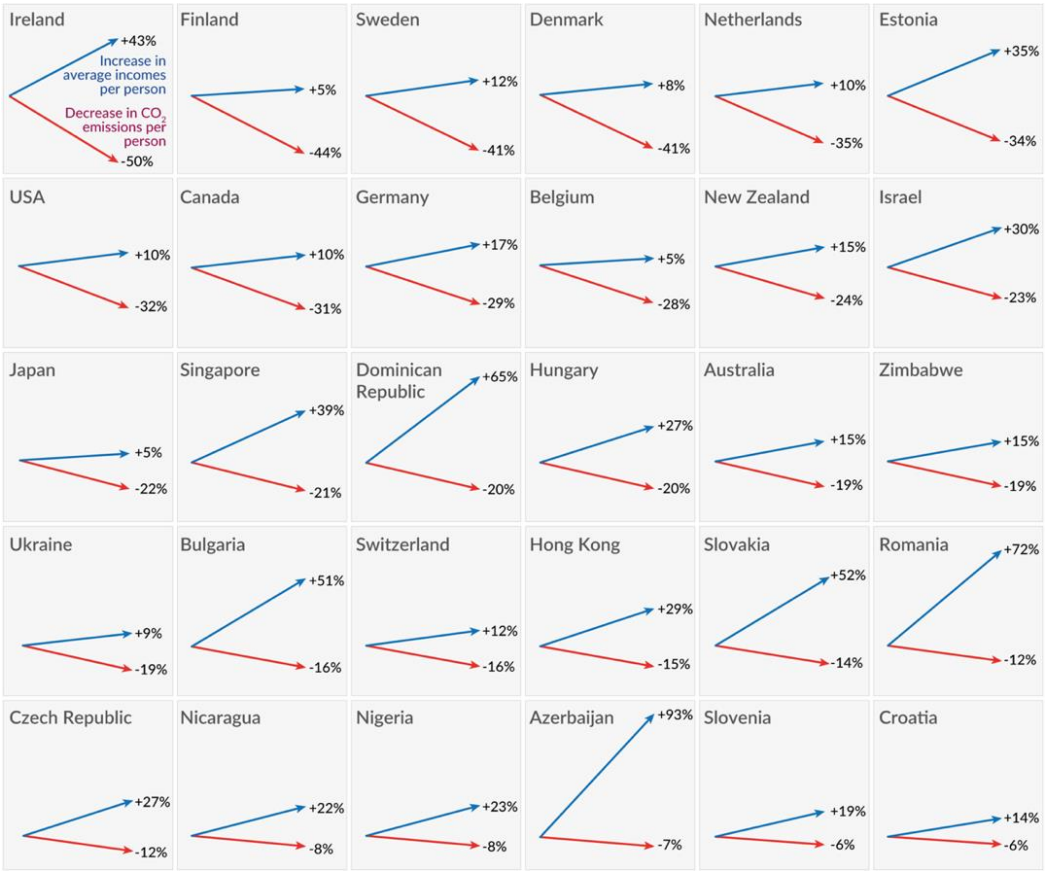
The majority of respondents seemed to have some fear of the future when asked about their desire to have children, with 44% agreeing and 12% totally agreeing that climate change contributes to discouraging them from having children. Once again, we tend to invoke the concept of eco-anxiety, which is in line with other studies, such as Hickman et al. (2021), which states that 4 out of 10 young people from more than 10 countries admit to preferring not to have children because of climate change.

3 CARBON EMISSIONS IN EUROPE OVER THE LAST 20 YEARS

We also wanted to know whether respondents were aware of the European Union's efforts to reduce its carbon emissions, or whether, on the other hand, their perceptions indicated that we are emitting more and more gases, which is contributing to a bleak and uncertain future. In the United Kingdom, each inhabitant emits the same today as in the 1850s. An individual in Europe today breathes the best air of the last 100 years. It emits the same emissions as their great-great-grandparents and has a much better standard of living, as GDP has been increasing, while at the same time slowing down their emissions (Jaume Freire-González et al., 2024; Ritchie, 2021), a can be seen in more detail in figure 2 below:

Figure 2

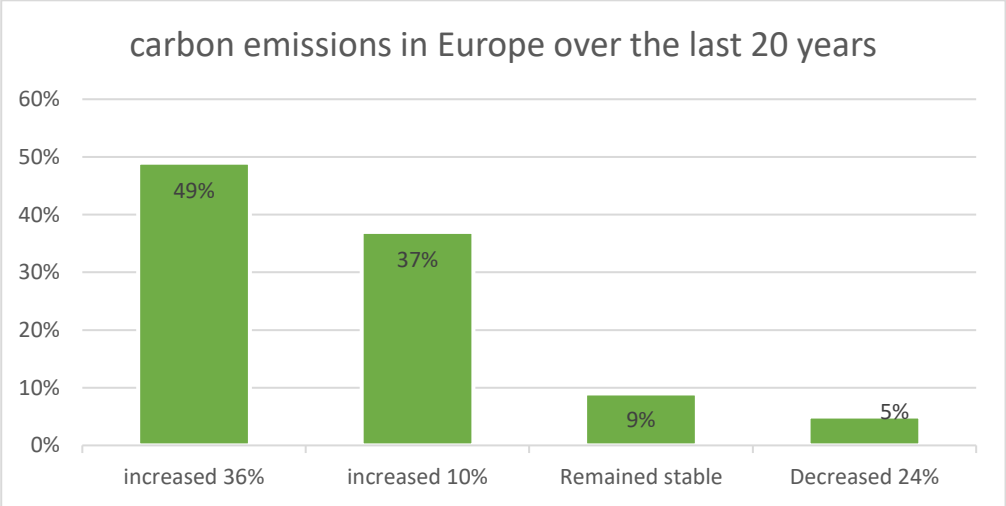
Correlation between GDP and CO2 emissions in various countries. Adapted from Ritchie (2021).



We can see the percentage of answers to the question "carbon emissions in Europe over the last 20 years" where there were four answer options: decreased by 24%, increased by 10%, remained stable, and increased by 26%.

Figure 3

Percentage of answers to the question "Carbon emissions in Europe over the last 20 years..."



When analyzing the results, we see that 37% answered that emissions had increased 10x, 49% said that carbon emissions had increased by 36%, and 9% said that emissions had remained the same, making a total of 95% wrong answers. Headlines can often mislead us into believing that our air is the most polluted ever (Dias, 2023; Galvin, 2025). Technology and science have made it possible to make a transition from the coal of yesteryear to more sustainable energy sources, and the trend is set to improve (Gov UK, 2025; Ritchie et al., 2020; Statista, 2024; UK Energy, 2024).

4 WHAT DO YOU THINK HAS HAPPENED TO MORTALITY RATES CAUSED BY NATURAL DISASTERS FROM 1920 TO 2024?

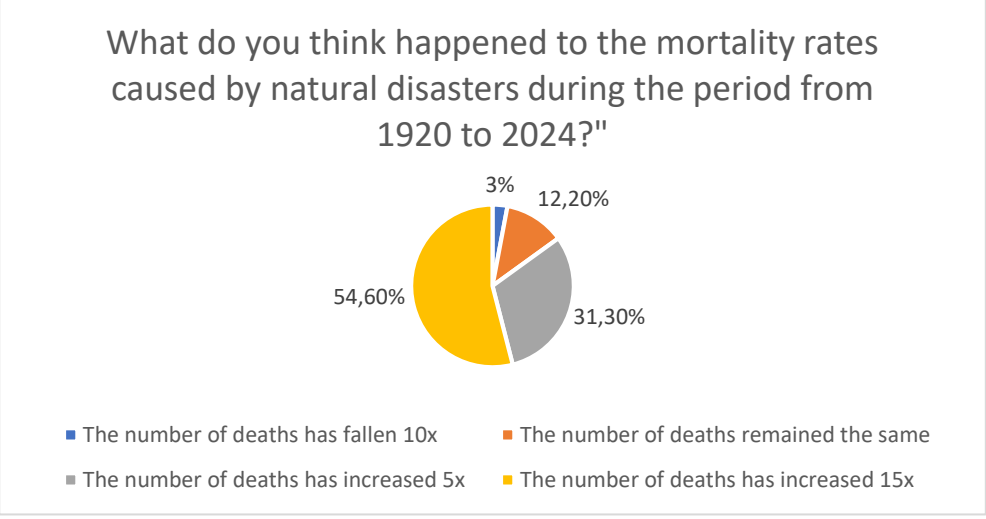
Climate change has increased the frequency and intensity of extreme events, such as heat waves, storms, floods, forest fires, etc (European Environment Agency, 2012; NASA, 2024).

However, despite this increase, mortality associated with extreme events has been falling. This paradox is mainly due to technological advances, the improvement of early warning systems, and the strengthening of adaptation and mitigation infrastructures. Better preparedness, greater community resilience, and investments in disaster response have made it possible to save more lives, even in the face of more intense phenomena. Studies indicate that, over the last century, deaths related to natural disasters have fallen dramatically despite population growth and increased climate risks. This reinforces the importance of continuing to invest in adaptation, sustainable policies, and technological innovation to minimize the impacts of climate change on humanity (WMO, 2024). However, in fact the number of deaths related to natural disasters has decreased since the first half of the 20th century, by about 10 times (World in data, 2024). We therefore wanted to find out what the respondents' perception was of the death rates caused by natural disasters over the last 100 years, asking the following question:

"What do you think has happened to the death rates caused by natural disasters from 1920 to 2024?" The percentage of responses can be seen in Figure 5 below:

Figure 4

Percentage answers to the question: "What do you think happened to the mortality rates caused by natural disasters from 1929 to 2024?"

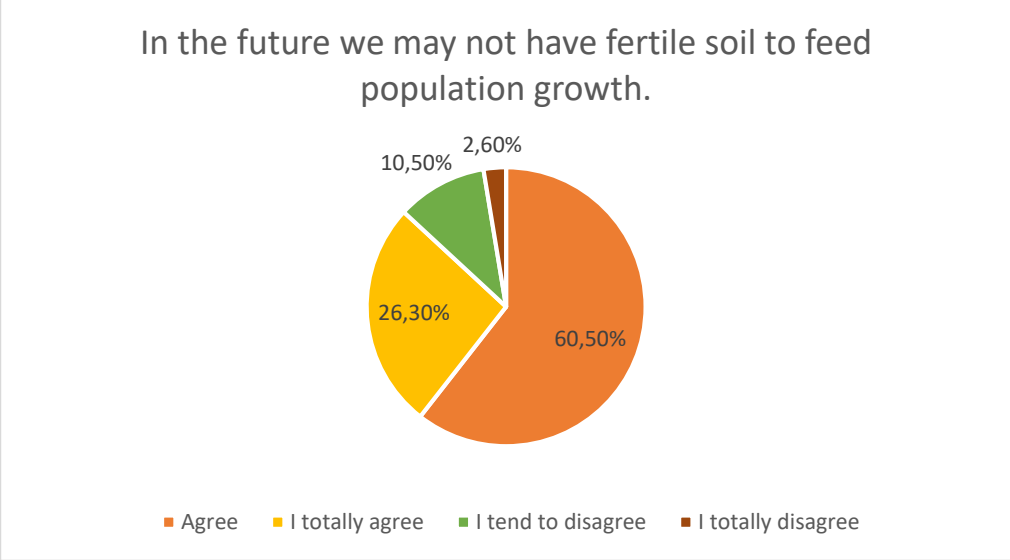


The perception of the respondents showed that only 3% of the participants answered correctly when they said that the number of deaths had decreased by 10x, while the rest of the sample said that the number of deaths had increased by 15x (54%) and that the number of deaths had increased by 5x (31%). The decrease in death rates should not minimize the problem of climate change, but on the contrary, shows us that humans can solve problems. Today, we have infrastructure that can help mitigate a flood, emergency shelters, rebuild communities, foster international support networks, meteorologists track storm trajectories, and our food resists and lasts longer (Masterson, 2024; Ritchie, 2024).

We were also interested to know the respondents' perception of a possible lack of food, so we asked the question "4- In the future, we may not have fertile soil to feed the growing population". The answers are shown in figure 6 below:

Figure 5

Percentage answers to the question: "In the future, we may not have fertile soil to feed population growth".



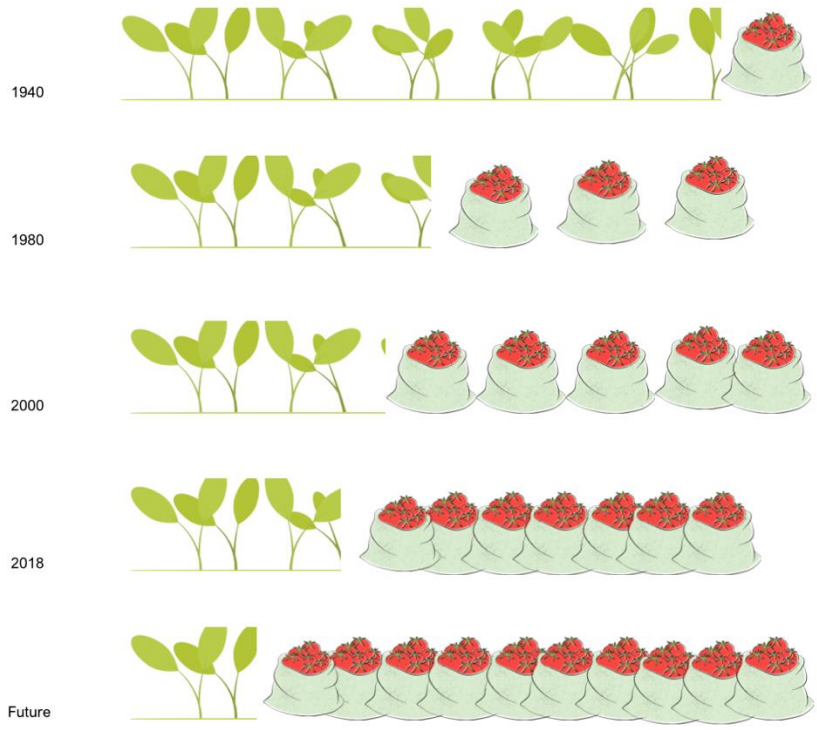
The majority of respondents answered that they agree and agree that in the future we will not have fertile soil to feed the population, making a total of 80%.

We currently produce enough food for twice the world's current population. Over the last dozen years, the world has significantly reduced hunger. However, malnutrition rates have not been completely eradicated. If we go back a few centuries, most people could barely get enough to eat (Hasell & Roser, 2013). The idea that we do not have enough land for everyone is not new; the 1968 work Population Bomb stated that population growth was out of control and that we would not be able to produce enough food for everyone (Ehrlich, P. R., & Ehrlich, A. H. 1968).

Its author, Ehrlich, suggested sterilization programs; today, we know that it is possible to feed millions of people without destroying the planet. Throughout history and through fertilization and genetic engineering, we have improved crop yields worldwide, requiring less soil (Ritchie et al., 2022).

Figure 6

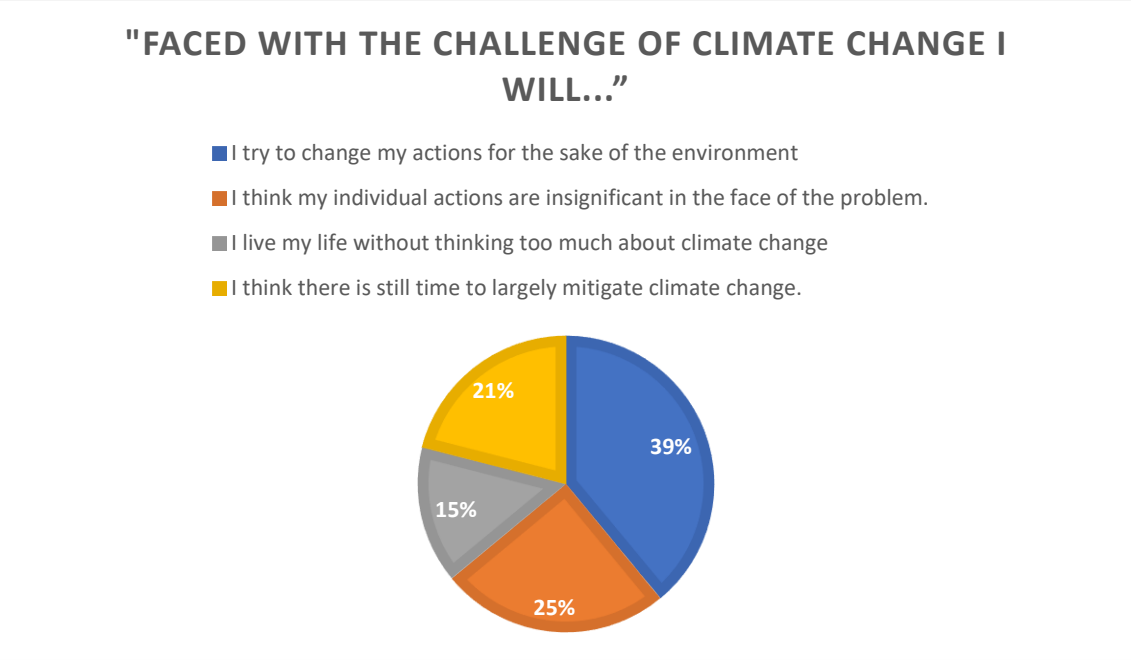
Correlation between the need for less soil and the increase in agricultural production over time, adapted from Bayer (2022) and USDA (2021).



While climate change and the loss of fertile soil generate legitimate concerns about agricultural productivity, it is equally important to highlight the technological advances that have transformed the sector. In recent years, agriculture has undergone a real revolution, making it possible to produce more food in less space, even in challenging scenarios (Yacoub Bach et al., 2023; Scarborough et al., 2023), but systematic scaremongering leads people to believe that much of the hunger on the planet today is caused by climate change, even though unfortunately we still have not managed to eradicate hunger, more people are dying from overeating than from hunger (Chong et al., 2023; Flegal et al., 2013). Throughout this article, we have pointed out that the feeling of powerlessness in the face of the environmental crisis can lead people to abandon greener habits, believing that their actions have little impact on the magnitude of the problem. This perception can be fueled by excessively alarmist news, conveying an unpromising future (Allianz, 2023; Ballew et al., 2021; Lu, 2022; Stanley et al., 2021). With this in mind, we sought to understand the respondents' willingness to adopt more sustainable behaviors by asking the following question: “5 - Faced with the challenge of climate change, I will...”.

Figure 7

Percentage answers to the question: "Faced with the challenge of climate change, I will..."



An analysis of Figure 7 shows that most respondents (39%) are proactive in adopting more sustainable behavior about the environment. Also noteworthy is the 21% who believe that "we still have time to mitigate climate change to a large extent, " revealing considerable hope. On the other hand, 25% of participants say that their actions are insignificant in the face of the magnitude of the problem, showing a feeling of powerlessness. In addition, 15% mention living without thinking about climate change, which reflects a worrying sign of indifference.

5 CONCLUSION

The results of this study reinforce the importance of more balanced climate communication based on scientific evidence. It can be seen that a significant proportion of participants have a pessimistic perception of the future, associated with eco-anxiety and fear of the consequences of climate change. This feeling is reflected, for example, in the reluctance of many respondents to have or not have children. In addition, the data reveals a

significant lack of knowledge about the environmental advances of recent decades. Almost all respondents (95%) had an incorrect perception of the evolution of European carbon emissions, underestimating the progress made. Similarly, only 3% correctly recognized the significant reduction in deaths caused by natural disasters since the beginning of the 20th century, reinforcing the narrative that alarmist news may distort public perception. The idea that we will face imminent food shortages is another concern, given that we currently produce enough food for twice the world's population. This exaggerated fear may result from communication that focuses excessively on the risks without contextualizing the advances in agriculture and food security.

It is suggested that Environmental Education based on scientific evidence, including content in school curricula that addresses the history of carbon emissions, advances in food security and measures that have reduced mortality in natural disasters, and improvement in climate communication: Encourage the media to adopt a balanced approach, avoiding sensationalism and contextualizing information with historical and comparative data. Highlight positive examples of climate mitigation and adaptation, showing that taking action and obtaining concrete results is possible. Although climate change will have many consequences, the world needs realistic optimism, not excessive alarmism. It is important to distinguish this optimism from a naive and reckless vision because overconfidence can also be dangerous. It is essential to keep the focus on this progress but never to underestimate the seriousness of climate problems and the ongoing need for action.

By promoting more balanced climate communication and equipping the population with solid knowledge, we can reduce pessimism and strengthen the collective capacity to act effectively and confidently in the face of environmental challenges.

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