THE ENERGY TRANSITION AND GENDER EQUALITY:

OPPORTUNITIES FOR SPANISH YOUTH

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FOREWORD

The IE Foundation aims to contribute to the transformation of society by participating in initiatives that improve educational excellence and foster talent, as well as to research and the dissemination of groundbreaking knowledge. We endorse research projects that unlock new approaches to tackle the social, technological and economic challenges inherent to modern-day society.

I am delighted to present this report, which is the outcome of a joint venture between the IE Foundation and the Cepsa Foundation which sheds light on a key issue: the opportunities and challenges of the energy transition for young people in Spain in terms of gender equality.

It is indeed vitally important to move towards energies that are not only more sustainable, but also accessible, equitable and inclusive. Young people play an essential role in this process. It is, therefore, imperative to understand the energy transition from their perspective.

This report, which is the result of the first quantitative study carried out in Spain on this subject, was drawn up by a team of female professors and researchers from IE University, who are experts in different fields.

The study confirms the encouraging evidence that the majority of young people want to be involved in designing measures to combat climate change. However, it also highlights the need to increase their awareness of the opportunities that the energy transition affords to reduce gender gaps.

These conclusions strengthen the Foundation's commitment to resolutely supporting initiatives that spearhead these changes.

We hope you enjoy reading this report and find the conclusions useful and inspiring.

Gonzalo Garland

Executive Vice-President, IE Foundation

The Cepsa Foundation is convinced that the transition to a new energy model is a challenge which requires the impetus and participation of organizations, companies and citizens, given its sheer magnitude and cross-cutting nature. This collaboration is key to addressing the potential gaps and inequalities inherent to this process.

We are working hard to ensure that this economic, technological and social transformation is fair and inclusive. This is why the Cepsa Foundation decided to set up the Just Transition Observatory in conjunction with Red2Red. This forum for reflection has given rise to the first national report on the social perception of the ecological transition in Spain.

It is essential to promote an active listening process between citizens and the public and private sectors to share proposals for the future. This study, conducted in conjunction with the IE Foundation, aims to drive this objective forward, and considers that young people have a key role to play in this transformation.

We need to understand where we are now so we can turn today's challenges into opportunities for the future. The energy transition is a major shift in a paradigm that will revolutionize the way we consume, work and move. Therefore, it must be properly managed to ensure that measures that reduce existing gaps, such as gender equality, are implemented.

One of the main findings of this joint study conducted with the IE Foundation points to the need to increase awareness among young people about the opportunity to promote gender equality through the energy transition. If one in three young people is considering working in environmental and sustainable energy-related fields, as this report reveals, efforts must focus on promoting gender-equal careers in the sector in the future.

It is important to deploy measures that raise awareness among young people about the benefits of attracting more women into the energy industry and to involving them in this transition process. We are also mindful of the importance of training young women in energy and sustainability issues to channel their heightened environmental awareness.

The Cepsa Foundation is committed to undertaking projects to achieve these goals, as well as to generating knowledge through reports such as this one.

We hope you enjoy reading this report and that its contents prove valuable and prompt you to take action.

María Teresa Mañueco Pfeiffer

Vice President, Cepsa Foundation

INTRODUCTION

YOUNG PEOPLE HAVE A PIVOTAL ROLE TO PLAY IN THE TRANSITION TOWARDS MORE SUSTAINABLE ENERGY. THEY ARE OUR FUTURE LEADERS AND THE INHERITORS OF THE PLANET

The energy transition is one of the greatest challenges facing today's society, but as with all major challenges, searching for and reflecting on potential solutions also opens a door that brings new opportunities. This is a process of enormous scale that affects all social and economic agents, and has a special impact on the younger generations, since it is a transformation whose fruits they will reap in the coming decades. The transition towards more sustainable, more affordable, fair and inclusive energy is not only linked to technology. Its success also depends on how its social, economic and cultural impact is dealt with.

To ensure success, the energy transition must factor in gender equality, i.e., it must guarantee equal distribution of job opportunities between men and women. Furthermore, it should also engage and embrace the younger generations, who are keenly aware of the environmental challenges and understand that the way we generate and use energy has a direct impact on the sustainability of the planet.

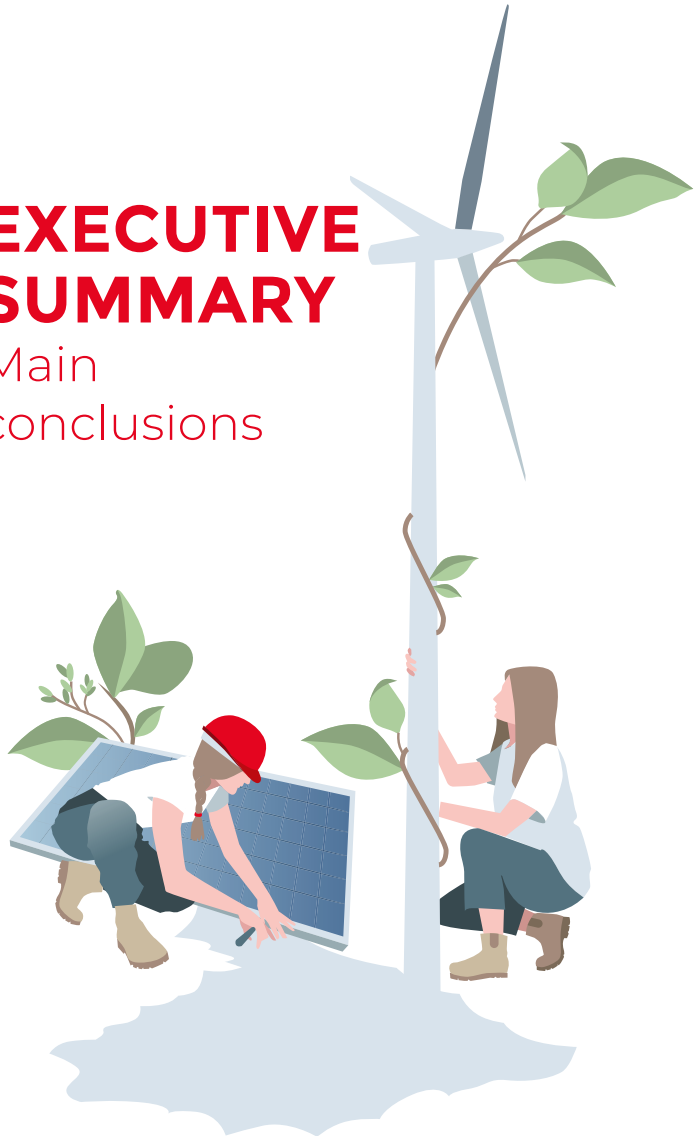
Their participation is crucial to changing mindsets about resource and energy production and consumption patterns and to aligning them with renewable, sustainable sources. They are the generation that will bear the consequences of decisions made today. Therefore, they have a vested interest in promoting sustainable energy solutions to ensure a future that provides better opportunities for everyone. In addition, young people are a driving force for change. They have an innovative mindset that is wired to come up with creative ideas to address energy challenges. By engaging in the energy transition, young people can promote clean technologies, support energy efficiency and encourage responsible consumption, thus contributing to a greener, more sustainable future for all.

Therefore, young people's opinions and experiences are deemed to be especially relevant for the future, as their priorities and concerns will shape the political, economic and social agenda in the coming decades. However, up until now, the perceptions of young men and women regarding the opportunities afforded by the energy transition from a gender-equality point of view have not been analyzed. This study therefore seeks to find out what young people think about climate change and the energy transition and how this could have an impact on gender equality.

Furthermore, it is worth noting that this study reveals that the younger generations have different behavioral patterns and opinions about climate change and the opportunities afforded by the energy transition depending on their gender.

EXECUTIVE SUMMARY

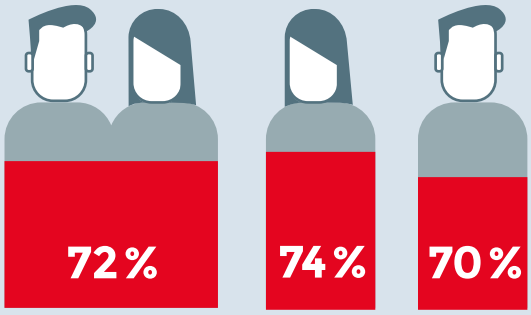
Main conclusions



AWARENESS

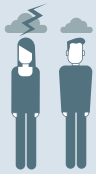
Young people in Spain are very environmentally aware and are keen to be more involved in climate policies.

Percentage of environmental awareness



EQUITY

The energy transition is an opportunity to foster gender equality.



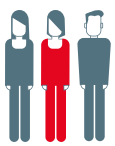
Most young people are unaware that **climate change has a greater impact on women.**

Teaching and educating young people about gender equality and renewable energy could encourage female participation in these fields and **reduce the gender gap in them.**

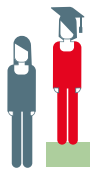
Given their environmental sensitivity and awareness, **female managers could bring more ESG criteria** to organizations, making them more competitive.

SUSTAINABILITY

Sustainability makes companies more appealing to young people.



One out of three young people is considering working in environmental and sustainable energy-related fields.



Higher levels of education imply **heightened interest** in working in energy transition-related professions.

The 21-25 age group is more interested in environment-related professions **than the 16-20 age group**.

EXECUTIVE SUMMARY

THREE MAIN CONCLUSIONS CAN BE DRAWN FROM THE STUDY

1. Young people in Spain are very environmentally aware and half of them would like to play a more active role in the design of climate policies.

• Young people in Spain (between 16 and 25 years of age) are highly aware of the importance of looking after the environment (72%). This percentage was higher among young women (74%) than young men (70%). Higher income brackets and level of education increased environmental awareness among men, while these aspects did not influence awareness among young women.

2. The energy transition could be an opportunity to foster gender equality.

• Young people in Spain are largely unaware of the gender-equality aspects of the energy transition. For example, most of them do not know that climate change and its consequences have a greater impact on women and girls, especially in developing countries.

• Greater training and education for young people on the links between gender equality and the energy transition could be a major opportunity to attract more women to fast-growing energy sectors (renewables) and to reduce the gender gap in a traditionally male-dominated sector.

• Bringing women, most of whom are more environmentally aware and sensitive, into management positions in the industry could provide a competitive advantage to organizations that are increasingly interested in applying ESG (Environmental, Social and Governance) criteria in their management practices.

3. Sustainability makes companies more appealing to young people when looking for jobs.

• One out of three young people is considering working in environmental and sustainable energy-related fields.

• Young people with higher levels of education were more interested in working in energy transition-related professions.

• Interest in working in environmental and sustainable energy-related sectors and professions increased as young people matured (more in the 21–25 age group compared to the 16-20 age group).

1.

RESEARCH OBJECTIVE

THE GOAL WAS TO COMPARE THE PERCEPTION OF DIVERSITY AND ENERGY TRANSITION EXPERTS WITH THE VISION OF YOUNG PEOPLE IN SPAIN REGARDING THE OPPORTUNITIES PROVIDED BY THE ENERGY TRANSITION IN TERMS OF GENDER EQUALITY

The research objective was to compare the perception of diversity and energy transition experts, using a qualitative analysis through focus groups, with the vision of young people in Spain between 16 and 25 years of age, whose opinions were gleaned through a quantitative analysis via a survey that focused on the opportunities and challenges afforded by the energy transition in terms of gender equality. The approach of the study was therefore intergenerational and gender-focused. Special attention was paid to training, employment and entrepreneurship.

The first phase of this study reviewed the existing academic literature on the energy transition and gender equality and confirmed the limited availability of statistical information about young people in Spain's perceptions of the energy transition and its impact on gender equality. This is a unique contribution of this report.

A quantitative analysis was then carried out (see details in the methodology section) through a survey of 2,400 young people between 16 and 25 years of age throughout Spain to ascertain how they perceived the impact of the energy transition on gender equality. Subsequently, after collecting a significant amount of data, the next stage of the qualitative assessment sought to compare the perceptions of diversity and energy transition experts with the vision of the surveyed young people.

2.

BACKGROUND

PREVIOUS RESEARCH HAS REVEALED THAT CLIMATE CHANGE HAS A GREATER IMPACT ON WOMEN

A systematic review of the literature yielded 51 academic articles related to practitioners involved in this research as well as some corporate report references to the energy transition: the impact of the energy transition on the perception of gender equality. The most salient examples were selected as the academic background for our study.

The literature was divided into the following areas:

a) beliefs about the energy transition and climate change and the role of gender

b) the intersection between gender equality and the energy transition

c) climate change-induced side effects

The research on these three aspects predicts that climate change will have a more severe impact on women.[1] This is primarily because changes in the use of natural resources, employment, the economy, and in health issues related to the environment are more likely to affect women.[2] In addition, women are underrepresented in the green economy, implying they may struggle to cope with the consequences of climate change. According to the Stockholm Environment Institute, transitions, in addition to being sociotechnical, are also "gendered" and "deeply sociopolitical," which could exacerbate inequalities.[3] This Institute analyzed how different forms of renewable energy can have an impact on women's work, access to land, employment and poverty, among other issues. A specific example was cited in the analysis of a transition process in Rwanda,[4] in which the authors analyzed the impact of electrification on women's habits and day-to-day activities.

[1]BCG Global. (2021). *Why Climate Action Needs a Gender Focus*. https://www.bcg.com/publications/2021/climate-action-impact-on-gender-equality.

[2]Energy Sector Management Assistance Programme. & World Bank eLibrary - York University. (2019). "Gender Equality in The Geothermal Energy Sector: Road to Sustainability". (Vol. 1-1 online resource). *The World Bank*; WorldCat.org. http://elibrary.worldbank.org/doi/book/10.1596/31607.

[3]Johnson, O. W., Han, J., Knight, A., Mortensen, S., Aung, M., Boyland, M., & Resurrection, B. (2020). "Assessing the Gender and Social Equity Dimensions of Energy Transitions". *Stockholm Environment Institute*. https://www.sei.org/wp-content/uploads/2020/04/assessing-the-gender-and-social-equity-dimensions-of-energy-transitions-2020.pdf.

[4]Muza, O., & Thomas, V. M. (2022). "Cultural norms to support gender equity in energy development: Grounding the productive use agenda in Rwanda". *Energy Research & Social Science*, 89, 102543. https://doi.org/10.1016/j.erss.2022.102543.

In this case, electrification had a positive impact on high-income households, but a less positive impact on low-income households, many of which were headed by women, again revealing a gender gap. Similar cases were studied in other research projects conducted in other countries such as Canada, Kenya and Spain,[5] revealing the impact of gender inequality in various energy transition scenarios. In all three cases, the deployment of blanket energy transition solutions, which did not take gender into account, exacerbated these inequalities, leading to a number of undesirable outcomes, such as the exclusion of minorities (in the case of Canada) and of women (in the case of Spain and Kenya).

To combat unwanted effects on gender inequality, experts have advocated a more gender-balanced approach to climate change interventions[6] so that women have the same opportunities to cope with its catastrophic consequences. For example, a recent report by the International Renewable Energy Agency (IRENA) found that there was a lack of female employees in the renewable energy, oil and gas industries.

[5]Lieu, J., Sorman, A. H., Johnson, O. W., Virla, L. D., & Resurrection, B.P. (2020). "Three sides to every story: Gender perspectives in energy transition pathways in Canada, Kenya and Spain". *Energy Research & Social Science*, 68, 101550. https://doi.org/10.1016/j.erss.2020.101550.

[6]IRENA (2019). *Renewable energy: A gender perspective*. IRENA, Abu Dhabi.

They mainly attributed this shortfall to the lack of STEM (Science, Technology, Engineering and Mathematics) skills, the absence of gender targets in companies and the limited mobility imposed by exogenous constraints on women's lives. They also reported a lack of awareness about the existence of job opportunities in the renewable energy and traditional energy sectors, which could be countered by providing women with more information and education. Similarly, the study carried out by the Cepsa Foundation and Red2Red's Just Transition Observatory showed that young people and women were more sensitive to the need to fight climate change than men and older people, and found that this same group was also more optimistic about the potential impacts of climate change on their lives.[7]

The recommendations put forward by Energia, the International Network on Gender and Sustainable Energy, were similar.[8] They conducted a literature review which revealed that universal energy access targets are unlikely to be met unless energy policies are aligned to women's as well as men's energy needs, skills and participation in the transition.

A recent study by the Naturgy Foundation[9] found that in the ten-year period from 2012 to 2022 energy transition-related jobs occupied by women increased from 17% to 18% in Spain, revealing a profound gap between male and female employment in this field. The Naturgy Foundation also reported poor percentages of women working in energy transition-related jobs requiring STEM skills, mirroring the IRENA and Energia reports.

The aforementioned study carried out by CEPSA Foundation and Red2Red's Just Transition Observatory, entitled *La percepción social sobre la transición ecológica en España, 2022-23*

EXPERTS HAVE ADVOCATED MOVING TOWARDS A MORE GENDER-BALANCED APPROACH TO CLIMATE CHANGE INTERVENTIONS, SO THAT WOMEN HAVE THE SAME OPPORTUNITIES TO COPE WITH ITS IMPACTS

[7]Just Transition Observatory (2023). *La percepción social sobre la transición ecológica en España, 2022-23.* Available in Spanish at: https://observatorio-transicionjusta.com/wp-content/uploads/Informe_Largo_Percepcion_TJ_Es_23.pdf.

[8]Sharma, A. (2019). *Gender in the transition to sustainable energy for all: From evidence to inclusive policies*. Available at: https://storage.googleapis.com/e4a-website-assets/Gender-in-the-transition-to-sustainable-energy-for-all_-From-evidence-to-inclusive-policies_FINAL.pdf.

[9]Naturgy Foundation (2023). *Employment of women in the Just Energy Transition in Spain*. https://www.fundacionnaturgy.org/en/producto/the-employment-of-women-in-the-just-energy-transition-in-spain/.

(Social perceptions of the ecological transition in Spain) revealed young people's opinions about their role in the energy transition. This report builds on these ideas by focusing on the perceptions of young people in Spain about the impact of the energy transition and the differential effect it has on men and women, as well as including a quantitative analysis of these perceptions. We hope that our findings will provide fresh insights into how Spain's young people see the impact of the energy transition in terms of gender perceptions.

Based on this line of work, the Spanish Institute of Women studied the perceptions of male and female adults on climate risks from a gender perspective.[10] To complement the study's findings, the Institute conducted a series of interviews that analyzed sustainable lifestyles among men and women in Spain.[11] These two innovative studies quantitatively and qualitatively examined gender in the context of the energy transition among the Spanish population, though they did not focus on young people.

A. Beliefs about the energy transition, climate change and the role of gender

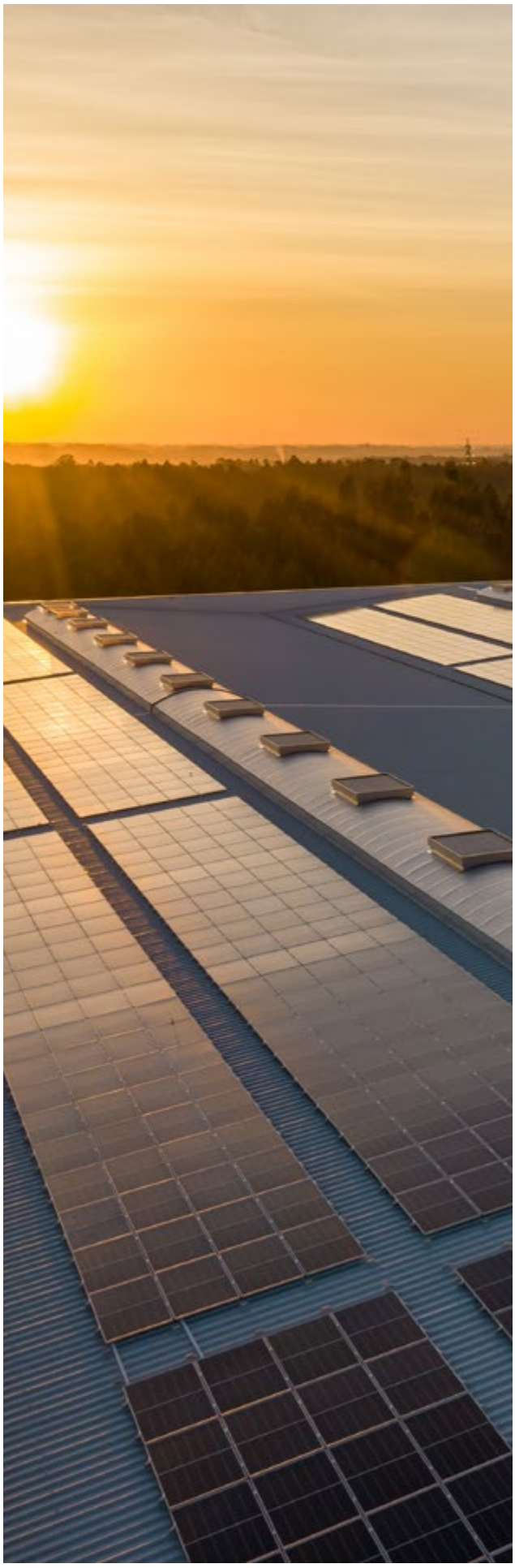
There is a stream of literature that has examined the inverse relationship, i.e., the impact of gender bias on the energy transition. While this literature is not directly related to the present study, we believe it is worth examining so that we can analyze its findings.

Ejelöv & Nilsson[12] (2020) reviewed previous studies on the impact of gender on acceptability for environmental policies. In this review, they found that women tended to be more willing to embrace new environmental policies. However, when policies were implemented in a context of low trust in government, women tended to exhibit lower acceptability of these measures than men. In addition, they found that men were more supportive of oil and gas-related policies, while women were more supportive of environmentally friendly and renewable energy-related policies.

[10]Spanish Institute of Women (2021). *Riesgos climáticos desde la perspectiva de género. Percepción, posicionamiento y adaptación en mujeres y hombres*. https://www.inmujeres.gob.es/areasTematicas/MedioAmbienteCambioClimatico/Docs/RiesgosClimaticosPerspectivaGenero.pdf.

[11]Spanish Institute of Women (2022). *Análisis sobre estilos de vida sostenibles y resilientes ante la emergencia climática. Una aproximación con perspectiva de género.* https://www.inmujeres.gob.es/areasTematicas/MedioAmbienteCambioClimatico/Docs/AnalisisSobreEstilosDeVida.pdf.

[12]Ejelöv, , E., & Nilsson, A. (2020). "Individual Factors Influencing Acceptability for Environmental Policies: A Review and Research Agenda". *Sustainability*, 12(6), 2404. https://doi.org/10.3390/su12062404.



Interestingly, the EU 2021 Climate Change Barometer revealed that men and women were equally concerned about climate change, though women were somewhat more likely (80%) than men (76%) to consider climate change as a very serious issue.[13] Likewise, at European level, women were also more likely to take action to combat climate change.

Moreover, group level perceptions about the energy transition, and climate change in general, are essential when analyzing the findings of this study, mainly because the existing literature has focused on the adult population, whereas the present study focuses on young people in Spain. Janik et al. (2022)[14] found that Swedish, Finnish and Danish citizens saw the development of renewable energy as a key target in their societies. Interestingly, the same report found that Spain, along with Malta and Cyprus, were least willing to pursue energy independence. Furthermore, another report revealed that Spanish citizens were against a tax on fossil fuels, and preferred subsidies to encourage the uptake of more environmentally sustainable consumption habits and renewable energies.[15] In the Canary Islands, a recent study found that sharing relevant information about renewable energy, as well as explaining its utility and perceived benefits, were positive drivers in encouraging the uptake of renewable energies.[16] Finally, being a member of a pro-environmental initiative group boosted acceptance of renewable energy.[17]

B. The intersection between the energy transition and gender equality

In 2021 and especially during the winter of 2022, Europe faced a series of unprecedented energy challenges, which had been building up for years.[18] A number of factors came together in the region which led to energy shortages and high prices. The energy crisis was exacerbated by several geopolitical and supply issues. First, there were disruptions in the oil and gas pipelines supplying energy to Europe, due to armed conflicts and geopolitical disputes in some producer regions.

Second, Europe's dependence on natural gas and oil imports made it vulnerable to price volatility on international markets, which led to significant increases in energy costs.

[13]European Commission (2021). Climate Change (Special Eurobarometer No. 513). https://ketlib.lib.unipi.gr/xmlui/bitstream/handle/ket/3703/ebs_513_en%20%281%29.pdf?sequence=1&isAllowed=y.

[14]Janik, A., Ryszko, A., & Szafraniec, M. (2021). "Determinants of the EU Citizens' Attitudes towards the European Energy Union Priorities". *Energies*, 14(17), 5237. https://doi.org/10.3390/en14175237.

[15]Stadelmann-Steffen, I., & Eder, C. (2021). "Public opinion in policy contexts. A comparative analysis of domestic energy policies and individual policy preferences in Europe". *International Political Science Review*, 42(1), 78-94. Scopus. https://doi.org/10.1177/0192512120913047.

[16]Marrero, R. J., Hernández-Cabrera, J. A., Fumero, A., & Hernández, B. (2021). "Social Acceptance of Gas, Wind, and Solar Energies in the Canary Islands". *International Journal of Environmental Research and Public Health*, 18(18), 9672. https://doi.org/10.3390/ijerph18189672. https://doi.org/10.3390/ijerph18189672.

[17]Radtke, J., Yildiz, Ö., & Roth, L. (2022). "Does Energy Community Membership Change Sustainable Attitudes and Behavioral Patterns? Empirical Evidence from Community Wind Energy in Germany". *Energies*, 15(3), 822. https://doi.org/10.3390/en15030822. https://doi.org/10.3390/en15030822.

[18]IEA (2022), *The global energy crisis*. Available at : https://www. iea.org/topics/global-energy-crisis?language=en.

EUROPE NEEDS TO DIVERSIFY ITS ENERGY SOURCES, BOOST PRODUCTION AND PROMOTE ENERGY EFFICIENCY TO SECURE SUPPLY

This "perfect storm" further highlighted the need to diversify energy sources and boost production and storage capacity in the region, as well as to promote greater energy efficiency to cope with future crises and to secure supply. It also underscored the importance of developing and implementing clean technologies, as well as promoting energy efficiency and emissions reduction policies to mitigate negative impacts on the environment and comprehensively tackle the energy crisis and climate change.

There are key aspects of this change that interact directly with other social considerations. Some are included in the 17 United Nations Sustainable Development Goals (SDGs). The interface between climate change (SDG goal 13) and gender (in)equality (SDG goal 5) is particularly salient.

Issues such as the differential impact of climate change on men and women and inclusive leadership in this new sector are also key elements for the future of countries and companies.

Between November 6 and 18, 2022, the Egyptian city of Sharm El-Sheikh hosted the annual United Nations Climate Change Conference (COP-27), where one of the most widely discussed topics was the importance of gender in climate change. Several participants referred to the differential role of women in protecting the environment, as well as the pertinence of factoring gender perspectives into climate change measures and the transition to renewable energy sources.

The relationship between gender equality and the energy transition is multifaceted. First, the energy transition is expected to improve women's health and access to public and private empowerment at global level by bettering their living conditions.[19] Second, given that poverty is higher among women, new, cheaper, more efficient forms of energy would help to achieve more equal representation, democratizing their use among the population at large.

[19]IRENA (2019). *Renewable Energy: A Gender Perspective*. IRENA, AbuDhabi.https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Jan/IRENA_Gender_perspective_2019.pdf?rev=bed1c40882e54e4da21002e3e1939e3d.

Table 1. Sustainable Development Goals

> THE IDEA OF ENCOURAGING FEMALE PARTICIPATION IN THE NEW JOBS TO BE CREATED IN THE GREEN ECONOMY IS KEY TO PROMOTING GENDER EQUALITY IN THE LABOR MARKET

However, there is also reason to believe that, should current trends persist, women who largely work in more polluting industries,[20] could be excluded from much of the employment and many of the educational opportunities arising from the green economy.[21]

Thus, unless there is a conscious, concerted effort to ensure more equity in the energy transition process, a BCG study estimated that progress towards gender equality could be delayed for an additional 10 to 15 years due to the potentially negative repercussions of the energy transition process.[22]

The mechanisms suggested to prevent this from happening include the idea of encouraging female participation in the new jobs that are expected to be created in the green economy.[23]

B. Why is it important to understand the energy transition from a gender perspective among young people?

Numerous studies of varying scope conducted in different locations have concurred that young people are more concerned about the environment than their elders.[24] The perspectives and experiences of young people are deemed to be particularly relevant, since their priorities and concerns will ultimately shape the political, economic and social agenda in the coming decades.

Therefore, this poses a critical question: what opportunities will the energy transition bring to young people and how do they perceive them?

A second question centers on the idea of whether the growth and impact of the energy transition will be equal and whether it can cater for men and women on an equal footing.

[20]ESMAP. (2019). "Gender Equality in The Geothermal Energy Sector: Road to Sustainability". (Vol. 1-1 online resource). *The World Bank*; WorldCat.org. http://elibrary.worldbank.org/doi/book/10.1596/31607.

[21]Johnson, O. W., Han, J., Knight, A., Mortensen, S., Aung, M., Boyland, M., & Resurrection, B. (2020). "Assessing the Gender and Social Equity Dimensions of Energy Transitions". *Stockholm Environment Institute*. https://www.sei.org/wp-content/uploads/2020/04/assessing-the-gender-and-social-equity-dimensions-of-energy-transitions-2020.pdf.

[22]Sqalli, Z., Unnikrishnan, S., Mejri, N., Dupoux, P., George, R., & Zrikem, Y. (2021, octubre 26). Why Climate Action Needs a Gender Focus. *BCG Global*. https://www.bcg.com/publications/2021/climate-action-impact-on-gender-equality.

[23]Suso Araico, A., Bartolomé Esteban, C., & Velasco Gisbert, M. (2020). "Género y cambio climático: Un diagnóstico de situación" (NIPO 049200313). *Spanish Institute of Women*. http://www.inmujer.gob.es/servRecursos/ServicioPublicaciones/Distribucion.htm.

[24] For example, in 2021, the European Commission found that 22% of people aged 15-24 in the European Union considered climate change to be the single most serious problem facing the world, compared with 16% of respondents aged 55 and older. https://www.inmujeres.gob.es/diseno/novedades/Informe_GeneroyCambioClimatico2020.pdf

3.

METHODOLOGY

THE STUDY AIMED TO ANSWER THE QUESTIONS: WHAT GENDER OPPORTUNITIES WILL THE ENERGY TRANSITION BRING TO YOUNG PEOPLE, AND HOW DO THEY PERCEIVE THESE OPPORTUNITIES?

As mentioned in section 1 "Research objective", this study aimed to investigate the following questions: What gender opportunities will the energy transition bring to young people, and how do they perceive these opportunities? A mixed approach was used to respond to these questions. First, a quantitative method was used via a questionnaire and then, a qualitative method was deployed through focus groups conducted with experts in different fields related to the research questions, which added greater depth to the analysis of the quantitative results.

A. Survey

The survey obtained 2,400 responses from young people between the ages of 16 and 25 from all over Spain between April 3 and 12, 2023. In all, 1,127 people (47%) identified themselves as male, 1,239 (52%) identified themselves as female, 19 (0.8%) identified themselves as other and 15 people (0.6%) preferred not to answer. The method used to obtain answers to the questions enabled us to balance the number of responses to reflect the demographic breakdown, both by province and by region.

The survey was devised to gather comprehensive information so we could control for a series of sociodemographic variables, and analyze the participants' environmental, gender, and energy transition beliefs and perceptions.

Each respondent answered a series of questions, partially based on the New Ecological Paradigm[25] scale, to ascertain his or her level of support (or rejection) for a world view intended to preserve the environment (pro-ecological world view). Since it was devised in 1978, and revised in 2000, this scale has been widely used by researchers[26] to measure environmental concern. In addition, participants answered questions that measured their level of support for different paradigms in gender beliefs.

[25]Dunlap, R. & Liere, K.D. & Mertig, A. & Jones, R. (2000). "Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale". *Journal of Social Issues*, 56. 425-442.

[26]Vozmediano, L., & San-Juan, C. (2005). "Escala Nuevo Paradigma ecológico: Propiedades psicométricas con una muestra española obtenida a través de Internet". *Medio ambiente y comportamiento humano. Revista Internacional de Psicología Ambiental* ISSN 1576-6462, Vol. 6, Nº. 1, 2005, pags. 37-49, 6.

Diagram 1. Analysis dimensions included in the questionnaire

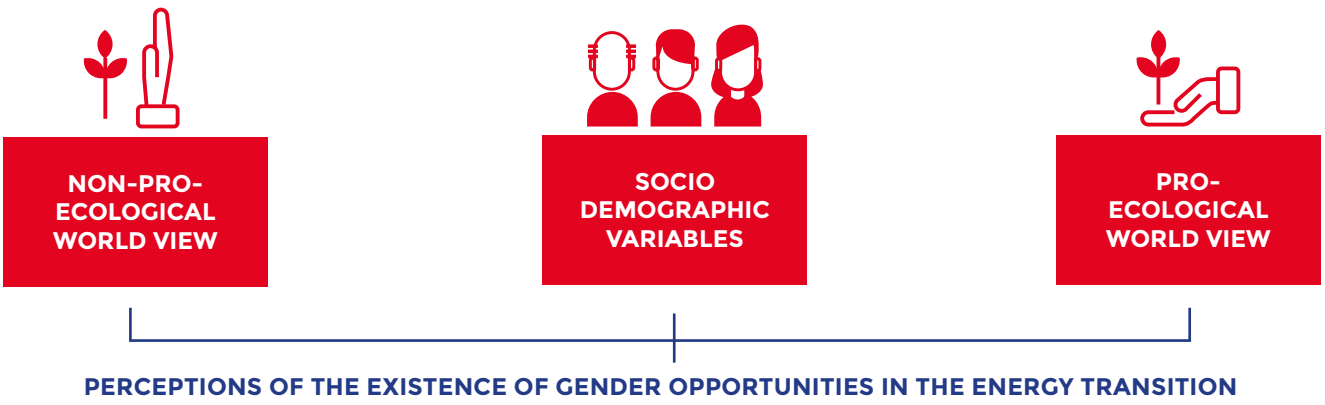


Diagram 1 shows the dimensions measured in the questionnaire, as well as the relationships we aimed to study.

Each of the dimensions in the above diagram was reflected in the survey as mentioned in section 1.

Once the survey results had been compiled, statistical methods were used to study the impact of each of the first three dimensions on the last one, i.e., the opportunities afforded by the energy transition. This enabled us to see the influence, for example, of an anthropocentric world view, i.e., a way of thinking that places human beings at the center of the universe (implying that all other beings, such as animals, plants and the rest of the planet, exist mainly to satisfy human needs), versus an ecocentric one, which posits that all living beings and the entire ecosystem are valuable in themselves (and not only in terms of how useful they are to human beings). In addition, it revealed how other characteristics, such as being male or female or having a particular socioeconomic status, influenced the way in which young people perceived the potential gender opportunities afforded by the energy transition.

The sociodemographic aspects used were gender, age, level of education, the autonomous region where the respondent resided, whether their municipality was classified as rural or urban according to its population density, and their household income bracket.

The questions used are shown below.

THE SURVEY RESULTS ENABLED US TO ASCERTAIN HOW YOUNG PEOPLE PERCEIVE THE POTENTIAL GENDER OPPORTUNITIES AFFORDED BY THE ENERGY TRANSITION

State your gender.	○ Male ○ Female ○ Other answer ○ Prefer not to answer
State your year of birth.	
What is the highest level of education you have completed?	○ No schooling completed ○ Primary education ○ Secondary education (Compulsory Secondary Education, Baccalaureate, Intermediate Vocational Training) ○ Diploma or Advanced Vocational Training ○ University degree ○ Master's degree ○ PhD
Which subject area did you study?	1. Social Sciences and Law 2. Humanities 3. Natural and Health Sciences 4. Technological Sciences 5. Other. State which area
What do you think you will be doing in five years' time?	1. I will be working because I don't need a qualification (e.g., a diploma or university degree) for the job I want to do. 2. I will be working because I need to be financially independent. 3. I will be studying because I still don't know what I would like to do for a living. 4. I will be studying because I need a qualification (e.g. a diploma or a university degree) for the profession I want to follow. 5. I will be studying or working for other reasons. 6. I'm going to do something else.
State your municipality zip code.	
State whether your father/mother/ guardians are both employed.	○ Both ○ One is and one isn't ○ Neither ○ Other
If this is the case, would you like to work in the same industry as your father/ mother/guardians?	○ Same industry as my father ○ Same industry as my mother ○ Same industry as my guardian ○ No
If this is the case, please state the industry in which your father/mother/guardians work.	

State the number of siblings in your family (include yourself).	
State your birth order. For example: write 1 if you are the first sibling, 2 if you are the second, etc.	
State whether you have ever lived abroad for more than three months. For example, because of your parents' occupation, your studies, etc.	○ Yes ○ No
State whether you have ever participated in a foreign language learning program abroad.	○ Yes ○ No
Do you see yourself working in the environmental or renewable energy fields in the future?	○ Yes ○ No ○ Don't know/ Prefer not to answer

	RATE THE FOLLOWING STATEMENTS ACCORDING TO YOUR LEVEL OF SUPPORT, FROM LESS (1) TO MORE (5)				
	1	**2**	**3**	**4**	**5**
I think I am a good student.	○	○	○	○	○
We are approaching the limit of the number of people the Earth can support.	○	○	○	○	○
The Earth has plenty of natural resources if we just learn how to develop them.	○	○	○	○	○
Earth is like a spaceship with very limited room and resources.	○	○	○	○	○
Humans were meant to rule over the rest of nature.	○	○	○	○	○
Humans will eventually learn enough about how nature works to be able to control it.	○	○	○	○	○
If you are paying attention, select the fourth option on this scale for this question.	○	○	○	○	○

	1	2	3	4	5
If things continue on their present course, we will soon experience a major ecological catastrophe.	○	○	○	○	○
The energy transition will lead to greater gender equality.	○	○	○	○	○
Greater gender equality fosters the energy transition.	○	○	○	○	○
The energy transition will create opportunities for women to access leadership positions (political, business, public...).	○	○	○	○	○
Companies that are more sustainable also foster gender equality.	○	○	○	○	○
Extreme events possibly caused by climate change, such as droughts and floods, have a greater impact on women globally than on men.	○	○	○	○	○
I would like to play a more active, participatory role in designing climate policies and measures to combat climate change.	○	○	○	○	○
Women are more environmentally aware in their consumption and mobility patterns, and in the rational use of resources.	○	○	○	○	○

B. *Focus groups*

The second part of the methodology consisted of organizing four focus groups with gender and/or energy transition experts. Their objective was to confirm the quantitative results of the survey, as well as to enhance our analysis of the results with valuable qualitative contributions. Thus, guided, structured discussions were conducted by a moderator from the research team in which participants were free to express their opinions and beliefs based on the questions we asked them, as well as to share their views openly about the survey results.

The sessions took place between April 24 and 28, 2023. Each one lasted for around 90 minutes. In total, 27 experts from different areas such as the energy transition, sustainability, gender equality, sociological analysis, business strategy and talent acquisition took part in the focus groups. The experts came from academia and the private sector, from the fields of consultancy and journalism, and from traditional and renewable energy companies. The specific questions posed during the sessions are detailed in the appendix above.

4.

WHAT DO YOUNG PEOPLE IN SPAIN THINK ABOUT THE ENERGY TRANSITION AND ITS POTENTIAL OPPORTUNITIES FOR GENDER EQUALITY?

> THE RESULTS REVEALED MAJOR AWARENESS OF THE IMPORTANCE OF SUSTAINABILITY, AS WELL AS A KEEN INTEREST IN PARTICIPATING IN ENVIRONMENTAL DECISION-MAKING

A. Involvement in sustainability and the environment

The results of the survey revealed that all the respondents were highly aware of the importance of sustainability and the need to protect the environment. They were also very keen to participate in decision-making on environment-related measures.

Thus, if we add the items taken from the New Ecological Paradigm to the other dimensions included (pro- and non-pro-ecological world view), we can see that 72% of respondents agreed with a pro-ecological world view, compared to 42% who agreed with a non-pro-ecological world view (Figure 1).

The questionnaire measured a series of sociodemographic variables, a pro-ecological world view, an anti-ecological world view, and, finally, the respondents' perceptions of the opportunities that the energy transition could bring.

Sociodemographic variables

Information was collected on gender, year of birth, level of education attained and the subject area in which it was completed, municipality zip code, employment status of parents or guardians, the number of siblings and the birth order of each respondent. Two other questions were added about having spent time abroad, as well as a self-assessment question about whether the respondent saw him/herself as a good student, and a question about the respondent's opinion of what he/she would be doing in five years' time.

These questions were intended to provide a range of socioeconomic observations to classify the respondents' opinions. The survey also included a question to ascertain whether the respondent would like to work in the same industry as his or her father, mother or guardian and, if so, asked them to state the industry in question. The point of this question was to identify the potential role model effect that parents or guardians had on their children.

Non-pro-ecological world view

The worldview dimensions were based on the New Ecological Paradigm scale and were assessed in the survey using a Likert scale that measured the level of support for each statement from 1 (strongly disagree) to 5 (strongly agree). The non-pro-ecological world view was measured using the following statements: "The Earth has plenty of natural resources if we just learn how to develop them", "Humans were meant to rule over the rest of nature," and "Humans will eventually learn enough about how nature works to be able to control it." These statements measured the level of support for an anthropocentric world view, centered on human dominance and the exploitation of nature.

Pro-ecological world view

In parallel, the pro-ecological world view was built on the following statements: "We are approaching the limit of the number of people the Earth can support", "The Earth is like a spaceship with very limited room and resources" and "If things continue on their present course, we will soon experience a major ecological catastrophe." These statements served to establish the level of support for an ecocentric vision of the world, focused on protecting and nurturing the environment.

Gender opportunities in the energy transition

This last dimension was measured in several questions. First, respondents had to answer (yes or no) as to whether they saw themselves working in environmental or renewable energy fields in the future. This meant we could analyze to what extent respondents saw the energy transition as an opportunity at a personal level. We subsequently studied this perception on a gender basis and using other sociodemographic factors.

Second, we included another set of statements to be assessed via a Likert scale (from 1 to 5) to study this dimension: "The energy transition will lead to greater gender equality", "The energy transition will create opportunities for women to access leadership positions (political, business, public...)", "Companies that are more sustainable also foster gender equality" and "I would like to play a more active, participatory

role in designing climate policies and measures to combat climate change." These statements were used to measure young people's perceptions of the different opportunities afforded by the energy transition for society as a whole. We also added another set of statements that sought to confirm previous findings in the literature on the influence of gender beliefs in the energy transition: "Greater gender equality fosters the energy transition", "Extreme events possibly caused by climate change, such as droughts and floods, globally have a greater impact on women than on men," and "Women are more environmentally aware in their consumption and mobility patterns and in the rational use of resources."

This result coincided with the experts' impressions, who agreed that the group targeted by the study[27] is the most environmentally active generation in today's society.

"This is in line with a generational trend: studies show that one of Generation Z's main mobilization and socialization drivers is climate activism" *(Adrian Jofre Bosch, Chairman, beBartlet).*

As mentioned above, this keen interest in the environment is reflected in a strong desire to participate and get involved in measures to mitigate climate change. Figure 2 shows that over 50% of those surveyed would like to play a more active role in the design of climate policies. This result also shows that the majority of young people in Spain are aware of the need to implement changes to protect the environment.

[27] Generation Z is commonly defined as those born between the mid-1990s and the mid-2000s. However, there is still no consensus among sociologists about the beginning and especially the end of the cohort.

Figure 1. Level of support for the pro- and non-pro-ecological world views of the New Ecological Paradigm (entire sample)

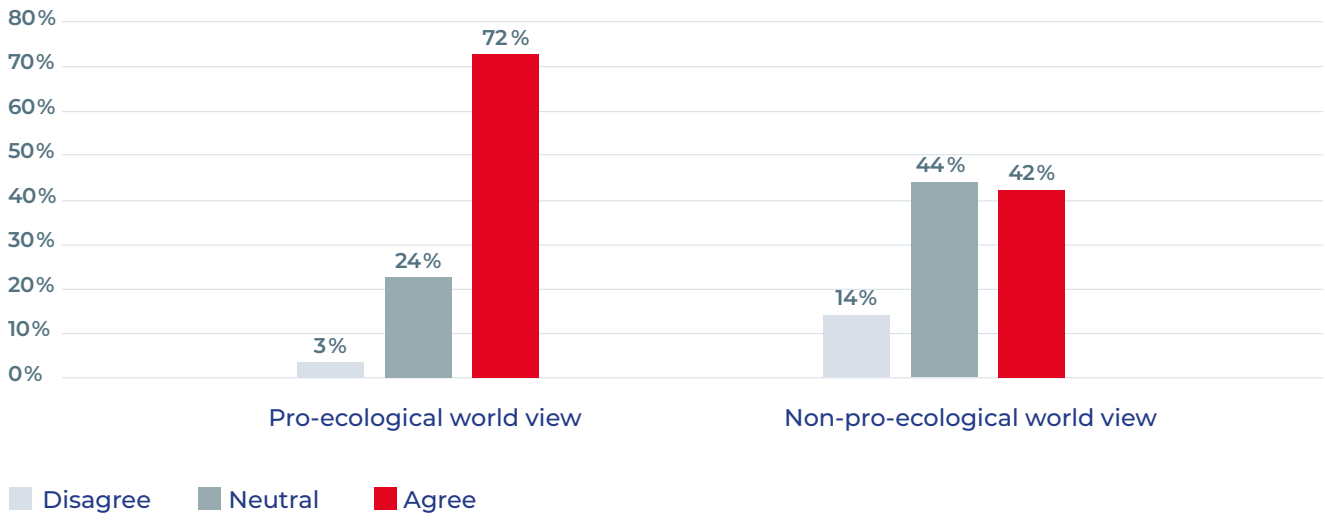
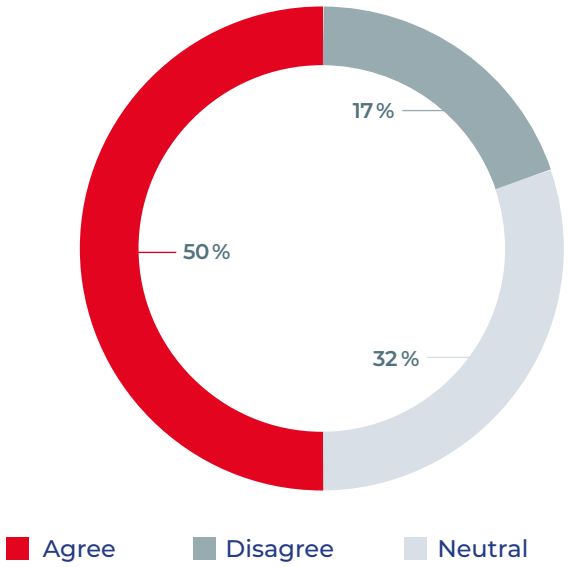


Figure 2. Level of support for the statement "I would like to play a more active, participatory role in designing climate policies and measures to combat climate change" (entire sample)



The experts consulted in the focus groups were surprised by this result. They valued the keen interest of young people in getting involved very positively, despite the possible fatigue generated by the term "policies", because this interest implied a desire to participate as a community beyond their own personal activism decisions.

Finally, the results revealed that although there was keen awareness and a desire to get involved in environmental matters among young people, there was also a relative lack of knowledge about gender-equality aspects in the energy transition context. This finding was reflected in the overwhelming support for the "neutral" option in several of the questions in the survey.

In other words, the respondents stated that they were neither in favor of nor against the statements made which, in this case, could potentially be due to a lack of knowledge about these issues, according to the experts. Examples of this phenomenon are shown in Figures 3 and 4.

Figure 3. Level of support for the statement "The energy transition will create opportunities for women to access leadership positions" (entire sample)

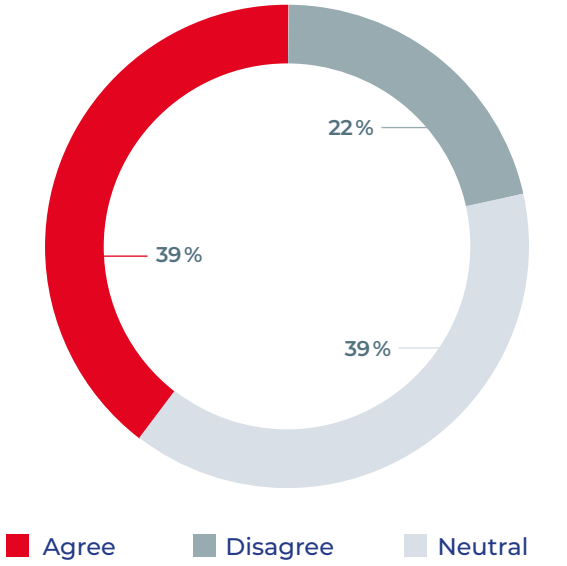
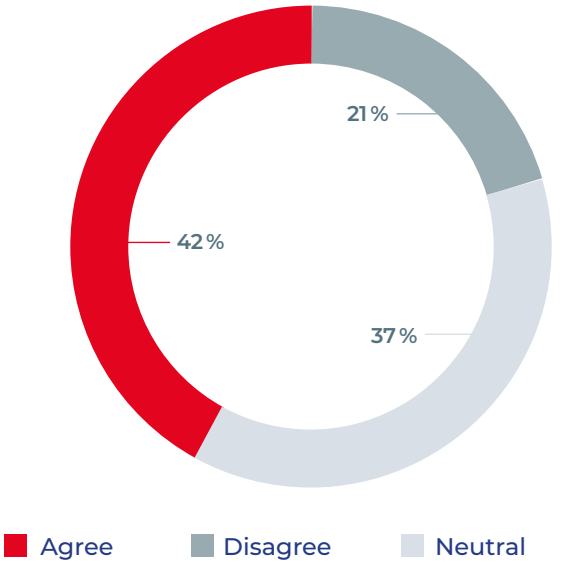


Figure 4. Level of support for the statement "Companies that are more sustainable also foster gender equality" (entire sample)



Thus, these results point to two different openings. First, there is a clear opportunity to teach new generations about some of the lesser-known aspects of the energy transition.

Second, there is a major opportunity to attract talent to the sustainable businesses that these results refer to. Generation Z is joining the labor market at this very moment or will do so in the next few years. It is to be expected that young people with a keen interest in the environment and a broader understanding of the opportunities afforded by the energy transition will want to work in companies that spearhead these changes. In particular, larger companies are more likely to invest in ESG policies, as was mentioned in the focus groups.

"Today, companies cannot afford to turn a blind eye" *(Jerusalem Hernández Velasco, Partner, Sustainability and Corporate Governance, KPMG).*

The results reported in this section represent the entire sample of respondents. However, there are several socioeconomic and demographic factors that revealed major differences in their answers. The four areas where these substantial differences appeared were gender, education, income and age group. We shall focus on them below.

B. What do young men think?

Our sample included 1,127 men, of whom 497 were in the 16 to 20 age group and 630 in the 21 to 25 age group. The majority had completed secondary education (Compulsory Secondary Education, Baccalaureate and Intermediate Vocational Training, 819 people), while 65 had completed elementary education, 170 had a university degree or Advanced Vocational Training and 63 had a master's degree or doctorate. In terms of household income level,[28] 612 were in the low-income bracket (54%), 333 were in the middle-income bracket (30%) and 182 were in the high-income bracket (16%).

In the case of environmental awareness, Figure 5 shows that a large percentage of male respondents supported a pro-ecological world view (70%) compared to a non-pro-ecological world view (49%).

Similarly, in Figure 6 we see that male respondents were also very keen to participate in decision-making and to implement measures to combat climate change. Almost half of the men surveyed (49%) stated that they would like to actively participate in designing climate policies, a phenomenon that coincided with the generational patterns reviewed above.

[28]To construct a proxy for household income level, respondents were asked whether they had lived abroad for more than three months and whether they had taken a foreign language course abroad. In our study, answering no to both questions equated to a low-income bracket, answering yes to both was equivalent to a high-income bracket, and answering yes to one of the questions and no to the other was equivalent to a middle-income bracket.

Figure 5. Level of support for a pro-ecological and non-pro-ecological world view (male respondents)

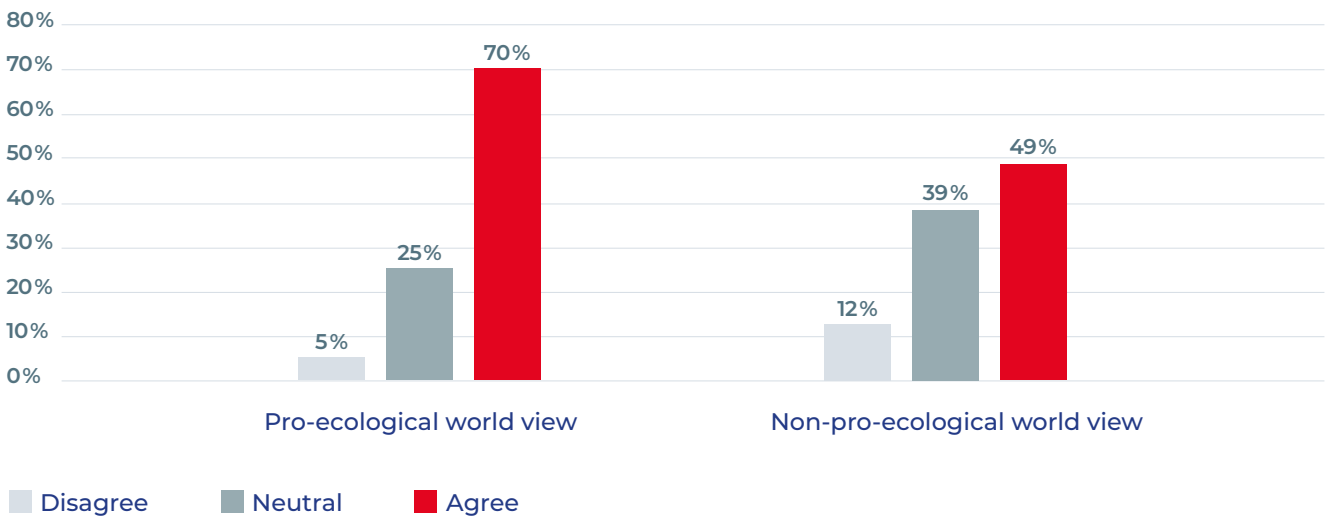


Figure 6. Level of support for the statement "I would like to play a more active, participatory role in designing climate policies and measures to combat climate change" (men)

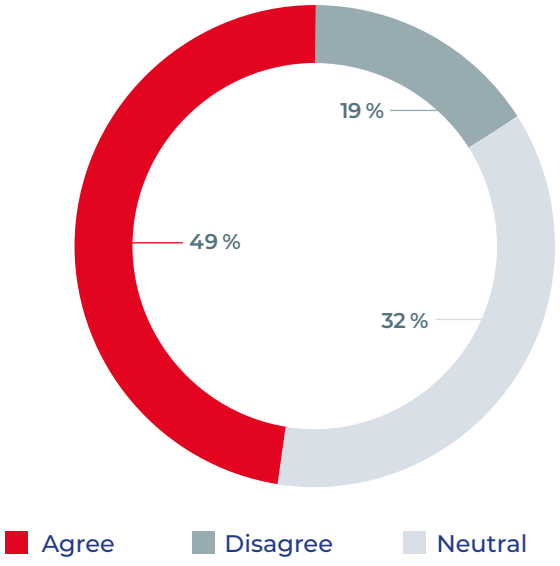
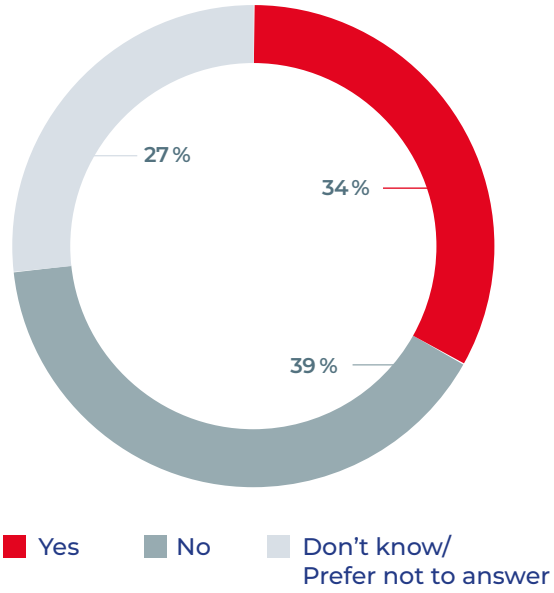


Figure 7. Responses to the question "Do you see yourself working in the environmental or energy fields in the future?" (men)



Conversely, a smaller percentage of men (34%) said they envisaged working in the environmental field in the future, as shown in Figure 7.

The focus group experts put forward several explanations for this phenomenon. First, they argued that working in the energy and environmental industry may be seen as a minority option because it involves much more time and effort than participating in political activities, which may be a temporary or one-off occurrence.

"Last year, 10% of all jobs offered on LinkedIn included a green perspective" (*Isabela del Alcázar, Chief Sustainability Officer, IE University*).

This could indicate that young people are not familiar with the sustainability sector. In the sessions, an explanation suggested that this relatively small percentage of positive responses may be due to the fact that young people think that working in sustainability and the environment is linked to technological jobs. Instead, the experts pointed out that most of the sustainable jobs of the future will be related to governance and other cross-cutting areas that can be accessed via many different knowledge streams. This result could open up an important educational opportunity to teach young people about the wide range of employment opportunities available in the environmental field.

"The challenges ahead of us have more to do with governance, finance and regulation than technology" (*Gonzalo Delacámara, Director, Center for Water and Climate Adaptation, IE University*).

Finally, the survey revealed that men were unaware of the relationship between the environment and gender. Figure 8 shows that a large percentage of men (41%) believed that climate change does not affect women more than men.

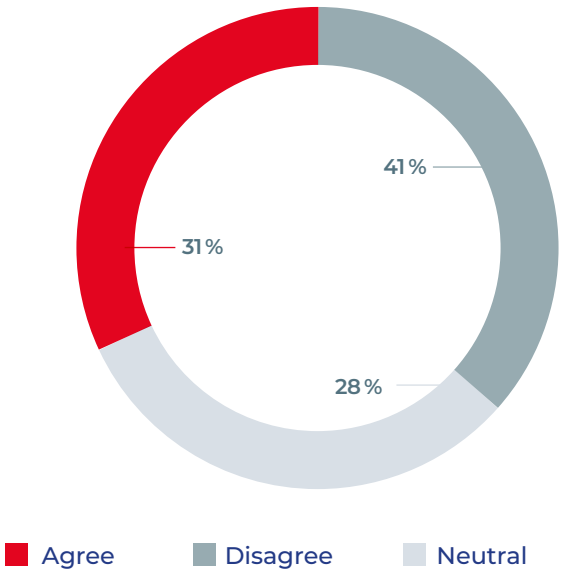
This finding was deemed relevant in the focus groups, since numerous studies, some of which are mentioned in this report, have concluded that climate change does have a greater negative impact on women. This opens up a new educational opportunity: there is a need for better teaching on the ways in which the environment and gender interact, both in developing and developed countries, and on the consequences that these interactions may have.

"An advanced theoretical framework is required to understand the relationship between the environment and gender." *(Beatrice Grace Aluoch Obado, Professor of International Relations and Sustainable Development, IE University).*

C. What do young women think?

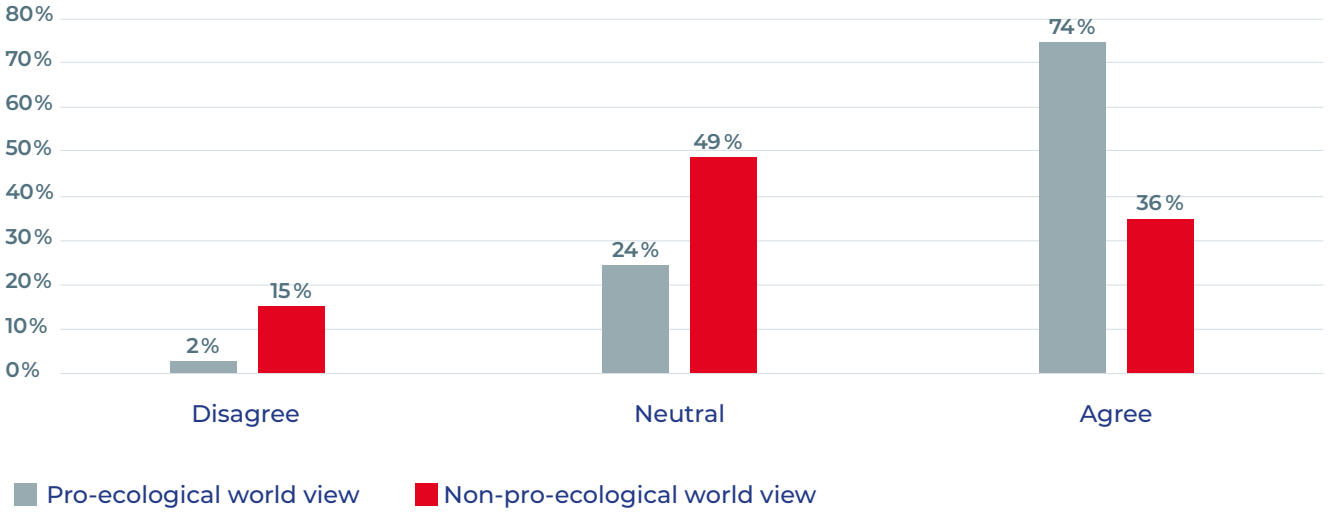
Our sample included 1,239 women, of whom 608 were in the 16 to 20 age group and 631 in the 21 to 25 age group. The majority (812 women) had completed secondary education (Compulsory Secondary Education, Baccalaureate and Intermediate Vocational Training), while 67 had completed elementary education, 276 had a university degree or Advanced Vocational Training and 84 had a master's degree or doctorate. In terms of household income, 676 women came under the low-income bracket (55%), 355 were in the middle-income bracket (29%) and 208 came under the high-income bracket (17%).

Figure 8. Level of support for the statement "Extreme events possibly caused by climate change, such as droughts and floods, globally have a greater impact on women than on men" (men)



The results showed that women were very interested in and concerned about environmental awareness. Based on the New Ecological Paradigm methodology, the majority of women (74%) had a pro-ecological world view, while only 36%, less than half, professed a high level of support for a non-pro-ecological world view (Figure 9).

Figure 9. Level of support for a pro-ecological and non-pro-ecological world view (women)



This finding coincides with most of the previous literature, which shows that women are extremely concerned about the consequences of the climate crisis. However, it is worth mentioning the importance of the "neutral" option, which women tended to choose in many cases. This phenomenon is shown in the figure above, and was echoed in numerous instances in the study, which are included in section 5.

Two scenarios were used to explain this phenomenon in the focus groups. The first was the importance of gender roles: the traditional female role is associated with being less assertive and less authority-seeking. Therefore, it is to be expected that, when faced with a dilemma between two options, women are more likely to choose the option that does not force them to decide conclusively one way or another (neutrality). In a similar vein, the experts stated the fact that women may be more averse to risk, which would make them avoid from extreme options when assessing their beliefs.

"Some studies have shown that women tend to answer, 'I don't know, I'm not sure' when they do not consider themselves to be experts or very knowledgeable about a subject, while men tend to say 'yes' or 'no' with the same degree of expertise about the topic in question" *(Soraya Polanco Palomar, Coordinator, IE Women & Allies, IE University).*

Secondly, the strong desire to be involved in environmental measures demonstrated by the women in the study is particularly striking. Figure 10 shows that more than half of the women in the sample would like to be able to participate more actively in climate change policies.

However, despite their keen interest in participating in climate change measures and policies, we found that a large number of the women in the sample (41%) responded that they did not see themselves working in the environmental field in the future (Figure 11).

The focus group experts linked this result to the underrepresentation of women in the STEM (Science, Technology, Engineering and Mathematics) fields and the perception that the energy industry belongs to this group of activities. The limited number of women working in these fields discourages girls and young women from choosing STEM-related degrees and job roles and may explain why younger women are not present in this industry.

Figure 10. Level of support for the statement "I would like to play a more active, participatory role in designing climate policies and measures to combat climate change" (women)

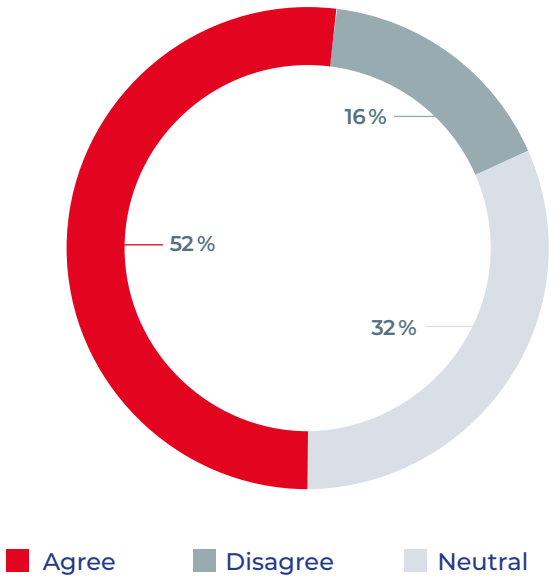
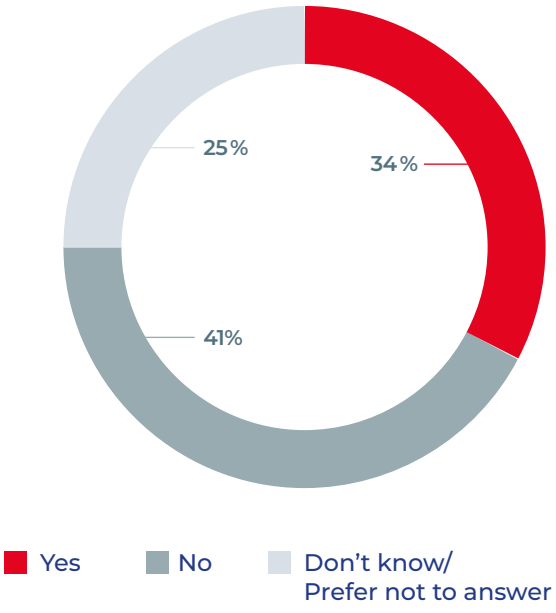


Figure 11. Responses to the question "Do you see yourself working in the environmental or energy fields in the future?" (women)



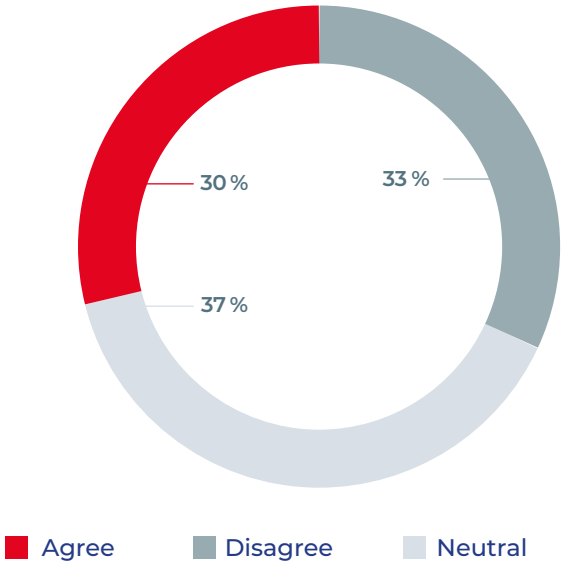
"When they come to [university], students have a very natural, genuine curiosity about the environmental field, but they don't always know how to channel it career-wise." *(Concepción Galdón, Vice-Dean, Business with Purpose, IE Business School, and Director of the Center for Social Innovation and Sustainability, IE University).*

In addition to the lack of information on other jobs in sustainability, not necessarily in the STEM fields, which we also saw among men, this gender effect could explain the large number of women who responded negatively to this question.

Finally, women had a lack of knowledge about the relationship between environment and gender. As we can see in Figure 12, more women disagreed (33%) than agreed (30%) with the idea that the effects of climate change affect women more than men.

Again, it is worth noting the importance of the "neutral" option, chosen by a large part of the sample (37%).

Figure 12. Level of support for the statement "Extreme events possibly caused by climate change, such as droughts and floods, globally have a greater impact on women than on men" (women)



D. The role of education in young people's involvement in the energy transition

In the focus groups, the question was raised as to whether the level of education was relevant when it came to explaining the differences in environmental awareness.

"Education makes a huge difference, as do the economic situation and background of the families to which the young people belong" *(Mercedes Wullich, Advisor to Executives and CEOs, Mujeres&Cia).*

In fact, in the study we found that the level of education was highly significant in the environmental awareness of young men, but not among young women.

While a higher level of education did not indicate significant differences in the pro-ecological world view of young women, which was relatively stable at all educational levels, this demographic factor was highly significant among young men.

Figure 13. Level of support for the statement "Earth is like a spaceship with very limited room and resources," by level of education (men)

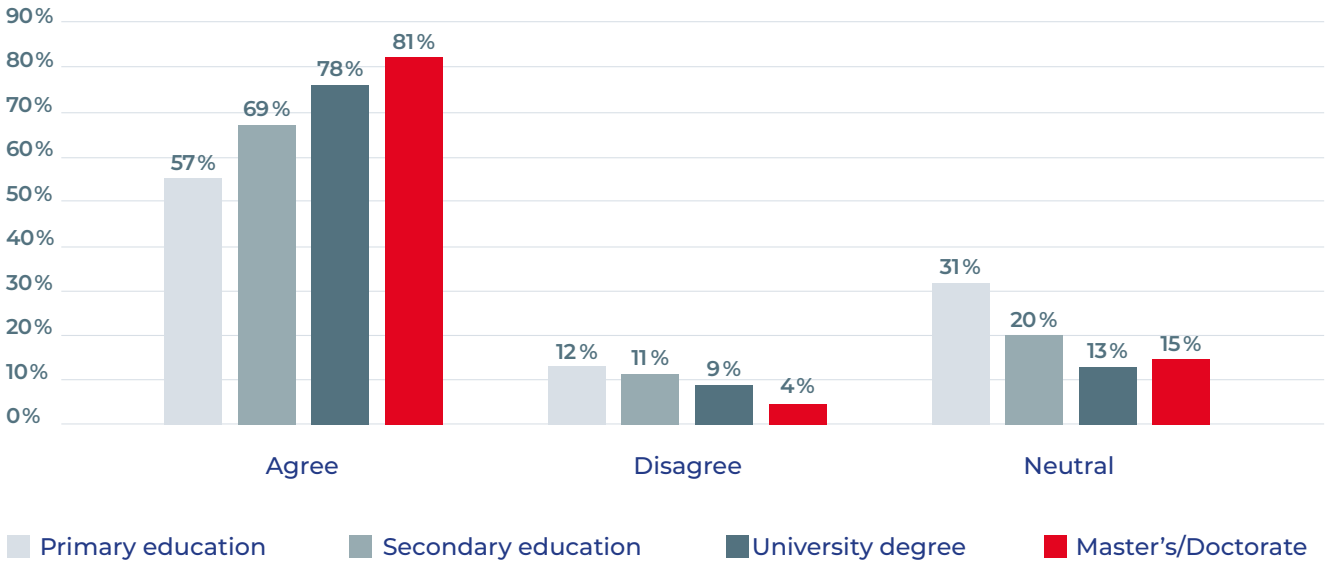


Figure 13 provides an example of this phenomenon and reveals a pattern that ran through other questions.

Similarly, a higher level of education was significant in explaining interest (agree/disagree) in designing climate change policies (Figure 14).

Figure 14. Level of support for the statement "I would like to play a more active, participatory role in designing climate policies and measures to combat climate change," by level of education (men)

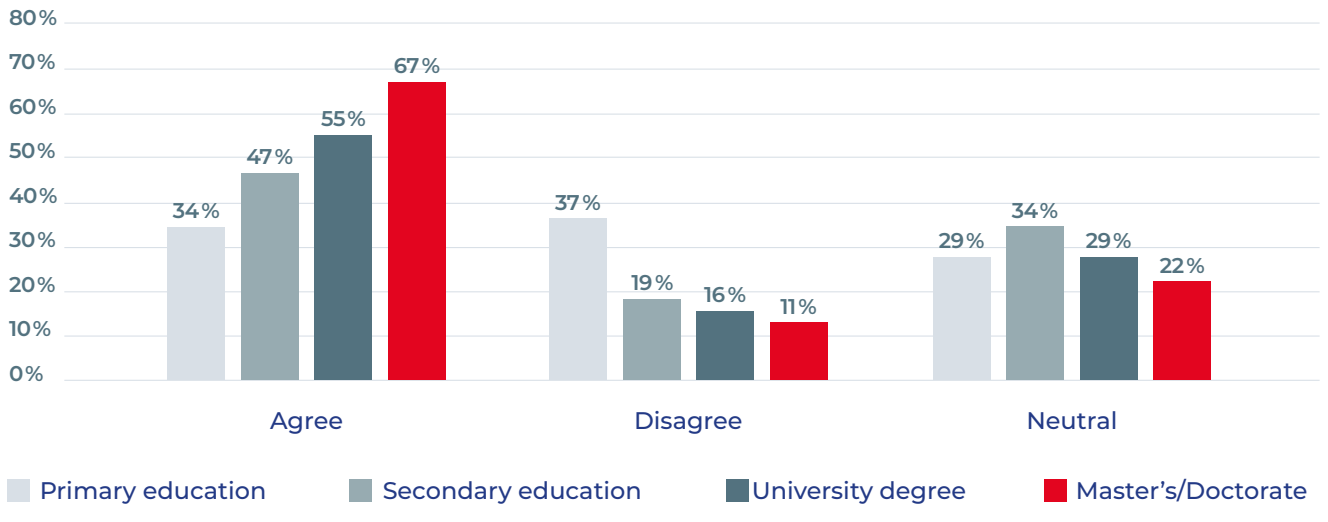
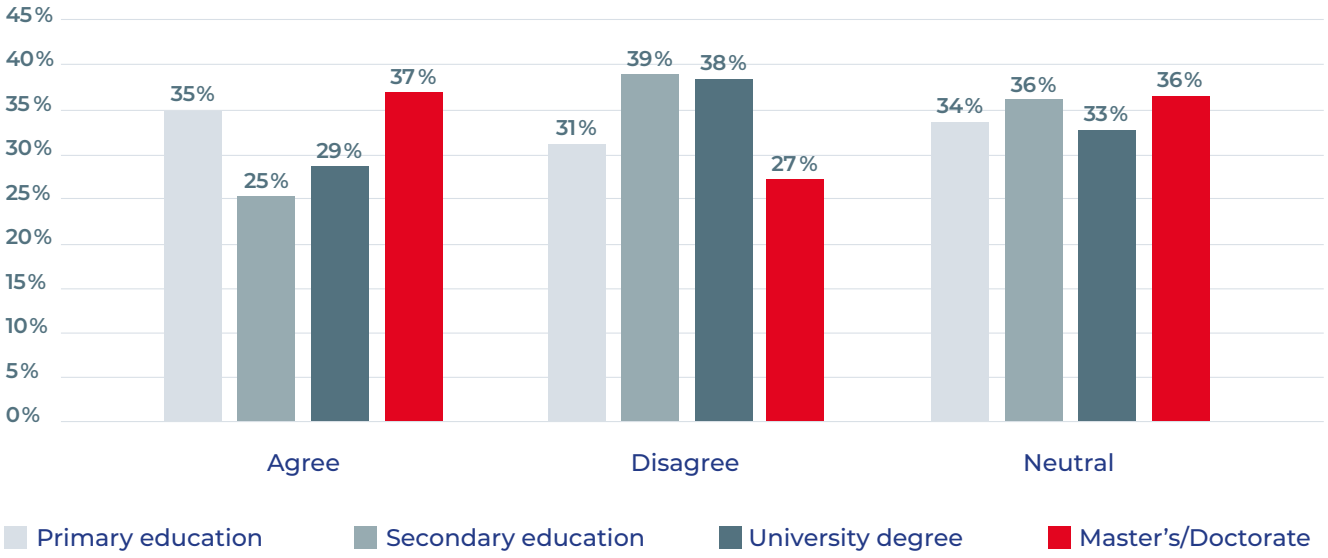


Figure 15. Level of support for the statement "The energy transition will lead to greater gender equality," by level of education (men)

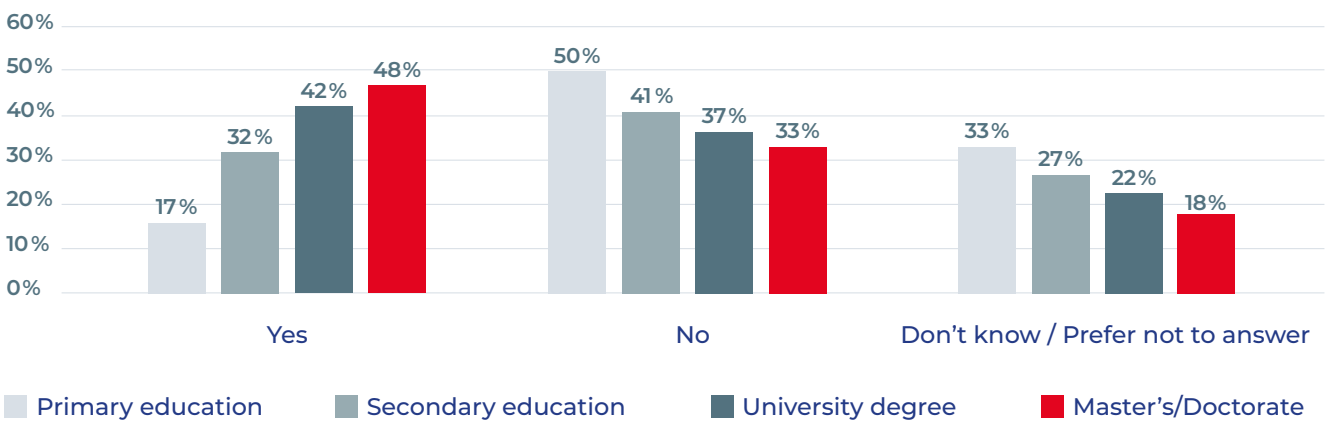


This upward trend, where a higher level of education was associated with greater interest, did not hold true in the case of women, where no significant differences were found in the statistical analysis of the results.

However, this trend was not found for men either in the gender dimension questions (Figure 15). We can thus see that educational level is related to greater environmental awareness in the case of young men, but not to greater awareness of the relationship between environment and gender equality. Neither relationship was found among young women.

However, the level of education was relevant for both women and men in their responses as to whether they saw themselves working in environment-related fields in the future (Figure 16). This pattern, shown for the entire sample here, was also true for men and women separately, and could indicate that higher education is associated with greater awareness and a sense of opportunity among the different job options that the energy transition affords and will afford.

Figure 16. Responses to the question "Do you see yourself working in the environmental or energy fields in the future?", by level of education (entire sample)



A. Other important aspects: income and age

There are two other study areas that yielded significant results from the questionnaire data: age and household income. In the case of age, we found that belonging to the 16-20 age group was not significant for the environmental awareness of either women or men (or together), compared to the 21-25 age group.

Conversely, being older was significant in terms of awareness of the relationship between the environment and gender equality, both for men and women (Figure 17). Likewise, age was related to a greater interest in working in environment-related fields for men and women (Figure 18).

Moreover, the male 21-25 age group was keener to participate in designing climate policies and protecting the environment (Figure 19). Conversely, this relationship was not found among young women.

Figure 17. Level of support for the statement "Women are more environmentally aware in their consumption and mobility patterns, and in the rational use of resources," by age group (entire sample)

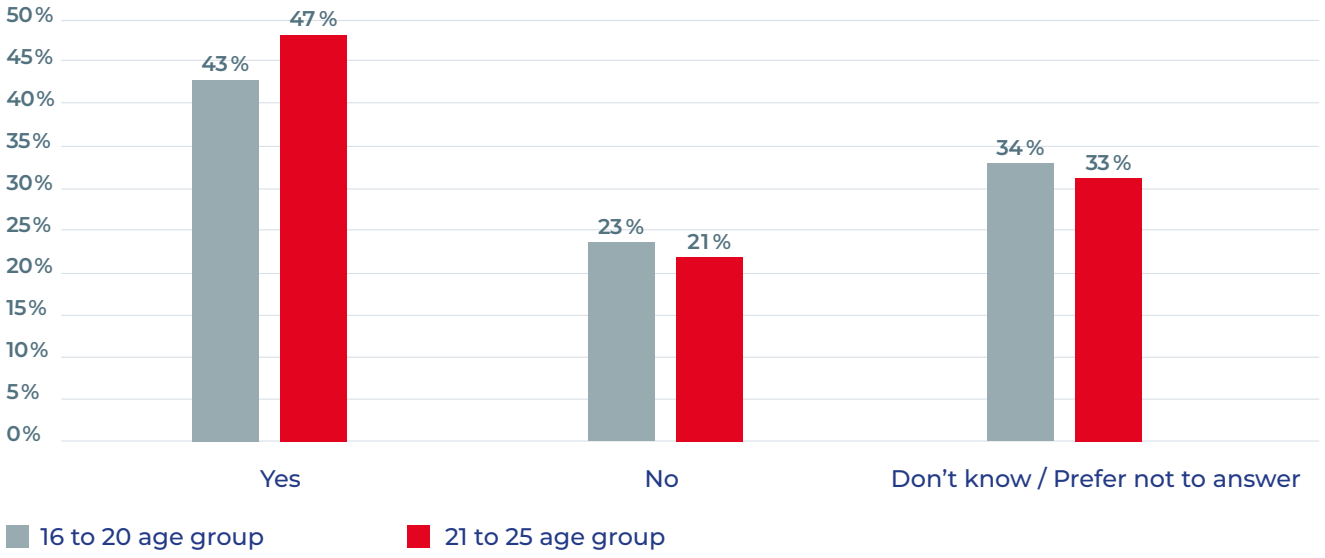


Figure 18. Responses to the question "Do you see yourself working in the environmental or energy fields in the future?", by age group (entire sample)

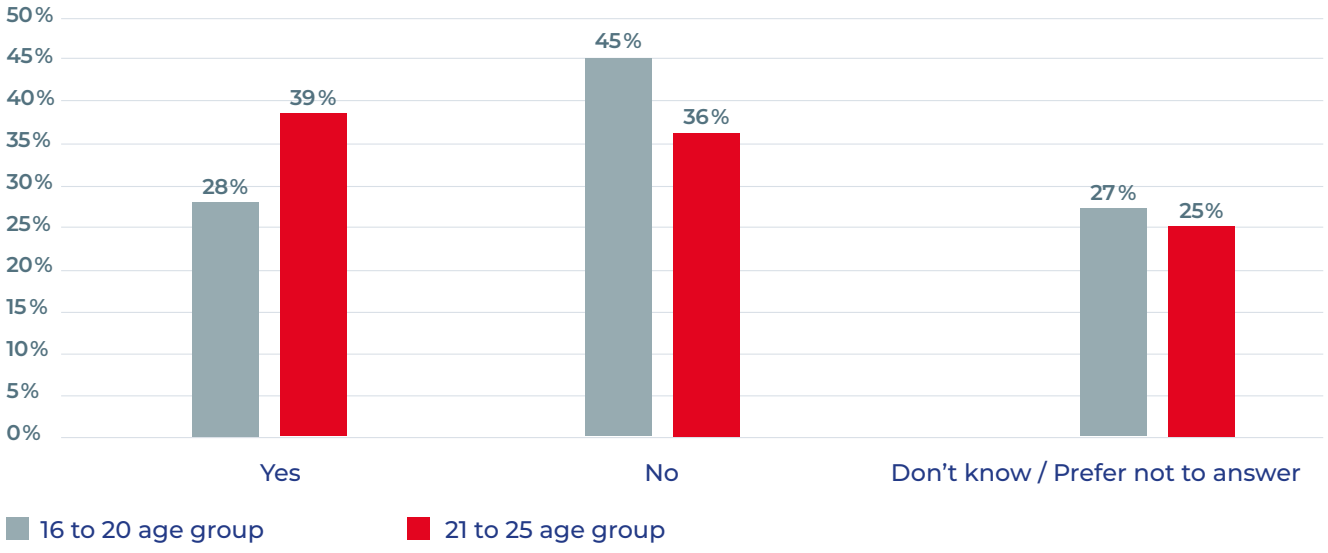


Figure 19. Level of support for the statement "I would like to play a more active, participatory role in designing climate policies and measures to combat climate change," by age group (men)

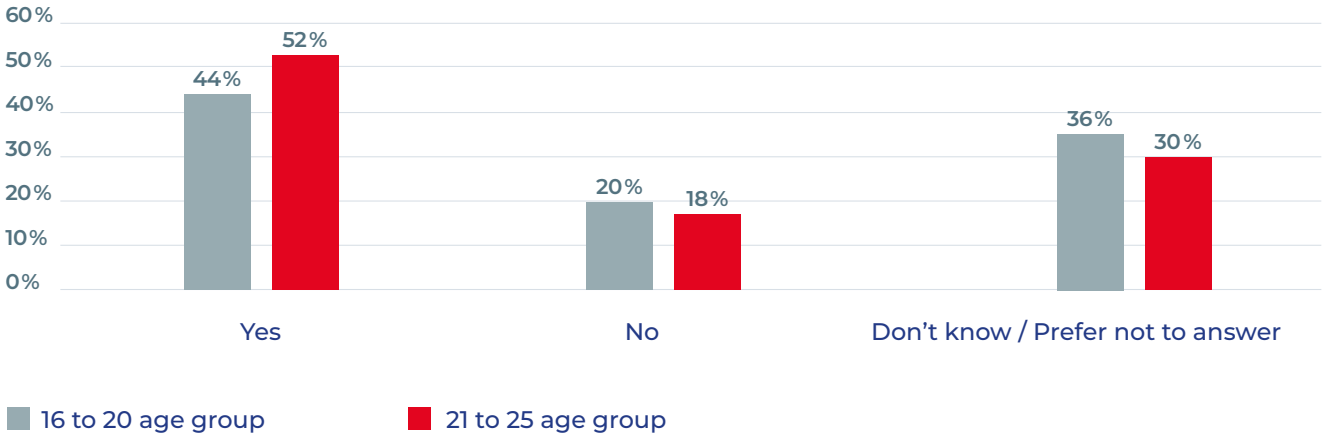
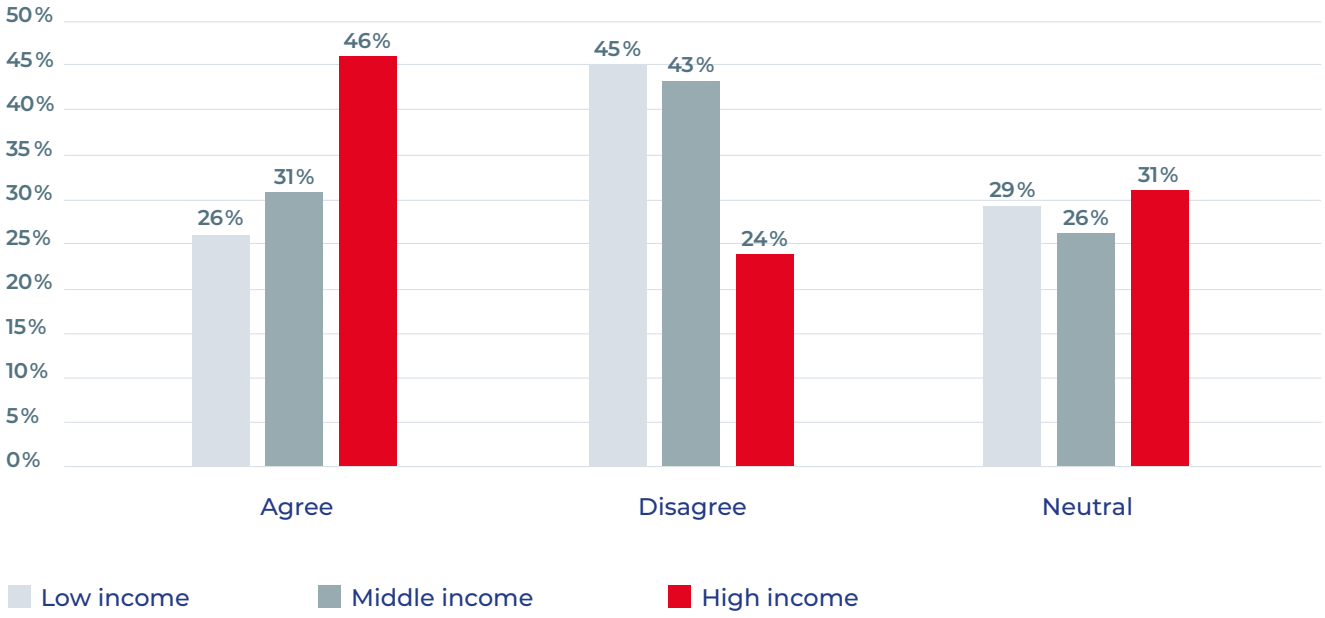


Figure 20. Level of support for the statement "Extreme events possibly caused by climate change, such as droughts and floods, globally have a greater impact on women than on men," by household income bracket (men)



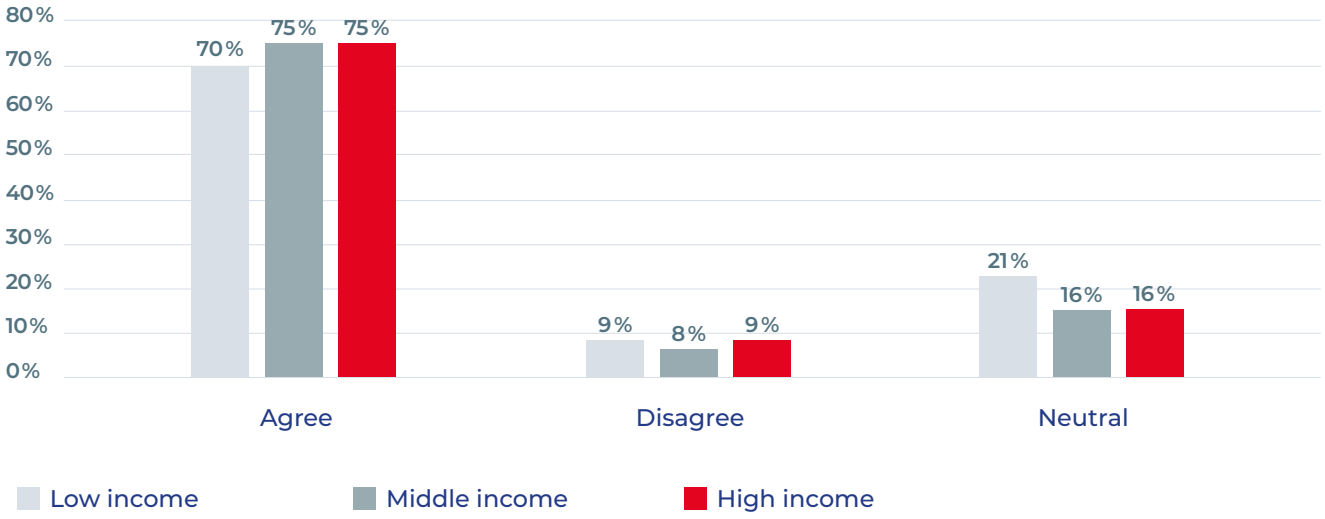
Thus, male environmental awareness and interest in participating politically in this cause could be due to greater maturity, to greater knowledge due to a higher level of education, or to a combination of both.

The household income factor[29] was significant for both men and women, and for the entire sample, in almost all the questions.

For men, a higher level of household income was linked to greater awareness of the relationship between the environment and gender equality (Figure 20).

[29]To construct a proxy for household income level, respondents were asked whether they had lived abroad for more than three months and whether they had taken a foreign language course abroad. In our study, answering no to both questions equated to a low-income bracket, answering yes to both was equivalent to a high income bracket, and answering yes to one of the questions and no to the other was equivalent to a middle income bracket.

Figure 21. "Earth is like a spaceship with very limited room and resources," by household income (women)



Income level was significant for women when it came to measuring their climate awareness (Figure 21). However, the relationship was not as clear as in Figure 20, since the differences between agree and disagree between the middle-income and high-income brackets were not significant in the case of women.

Finally, the desire to participate in climate change measures, whether in the political sphere (Figure 22) or in the labor market (Figure 23), was associated with household income level across the entire sample. These two patterns were repeated in the separate figures for men and women.

The mechanism explaining these relationships is again likely to be education. Household income is highly correlated with educational attainment in the population as a whole,[30, 31, 32] and this was also true for young men. In the case of young women, however, household income level was not significant in explaining the educational attainment of female respondents.

[30]Bowles, S., & Gintis, H. (2002). "The Inheritance of Inequality". *Journal of Economic Perspectives*, 16(3), 3-30. https://doi.org/10.1257/089533002760278686

[31]Ermisch, J., Jäntti, M., & Smeeding, T. (Eds.). (2012). *From Parents to Children: The Intergenerational Transmission of Advantage*. Russell Sage Foundation. http://www.jstor.org/stable/10.7758/9781610447805

[32]Universitario Español: Informe SUE 2018. IVIE. https://doi.org/10.12842/informe_sue_2018

Figure 22. Level of support for the statement "I would like to play a more active, participatory role in designing climate policies and measures to combat climate change," by household income level (entire sample)

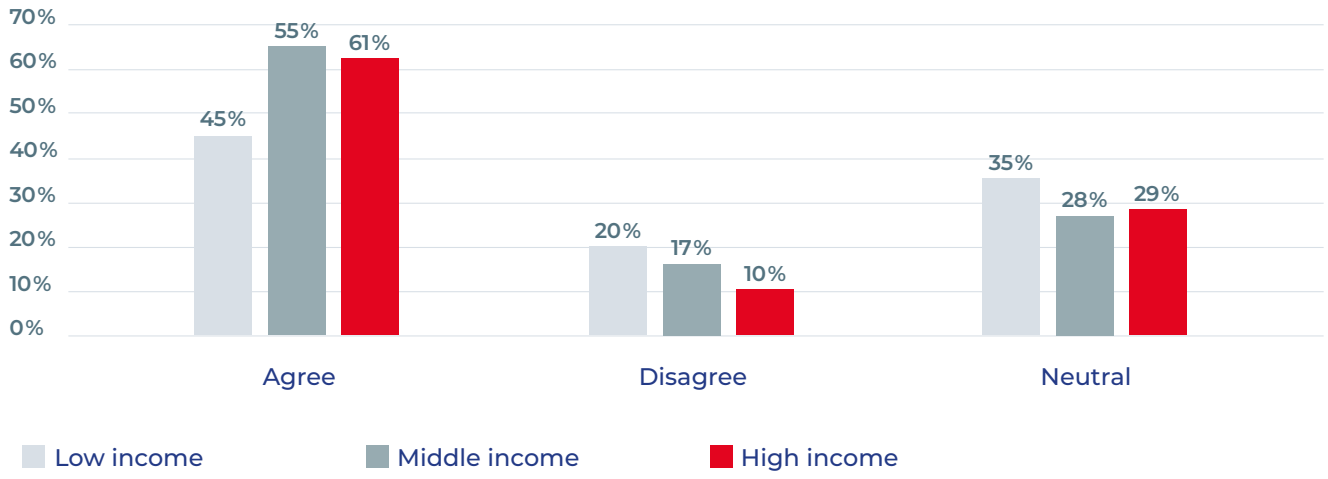
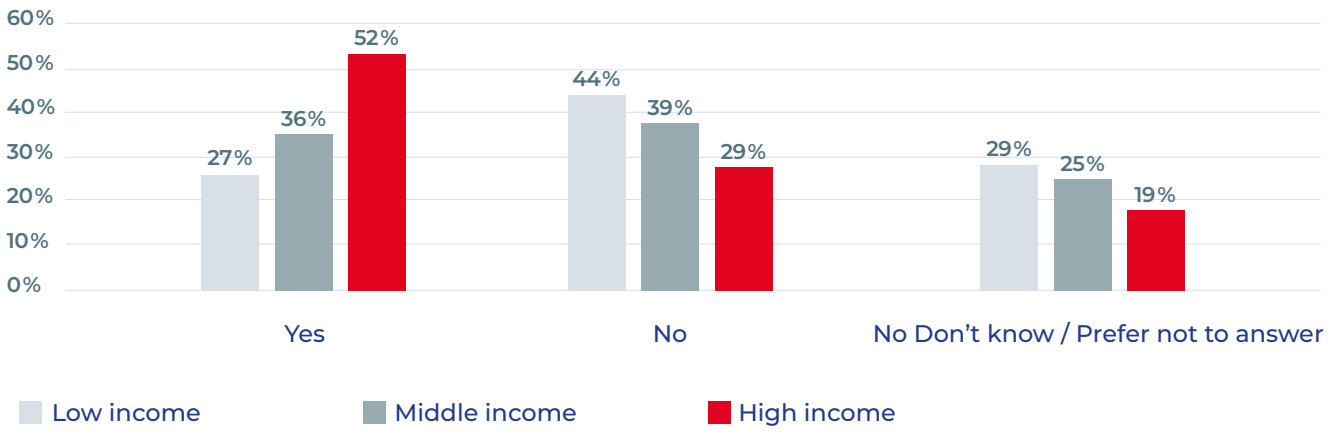


Figure 23. Responses to the question "Do you see yourself working in the environmental or energy fields in the future?", by household income level (entire sample)



5.

ACTIONS AND OPPORTUNITIES, QUALITATIVE DATA AND EXPERT OPINIONS

> YOUNG PEOPLE WILL BE THE KEY PLAYERS IN THE TRANSITION TOWARDS MORE SUSTAINABLE ENERGY

The energy sector, and more specifically the renewable energy sector, could become a focal point for female talent in the near future. This was one of the key ideas to emerge in the focus groups. The experts underscored the need to rethink and design the future of the energy sector to make it more appealing to young people, who will be the key players in the transition towards more sustainable energy (see word cloud with the terms most frequently used in the groups).

It is essential to understand young people's perceptions of gender dynamics in the energy labor market to promote gender-equal careers in the sector. This requires fostering strong, effective gender-equality policies in all organizations, rethinking the industry so it appeals to young people, and pursuing an inclusive approach across the energy-sector field.

Three areas of opportunity for designing the energy sector of the future based on an equitable approach emerged from the results of the data analysis conducted in this research and from the meetings with experts: understanding the link between the energy transition and gender equality, promoting gender equality in education, and the recent changes in the energy labor market.

Figure 24. Most common words that appeared in focus groups with experts

1. *Understanding and strengthening the link between the energy transition and gender equality*

"There are more women in the environmental sector compared to the energy industry, as the latter has traditionally been a male-dominated stronghold" *(Celia de Anca, Deputy Dean for Ethics, Diversity and Inclusion, IE University).*

This statement exemplifies the prevailing gender gap in the energy sector. This is a situation that can be turned around in the near future and requires a clear understanding of the situation and concerted efforts to change the existing narrative.

The comment also reinforces the gender bias that persists in the energy industry. The experts highlighted that it is vital to comprehend and address the cultural and systemic barriers that have deterred women from actively participating in this sector.

At present, most studies focus either on climate change and environmental sustainability issues, or on gender equality. They explore them separately without linking the two. However, the intersection between these two areas of knowledge is of paramount interest for future generations. Given the dramatic transformations that climate change and the consequent shifts in energy consumption and production patterns are bringing to our lives, social sustainability must be mainstreamed into them, especially to ensure that these measures have an equal impact on men and women.

However, there is no obvious link between the energy transition and the opportunities it can bring to men and women: "The fact that there is no connection between sustainability and gender equality is something we should be ashamed of" *(Gonzalo Delacámara, Director, Center for Water and Climate Adaptation, IE University)*. This statement summarizes how this link, which is widely recognized by experts, is not obvious to society at large. It is essential to establish and recognize the connection between sustainability, the energy transition and gender equality. The lack of awareness of this relationship is a significant gap that must be addressed to promote gender-equal careers in the energy sector.

The relationship between climate change and gender equality has been extensively studied in developing countries, given that in these contexts, changes in temperature and seasons involve significant changes in their inhabitants' way of life, and can lead to what is known as climate migration. In these cases, the impact of climate change on girls and women and how it affects them has been broadly reported.

RECOGNIZING AND ENCOURAGING THE CONNECTION BETWEEN SUSTAINABILITY, THE ENERGY TRANSITION AND GENDER EQUALITY IS VITAL TO ADDRESS GLOBAL CHALLENGES

CLIMATE CHANGE AFFECTS GENDER EQUALITY IN BOTH RURAL AND URBAN SETTINGS

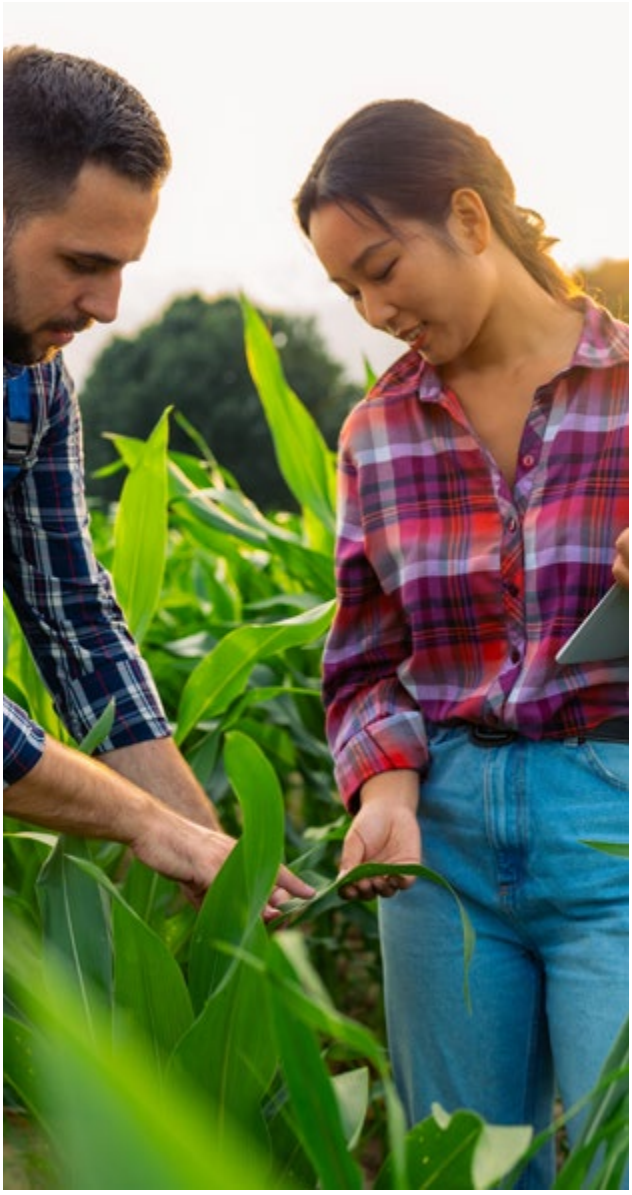
The experts underscored the fact that, although the link between climate change and gender equality is clear in developing countries, it also exists in rural settings in developed countries, and has a direct impact on these communities' main source of income, which tends to be related to agriculture and livestock. In the focus group discussions, this idea was voiced in the statement underscoring, "the relevance of rural and urban settings, which are more in tune with the environment and the importance of sustainable agriculture in rural areas" *(Manuel Pérez Romero, Chair, Center for Sustainable Cities, IE University).*

This underscores the key role of education and awareness-raising in building an inclusive approach that understands both rural and urban realities in the energy transition and in promoting gender equality.

"Countries that are embracing modern energy sources are seeing an increase in women taking up leadership roles, while other nations that have been deploying these sources for a long time, are still mostly led by men" *(Beatrice Grace Aluoch Obado, Professor of International Relations and Sustainable Development, IE University).* This comment specifically points to the inherent potential of women to lead in the energy sector, if they are provided with opportunities and gender equality is fostered.

However, in developed countries, such as Spain, these differences are not as obvious a priori, and therefore people tend to be less aware of the differential impact of climate change on boys, girls, men and women.

UNDERSTANDING THE LINK BETWEEN GENDER EQUALITY AND THE ENERGY SECTOR IS KEY TO ENSURING A FAIR, EQUITABLE TRANSITION TOWARDS MORE SUSTAINABLE ENERGY, PROMOTING GENDER-EQUALITY OPPORTUNITIES



However, the shift towards a cleaner economy implies costs that affect women more than men, especially when women are the heads of lower-income households. In fact, women have traditionally been more environmentally conscious than men precisely because of this. Our results bear this out, showing that this pattern holds true among Generation Z in Spain where, despite the high level of general environmental awareness, 74% of women supported a pro-ecological world view compared to 71% of men.

One of the reasons given by experts for the lack of knowledge about the link between sustainability, the energy transition and gender equality is male ignorance. There is a lot of disaffection among men about gender equality. There are very few men who see this issue as a factor for growth and competitiveness" *(Cristina Sancho, President, EJE&CON and Fundación Aranzadi LA LEY).*

This is a central issue that highlights the importance of awareness-raising and education to change existing attitudes and perceptions and to recognize gender equality as an enabler of growth and competitiveness.

Another reason identified was the lack of knowledge about the intersection between the two key areas of energy and gender equality. "Equality has one roadmap and the energy transition has another" *(Jerusalem Hernández Velasco, Partner, Sustainability and Corporate Governance, KPMG).* However, although each one has its own path, it is vital to recognize and leverage the intersections between them to promote a more egalitarian, sustainable energy sector. Finally, the experts mentioned the importance of showcasing and working on this intersection: "It is important to focus on equality to ensure the energy transition does not widen pre-existing gaps and we don't miss out on this opportunity" *(Concepción Galdón, Vice-Dean, Business with Purpose, IE Business School, and Director of the Center for Social Innovation and Sustainability, IE University).* Therefore, understanding the link between gender equality and the energy sector is a critical factor in ensuring a fair, equitable transition towards more sustainable energy and, in turn, driving opportunities for gender equality in the energy sector.

2. *The opportunity for education to promote gender-equal careers in the energy sector*

Nowadays, "sustainability is a flawed term, due to its overuse. There is a problem of education in values, equality and culture. Women have had to be and are now more assertive" *(Arturo Larena, Director of Environment and Science, Agencia EFE and EFEverde)*. This quote highlights how important education is in fostering gender equality in the energy sector. Training on the part of companies and institutions is necessary to remedy the lack of knowledge about the opportunities for gender equality that the energy transition can bring. Education on sustainability, though it is a complex issue, needs to underscore the values of equity and equality.

Additionally, sustainability, energy and the energy transition are widely perceived as technical disciplines, attracting more men than women. "This is a problem of lack of information. Boys see themselves more in STEM fields by inertia, not because they know more about them. With girls, it is the other way around. We need a change in role models" *(Mercedes Wullich, Advisor to Executives and CEOs, Mujeres&Cia)*. This reflection highlights how misinformation contributes to the gender gap in the fields of science, technology, engineering and mathematics (STEM). It is imperative to provide quality education that underscores equal opportunities within these fields.

Furthermore, "to engage young people you have to make them see that a topic affects them and their lives" *(Isabela del Alcázar, Chief Sustainability Officer, IE University)*, underpinning the need for education that links sustainability and gender equality to students' day-to-day lives. It is vital to combine "education and social networks" *(Jesús Ruiz, CEO, BIP Iberia)* to have an impact on young people and broaden their understanding of these areas, i.e., we need to use language they can relate to so they can see the opportunities that are available in the energy transition process.

Women, who are often more sensitive to inequalities, must be empowered through education to challenge and overcome these barriers in the energy sector:

"Women see the obstacles more clearly, even if they have not been directly affected, they are more aware of them" *(Carolina Ferrer, Gender and Social Inclusion Specialist, IE University)*.

"The importance of role models has been demonstrated, and after the age of 14, it is too late" *(Soraya Polanco Palomar, Coordinator, IE Women & Allies, IE University)*. This quote highlights the need for role models to inspire and motivate young women to participate in STEM areas and in the energy sector from an early age.

> **SUSTAINABILITY REQUIRES COMPANIES AND INSTITUTIONS TO ENGAGE IN EDUCATION THAT UNDERSCORES THE VALUES OF INCLUSION AND EQUALITY**

Energy, sustainability and the environment are highly technical, but also social and impactful careers. Young women show a keen interest in changing the world around them with their interest in these fields. If the energy sector was seen as an appealing career option, it could prove to be the gateway for these girls to study STEM degrees, boosting the low numbers of women on these courses. Careers in the energy sector require intensive technical knowledge, but also focus on ecology, finance, and economics.

In the words of a university professor: "The population group she knows (students on her courses) is very interested in these subjects, but they don't always know how to move into them career-wise. It is something that needs to be actively pursued." (*Concepción Galdón, Vice-Dean, Business with Purpose, IE Business School, and Director of the Center for Social Innovation and Sustainability, IE University).* This indicates that the education system must proactively strive to nurture students' curiosity and equip them with the necessary skills to pursue careers in these fields.

However, there is still a need to foster an understanding of sustainability and how it affects different areas, including energy. In the words of one of the participants: "Europe is trying to encourage sustainability education across the board. There is still work to be done to make people more aware of what it means to work in the environmental field" *(Jerusalem Hernández Velasco, Partner, Sustainability and Corporate Governance, KPMG).*

In addition, the analysis of the quantitative data obtained in the study infers that education plays an important role in the perception of gender equality and the energy transition. In particular, a higher level of education was associated with greater interest among young people in working in professions related to the energy transition. We also found that a higher level of education was linked to more egalitarian gender perceptions. The literature also found a positive correlation between education and sustainability perceptions. However, the novelty of this study is that it is the first to examine this effect in Spain's Generation Z.

In conclusion, education and teaching about energy-sector opportunities regarding gender equality could be a powerful tool to address gender inequalities in the more traditional energy sectors and in the labor market. There is a need to promote quality education that inspires young women, encourages interest and understanding of sustainability, and provides students with the tools to address climate anxiety and contribute to environmental sustainability in the energy sector.

3. *The importance of understanding gender equality and the energy labor market to promote gender-equal careers in this industry*

"Only 28% of workers in the energy sector were women, according to the study *El empleo de las Mujeres en la transición energética justa en España (Female employment in the just energy transition in Spain) (Arturo Larena, Director of Environment and Science, Agencia EFE and EFEverde)*. This percentage clearly illustrates the underrepresentation of women in the energy sector and highlights the need to understand and address this inequality to promote gender-equal careers in this industry.

"The world of energy transition is dominated by startups that move in a high-risk environment. At some points in their careers, women may need more stability, both financially and in terms of working hours" *(Isabela del Alcázar, Chief Sustainability Officer, IE University)*. It is important to design public policies that support and promote job security and gender equality in startups and emerging companies in the energy sector.

Experts reported a perceived preference for traditional energy industries, which offer greater stability and have specific gender-equality programs. This suggests that renewable energy companies need to do more to create an inclusive, safe working environment for women and set up strong gender-equality policies and programs. "There are more women in fossil (energy) firms than in renewables" *(Manuel Perez Romero, Chair, Center for Sustainable Cities, IE University)*, as these companies are larger, not as risky and offer more stability to their employees. "It is easier to achieve gender equality in larger companies" *(Alberto Martín Rivals, CEO, NetOn Power)*. While this may be true, it also underscores the importance of driving gender equality in all organizations, large and small, to ensure that all women have the opportunity to participate and progress in the energy sector.

Furthermore, "the traditional energy sector is very male-dominated" *(Eva Isabel López de Sebastián, Head of Corporate Risk Management, Cepsa)*. This point highlights the need to challenge and change gender norms in the energy sector, encouraging greater participation of women and promoting gender equality in all aspects of energy-related jobs, especially in the renewable energy field, which will be spearheading the industry's future.

Business leadership has traditionally been seen as masculine though the leaders of the future will have to deal with financial aspects, as well as sustainability, environment and governance issues, which are areas in which women and the young women surveyed seem to show greater engagement.

Although both young female and young male respondents showed keen engagement, the sector is seen as an opportunity for equitable leadership, where both male and female leadership characteristics will be welcome to achieve sustainable business success.

In conclusion, understanding the dynamics of the energy labor market is crucial to promoting gender-equal careers in the sector. It requires the implementation of gender-equality policies, the promotion of job security and a change in the masculine perception of the traditional energy industry.

The energy sector could be the gateway to embracing inclusive, diverse sustainability leaders, especially when more women than men in our sample appeared to be interested in pursuing careers in this field.

6.

PROSPECTS FOR SPANISH YOUTH IN THE ENERGY TRANSITION

RECOGNIZING THE INTERSECTION BETWEEN CLIMATE CHANGE AND GENDER IS ESSENTIAL FOR AN EQUITABLE ENERGY TRANSITION

At present, most studies focus either on climate change and environmental sustainability issues, or on gender equality. They explore them separately without linking the two. However, the intersection between these two areas of knowledge is of paramount interest for future generations. Given the dramatic transformations that climate change and the consequent shifts in energy consumption and production patterns are bringing to our lives, social sustainability must be mainstreamed into them, especially to ensure that these measures have an equal impact on men and women.

The relationship between climate change and gender equality in developing countries has been extensively studied, as climate changes significantly affect lifestyles in these places. Women, who are mainly responsible for tasks such as collecting water and food in less fertile soils, are highly affected. Conversely, in more advanced economies such as Spain, the relationship between climate change and gender is less visible, which limits public perception of its differential impact.

The transition to a green economy implies costs, most of which are borne by women who are the heads of lower-income households. This context has historically driven stronger environmental awareness among women. These results show that this trend persists in Spain's Generation Z: 74% of women supported a pro-ecological world view compared to 71% of men.

Based on the results obtained in this research, we would like to make some relevant points for the future.

The importance of educating young people to maximize gender equality in the energy transition

One of the findings of this study is that education plays an important role in the perception of gender equality and the energy transition. Specifically, a higher level of education implies greater interest among young people in working in professions related to the energy transition.

In addition, we observed that a higher level of education was associated with more egalitarian gender perceptions. Expert opinions confirmed these findings, and the literature also found a positive correlation between education and perceptions of sustainability. However, the novelty of this study is that it is the first to examine this effect in Spain's Generation Z.

Leading the fight against climate change can be equitable in the future.

The young men and women surveyed showed keen engagement. The sector is therefore seen as an opportunity for equitable leadership, as both male and female leadership characteristics will be welcome to achieve business success in the field of environmental sustainability.

Business leaders of the future will need to take a more holistic, sustainable approach to their business strategies by considering the environmental, social, economic and governance impacts of their operations. Sustainability is not only an ethical imperative, it is also a source of competitive advantage as it attracts more conscious customers and talent who are committed to a broader purpose. It is in these dimensions that the young women surveyed were most engaged.

The sector can therefore contribute to breaking down the stereotypes and obstacles that constrain women's progress in business leadership by promoting diversity and inclusion at all levels of the organization. The business leaders of the future will be those who see sustainability and gender equality not as obstacles, but as drivers for building a prosperous, fair future for business and society as a whole.

Careers linked to the energy transition require intensive technical knowledge, but also demand expertise in the humanities, finance and economics. The involvement of women in both is a new opportunity

Energy, sustainability and the environment are highly technical, but also social and impactful careers. Girls show a keen interest in changing the world around them with their interest in these fields, as well as in areas where the impact of technologies is more prevalent. If the energy sector was seen as an appealing career option, it could prove to be the gateway for these girls to study STEM degrees, boosting the low numbers of women on these courses. Careers in the energy sector require intensive technical knowledge, but also focus on ecology, finance, and economics.

Focusing attention on gender equality in energy transition processes could prevent the energy transition from widening pre-existing gaps, creating an opportunity to promote gender equality and female leadership in energy transition processes within companies.

The energy transition can bring diversity in leadership examples

Both men and women have the potential to mainstream a new type of leadership at the intersection of gender equality and sustainability. This will mean shaping leaders of the future who are less homogeneous and are more likely to be role models for the next generation of leaders. The energy sector could be the gateway to embracing inclusive, diverse sustainability leaders, especially when more women than men in our sample appeared to be interested in pursuing careers in this field.

GLOSSARY

Energy transition. We have defined the energy transition as a "set of changes in energy production, distribution and consumption patterns to prevent greenhouse gas emissions".[33]

Green economy. The United Nations defines this in its UN Environment Program (UNEP) as "one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities."[34] The program also explains that a green economy can be understood as one that is "low in carbon, resource efficient and socially inclusive."[35]

Environmental, social and governance (ESG). This refers to a framework for analyzing corporate sustainability based on these three factors. Thus, and according to S&P Dow Jones, environmental criteria analyze the contribution and performance of a business in terms of environmental challenges (use of natural resources, waste management, emissions reduction, etc.), social criteria, which evaluate how a company treats people (human resource management, workplace safety, diversity and equal opportunities, etc.) and corporate governance criteria, which examine how a company is managed (executive compensation, corruption, etc.). This approach is used to supplement financial aspects when appraising a company's performance and making investment decisions.

Sustainability. The most widely accepted definition of sustainability is that it consists of meeting the needs of the present without compromising the ability of future generations to meet their own needs, while ensuring a balance between economic growth, environmental protection and human welfare.[36]

Gender equality and equity. There are multiple ways to define and delimit the difference between the terms gender equality and gender equity. The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines gender equality as equal rights, benefits, responsibilities, opportunities, and equal value between men and women, and between boys and girls. Thus, gender equality would be the ultimate goal and objective pursued by the application of gender equity, a concept that refers to complete fairness and justice in the distribution of benefits between men and women. Thus, gender equity recognizes the existence of power imbalances that create different needs, which must be addressed to correct existing inequalities.

Diversity. Diversity encompasses the different talents, knowledge, cultures, experiences and values of the people who make up an organization. This diversity is reflected in multiple characteristics, such as race, age, gender, social class, religion, sexual orientation, ethnicity, culture and disability.

Inclusion. The actions taken in an organization to ensure that all individuals are accepted and treated equally.

[33] Iberdrola, *Energy transition*, https://www.iberdrolaespana.com/sustainability/energy-transition

[34] United Nations Environment Programme, *Green Economy* https://www.unep.org/regions/latin-america-and-caribbean/regional-initiatives/promoting-resource-efficiency/green

[35] Idem.

[36] Brundtland, G. (1987). Our common future: *Report of the 1987 World Commission on Environment and Development*., pp. 1-59.

Diversity and inclusion policies. Diversity and inclusion are complementary and should be developed in tandem. Their objective is to create a sense of belonging in which all members of a company or organization feel valued and respected in their working environment.[37] In gender terms, diversity and inclusion practices comprise policies and procedures that promote equal opportunities and fairness in the distribution of benefits for men and women.

Non-pro-ecological world view. The worldview dimensions were based on the New Ecological Paradigm scale (see below) and were assessed in the survey using a Likert scale that measured the level of support for each statement from 1 (strongly disagree) to 5 (strongly agree). The non-pro-ecological world view was measured using the following statements: "The Earth has plenty of natural resources if we just learn how to develop them", "Humans were meant to rule over the rest of nature" and "Humans will eventually learn enough about how nature works to be able to control it." These statements measured the level of support for an anthropocentric world view, centered on human dominance and the exploitation of nature.

Pro-ecological world view. This dimension was constructed in parallel to the non-pro-ecological world view using the following statements: "We are approaching the limit of the number of people the Earth can support", "The Earth is like a spaceship with very limited room and resources" and "If things continue on their present course, we will soon experience a major ecological catastrophe."

[37]Indeed Editorial Team. (2023). *Diversidad en las empresas: definición y beneficios*. Guía profesional de Indeed. https://es.indeed.com/orientacion-laboral/desarrollo-profesional/diversidad-en-empresas

TABLE I. REVISED NEP STATEMENTS

1. We are approaching the limit of the number of people the Earth can support.
2. Humans have the right to modify the natural environment to suit their needs.
3. When humans interfere with nature, it often produces disastrous consequences.
4. Human ingenuity will ensure that we do not make the Earth uninhabitable.
5. Humans are seriously abusing the environment.
6. The Earth has plenty of natural resources if we just learn how to develop them.
7. Plants and animals have as much right as humans to exist.
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.
9. Despite our special abilities, humans are still subject to the laws of nature.
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.
11. The Earth is like a spaceship with very limited room and resources.
12. Humans were meant o rule over the rest of nature.
13. The balance of nature is very delicate and easily upset.
14. Humans will eventually learn enough about how nature works to be able to control it.
15. If things continue on their present course, we will soon experience a major ecological catastrophe.

Source: Dunlap et al. (2000).

The seven numbered items, if agreed to by the respondent, are meant to represent statements endorsed by the dominant social paradigm (DSP). The eight odd items, if agreed to by a respondent, are meant to reflect endorsement of the new environmental paradigm (NEP).

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