Mapping on energy and gender policies in Spain

EMPOWERING UNDERREPRESENTED WOMEN IN THE ENERGY SECTOR

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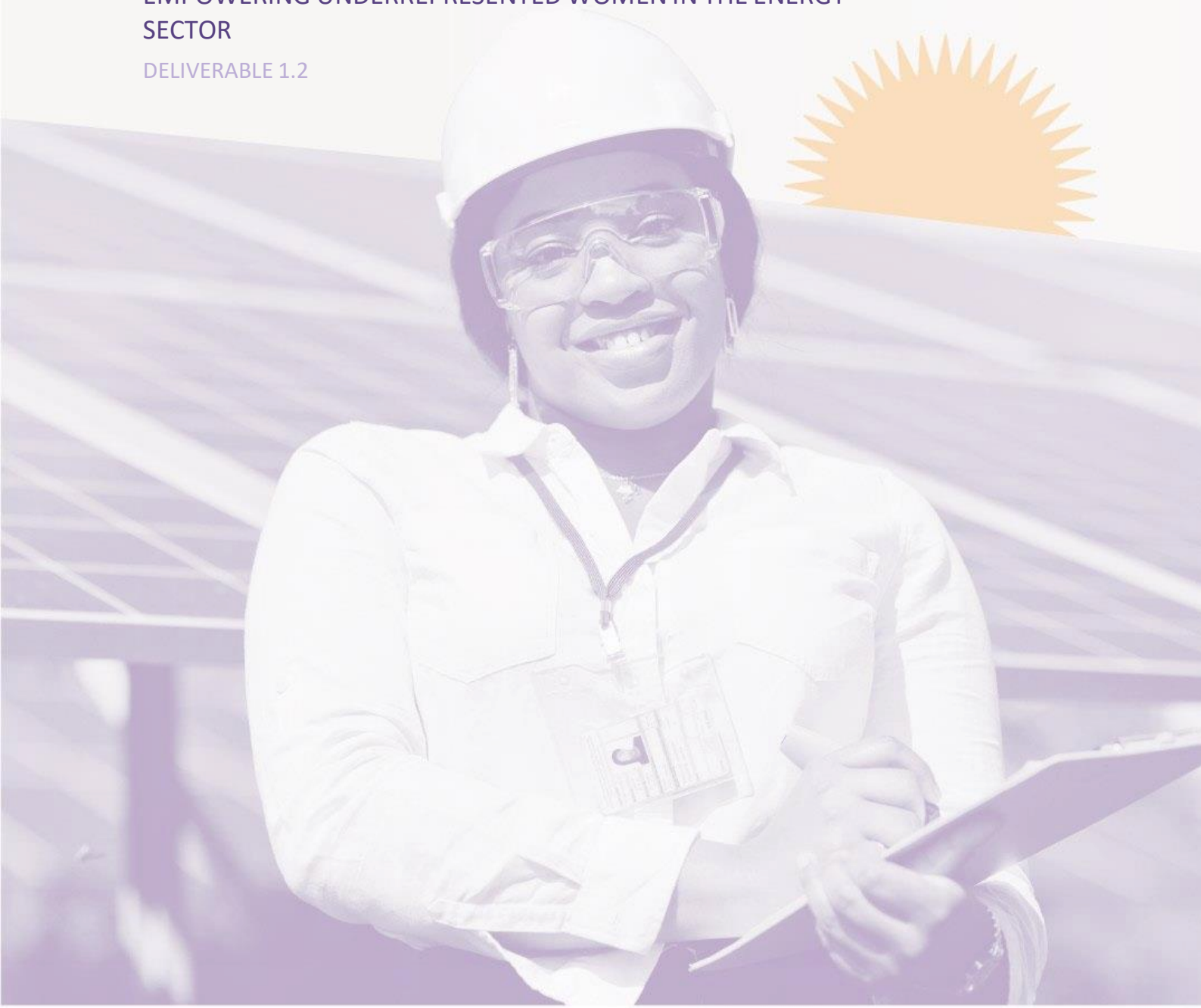

Funded by the European Union

Title: Mapping energy and gender policies in Spain

WP leaders: DOOR

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Version: Final

Date: November 2023

This project is funded by the European Union Programme: Citizens, Equality, Rights and Values (CESR-2022-EU). However, the views and opinions expressed are solely those of the author(s) and do not necessarily reflect those of the European Union or the European Commission. Neither the European Union nor the European Commission can be held responsible for them.

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1. Introduction and objectives

The legislative system in the energy sector is promoting a transition to reduce greenhouse gas emissions, increase energy efficiency and the share of renewables in energy production. However, this technological shift to renewables alone does not guarantee an environmentally or socially just transition. Energy policies continue to be influenced by a patriarchal perspective, which, on the one hand, excludes women and other genders as managers, producers, consumers, energy advocates, decision-makers and users of energy systems; and, on the other hand, creates the conditions for energy to be used as a speculative tool, not as something essential for sustaining life.

The energy sector has traditionally been male-dominated, both technically and in decision-making and policy-making. Thus, any new measures or policies based on the exclusionary model that has created gender inequalities will only perpetuate or exacerbate these inequalities. Therefore, a new gender justice perspective must be incorporated into policy and decision-making processes, based on redistribution, recognition and representation of women's specific experiences, different gender identities and those in the LTBIQ+ collective[1] , with the ultimate goal of achieving the democratisation of the energy system.

In this sense, the project *Empowering Underrepresented Women in the Energy Sector* (EUWES) in which the report "Mapping energy and gender policies in Spain" is framed, aims to raise awareness of the problem, while seeking to promote opportunities for the active participation of women* and contribute to closing the gender gap in decision-making positions in the field of energy. From this report, EUWES aims to identify and understand the barriers to women's progress in the energy sector through a multi-level analysis and mapping of national policies and strategies in Spain. In a later phase of the project, this document will help to identify opportunities for advocacy among decision-makers.

First of all, after a previous presentation of the methodology followed, an analysis of public policies on gender and energy is carried out (chapters 3 and 4).

Next, the focus is on analysing the representation of women in the energy sector at national level, in the fields of politics, economics, education or fuel poverty. Interviews with stakeholders are included (chapter 5).

Chapter 6 will outline the main conclusions and serve as a starting point for the elaboration of specific recommendations for gender mainstreaming in Spanish and EU national policies.

In parallel, the project is being implemented in a homologous way by Društvo za oblikovanje održivog

[1] In the following, the term women* will be used with an asterisk to make it clear that women are not a homogenous group, but that there is a great diversity and different power structures.

razvoja (DOOR) in Croatia, Women Engage for a Common Future (WECF) in Germany and Focus in Slovenia.

2. Methodology

The data collection techniques used to identify barriers to women's access and progress* in the energy sector were threefold: (1) analysis of available statistical data on gender and energy in relation to academic, policy, economic and fuel poverty domains; (2) mapping of national policies and strategies in relation to energy policies; and (3) interviews with key stakeholders in the areas of study. In this way, the policy mapping will be complemented by the collection of quantitative data and statements from academics, experts and policy makers on gender equality in the national energy sector.

Analysis of available statistical data

Gender or statistical indicators are criteria that have made it possible to assess the state of the issue under study. The selected indicators serve to directly or indirectly measure gender equality, including gender roles and relations, in the social, political and economic sphere[2] . Specifically, in this report, gender-sensitive indicators in the energy sphere have been selected from the fields of education and research, political and economic representation and energy poverty. In this case, the selected indicators are quantitative statistical data.

It is important to mention that usually no distinction is made between "sex" and "gender" in the publication of data and that "sex" is often a more commonly used term, or both words are used interchangeably. In terms of the position of gender as a social construct, the lack of representation of other identities beyond the binary is also evident in the data found.

Mapping public policies and strategies

Policies here refer to public policies mainly led by public agencies (i.e. national ministries, local authorities and municipalities). Policy mapping is a systematic analysis technique by which the content of policies in a thematic area is tracked and analysed. This mapping will explore to what extent existing energy policy objectives and priorities take into account concepts such as gender perspective, gender equity, gender equality, gender justice, women's rights or women's empowerment. However, it should be noted that this is not an exhaustive analysis of all existing policies, but a selection of the most influential in the energy sector and the energy transition process.
The mapping will be developed from the coding of the above specific categories, as well as the mention of gender identities (women, female, non-binary, gender fluid, etc.) or sexual orientations (LGTBIQ+, LGTBIQ, LGBT, LGTB, etc.). This makes it possible to get a better overview of a document as a whole, to structure the information in the document and to find the necessary information on gender aspects. Thus, documents will be read and all parts belonging to a specific category will be marked, i.e. "coded"

[2] OECD (n.d.) *Indicators for Gender Equality and Women's Empowerment - An Introduction.* Available at: https://www.oecd.org/dac/gender-development/43041409.pdf. (Last accessed on 7.6.2023.)

for further analysis.

Interviews with key stakeholders

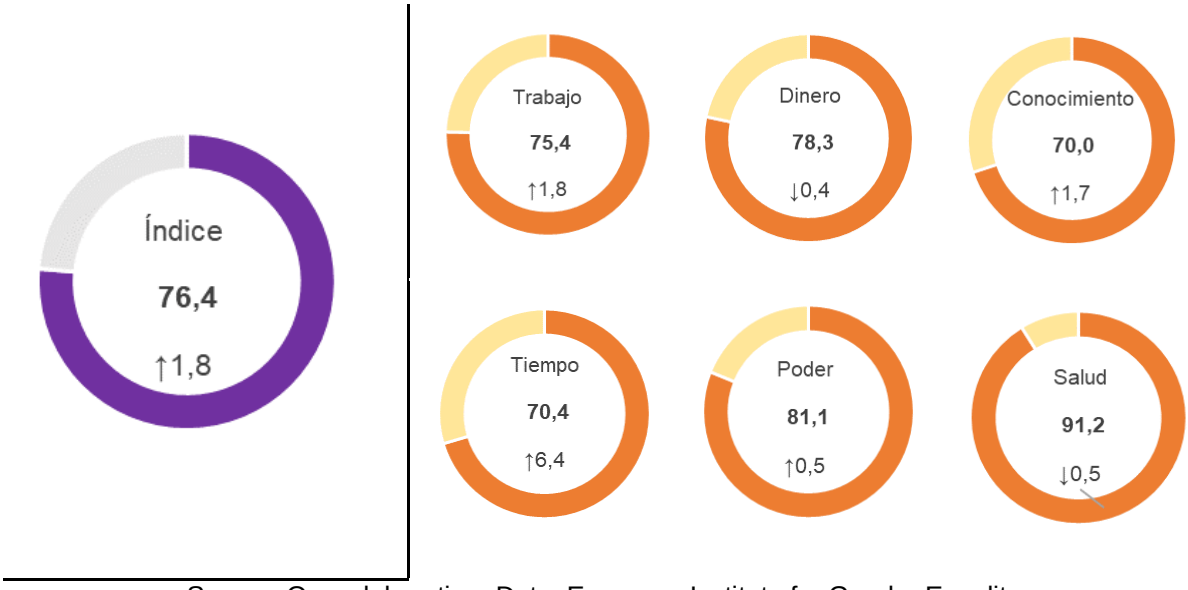
Key stakeholders are actors who have the capacity to influence the object of study, whether they are individuals, networks, public authorities, government agencies, or employees of companies and organisations. In the case of this study, six interviews were conducted with women from four spheres of the energy sector: policy makers, private sector, academia and civil society. Each interview lasted between 30 and 45 minutes and was semi-structured in nature.

3. Public Policies for Gender Equality

In 2023, Spain ranked **fourth in the European Union in terms of gender equality** with 76.4 points out of 100, according to data published by the European Institute for Gender Equality[3] (EIGE). The European Union average is 70.2 points.

This Gender Equity Index, which is published annually, is constructed on the basis of indicators in the areas of employment, knowledge, time, money, power and health. The area of gender-based violence is not included as there is no comparable data across European countries. However, it is worth noting that 49 women were killed by gender-based violence in 2022 and the 016 helpline received 102,391 calls.

FIGURE 1. Gender Equity Index for Spain in 2021.



Source: Own elaboration. Data: European Institute for Gender Equality.

Although time is one of the areas where there has been the greatest improvement, a closer look at the indicators shows that there is still a substantial difference in the role of cooking and doing household chores on a daily basis (64% of women and 44% of men).

Also, although the power indicator shows a remarkable performance, parity is perceived in the political sphere, while, for example, parity on the boards of the most listed companies has room for improvement (37% women and 63% men).

[3] European Institute for Gender Equality (2023). *Gender Equality Index*. Available at: https://eige.europa.eu/gender-equality-index/2023/country/ES

Development of the legislative framework of the Spanish State in matters of equality

The equality policy of the Spanish State is part of agreements, conventions, initiatives and international legal frameworks at European and global level, such as the **Convention on the Elimination of All Forms of Discrimination against Women (CEDAW).** In the observations made this year 2023 by the CEDAW Committee on the ninth report submitted by the Spanish State,[4] , positive advances towards wage equality, stabilisation of the labour market and reduction of the pension gap, among others, are highlighted. However, it recommends, for example, guaranteeing access to public services for women victims of various forms of discrimination and making progress in the generation of statistical data with a gender perspective. It is also concerned about the under-representation of women in strategic positions in the private sector and in the areas of science, technology, engineering and mathematics (STEM).

Another international framework for action is the **2030 Agenda**, a United Nations-driven programme with 17 sustainable development goals and 169 targets; it contains a specific goal on gender equality (SDG5) and another on ensuring affordable, safe and modern energy for all (SDG7). In the action plan for the 2030 Agenda, both equality and energy transition have been defined as lever policies, which are those with the capacity to accelerate the effective implementation of all SDGs.

Spain also signed the Beijing Declaration and Platform for Action in 1995 and the Istanbul Convention in 2014.

At the national level, the first state gender equality law passed in Spain was **Organic Law 3/2007, for effective equality between men and women**. The law is based on Articles 9 and 14 of the Spanish Constitution, which state that it is the responsibility of the public authorities to promote conditions to guarantee equality and that Spaniards are equal before the law, without discrimination on grounds of sex, among others.

Law 3/2007 regulates aspects such as parity in public and private administration, in positions of responsibility, equal opportunities in the workplace, non-discrimination based on sex, the fight against harassment at work and the reconciliation of personal, family and working life. It also establishes the tool of the equality plan or the equality label in the company.

This law has been supplemented in recent years by the following regulations:

- Royal Decree-Law 6/2019, of 1 March, on urgent measures to guarantee equal treatment and opportunities between women and men in employment and occupation.
- Royal Decree 901/2020 of 13 October regulating equality plans and their registration and amending Royal Decree 713/2010 of 28 May on the registration and deposit of collective bargaining agreements.

[4] https://www.igualdad.gob.es/wp-content/uploads/InformeCEDAW.pdf

- Royal Decree 902/2020 of 13 October 2020 on equal pay for men and women in the women and men.
- Preliminary draft law approved by the Government on 7 March 2023 to guarantee equal representation of women and men in politics, the Administration and companies[5] .

As a result of this regulatory process, progress has been made towards the equalisation of paternity/maternity leave to 16 weeks, the obligatory nature of equality plans for companies with more than 50 workers (which must also include a pay audit), the fact that any company must have a wage register and exercise pay transparency, and the creation of a register of equality plans.

In the more generic sphere of the legislative framework, and on the occasion of 8 March 2023, the Spanish Council of Ministers published a cross-cutting report[6] in which it analysed the **balance of the Government's regulatory action on equality between January 2020 and February 2023**, based on the gender impact report associated with each regulation.

According to the report, one in four of the 255 regulations adopted had a favourable impact on equality. Positive impacts were also identified in the areas of employment, reconciliation and co-responsibility, social protection, gender-based violence, housing, representation and participation, education and training, health and foreign policy.

Of all the impacts collected, we highlight those that are in some way related to the situation of the energy sector with respect to gender equality. On the one hand, the focus is placed on positive discrimination policies in terms of female employment, and the reform of the law on science, technology and innovation with specific provisions to favour female employment is highlighted. It also stresses the flexibilisation of the working day to facilitate work-life balance. In the field of education, mention is made of the reform of the system to improve the participation of women in all areas of knowledge, particularly in STEM (Science, Technology, Engineering and Mathematics).

As will be described in the analysis of indicators in chapter 5, energy poverty is a serious problem in today's energy sector with a strong gender impact. This is why some of the improvements included in the report, related to the increase in the Minimum Interprofessional Wage, the reduction of the gender gap in pensions or the minimum living income, are also legislation that can contribute significantly to reducing these inequalities. The same applies to policies aimed at family reconciliation, aid derived from the Social Economy and Care PERTE or the creation of a State Public Health Agency that can study the differential impacts of energy poverty on women's health.

A regulation that has also had a strong impact on energy poverty (with the associated gender inequality)

[5]https://portal.mineco.gob.es/ca-es/comunicacion/Pagines/representaci%C3%B3n-paritaria-de-mujeres-y-hombres.aspx

[6] https://www.mpr.gob.es/prencom/notas/Paginas/2023/070323-normas-para-igualdad-mujeres-y-hombres.aspx

has been the moratorium on water, electricity and gas supply cuts. This has been in force during the pandemic and until 31 December 2023, and protects vulnerable families who are beneficiaries of the social voucher from disconnection due to non-payment.

On the other hand, in the field of the elaboration of public policies on energy, in 2021, the Ministry for Ecological Transition and the Demographic Challenge and the Women's Institute[7] signed a general collaboration protocol to reinforce the gender equality approach in all MITECO actions and areas and thus reduce the existing gender gap. The agreement was therefore intended to facilitate gender-sensitive input into the drafting of new strategic and policy initiatives.

III Strategic Plan for the Effective Equality of Women and Men 2022-2025

With regard to the coming years, it is necessary to analyse the **Strategic Plan for the Effective Equality of Women and Men 2022-2025**[8] , which *constitutes the reference framework for achieving the necessary social changes in terms of equality.* This plan has 4 axes of intervention, 20 lines of work, 49 specific objectives and 141 operational objectives.

The axes are as follows:

- Axis 1: Good governance: towards more inclusive and democratic ways of doing and deciding.
- Axis 2: Economy for life and fair distribution of wealth, against the feminisation of poverty and precariousness.
- Axis 3: Towards guaranteeing women's lives free of gender-based violence, with the aim of eradicating all forms of violence.
- Axis 4: A country with effective rights for all women in all spheres of life.

With regard to this report, it is necessary to highlight the lines of work contained in the first two axes (good governance and economy for life).

In the case of Axis 1, good governance, it is planned to integrate the sex variable and the gender perspective in all statistics and studies, as well as to integrate the gender perspective in sectoral and cross-cutting regulations and plans, in budgets, in public employment and in contracts and agreements. It is also foreseen to improve intra- and inter-ministerial coordination for equality. The mainstreaming of the gender perspective in other sectoral policies, such as energy in this case, is essential in order to undertake structural equality policies with an impact on the sector.

Axis 2 explicitly mentions the concepts of energy, energy efficiency, energy poverty and ecological/green or just transition.

[7] https://www.miteco.gob.es/content/dam/miteco/es/prensa/210622ndpprotocoloinmujeres_tcm30-528386.pdf
[8] https://www.inmujeres.gob.es/elInstituto/PlanesEstrategicos/docs/Plan_Estrategico_2022_2025.pdf

A line of work is defined aimed at building a quality and equal labour market for women, which specifies an action aimed at promoting the presence of women in scientific-technological areas and in sectors linked to the green economy (in which we could also include the energy transition). It is also foreseen to support the entrepreneurship of women promoters of employment and self-employment (with special attention to rural and migrant women) in the environmental economy. Specific measures are being developed for the participation of women in training and capacity building to access new jobs related to renewable energies, among other measures.

Axis 2 also envisages initiating actions to reduce the feminisation of poverty and precariousness, addressing inequality and its intersections, and strengthening specific programmes aimed at guaranteeing access to social, economic and labour rights and developing a National Strategy against the feminisation of poverty.

Finally, a line of work based on ecological and social sustainability is proposed, in which it is planned to move towards a culture that assumes the limits of nature and interdependencies, that promotes eco-feminist literacy, a fairer distribution and distribution of wealth and a sustainable urban, rural, relational and environmental environment for life.

In this area, specific mention is made of incorporating gender-sensitive criteria in the rehabilitation of housing to improve its energy efficiency, and in other forms of combating energy poverty. Finally, it is also foreseen to improve data and knowledge on fuel poverty with an intersectional gender perspective.

4. Public energy policies

In order to carry out the analysis of public energy policies, different regulatory instruments of national scope (Spanish State) and current validity have been selected. Likewise, we have included policies that refer to different areas of the energy sector, such as energy transition, energy poverty, the implementation of renewables or the law that regulates the sector.

Firstly, the **Electricity Sector Law, which is the** main regulator of the state electricity market, is analysed.

It then examines the main policy instruments derived from the **Strategic Energy and Climate Framework,** presented by the PSOE government in February 2019, which focuses on the long-term goal of achieving emission neutrality by 2050:

- ➔ **Climate Change Law**, Law 7/2021
- ➔ the **National Integrated Energy and Climate Plan (PNIEC)**
- ➔ and the **Just Transition Strategy (JTS)**

In the field of energy transition, the **Recovery, Transformation and Resilience Plan (PERTE) for Renewable Energies, Storage and Green Hydrogen** is also assessed as a concrete roadmap for the implementation of renewable energies**.**

Finally, the **National Strategy against Energy Poverty** and **the electricity (**RD 897/2017) and **thermal (**RDL 15/2018) **social vouchers** are reviewed.

4.1. Electricity Sector Act

The purpose of **Law 54/1997, of 27 November, on the Electricity Sector**[9] is to *establish the regulation of the electricity sector with the aim of guaranteeing the supply of electricity and adapting it to the needs of consumers* in *terms of safety, quality, efficiency, objectivity, transparency and at minimum cost.*

Although the Electricity Sector Act does not make specific reference to gender, it directly affects a feminised group, such as those affected by energy poverty[10] . Among other aspects, the Law lays the foundations for the "bono social eléctrico", which will be regulated in more detail in Royal Decree 897/2017 described in this section, and which consists of a reduced tariff for people in a situation of vulnerability. The criteria for assessing vulnerability include income scales for single-parent households

[9] Spain. Law 54/1997, of 27 November 1997, on the Electricity Sector. *Official State Gazette*. 29 November 1997, núm. 285. Available at: https://www.boe.es/buscar/act.php?id=BOE-A-1997-25340

[10] González Pijuan, Irene (2017). *Gender inequality and energy poverty.* Enginyeria Sense Fronteres. Available in: ttps://esf-cat.org/blog/2017/01/24/esferes17-desigualtat-genere-pobrea-energetica-factor-risc-oblidat/

or victims of gender-based violence. In addition, they are also extended for each child in the household.

4.2. National Integrated Energy and Climate Plan

The **National Integrated Energy and Climate Plan (PNIEC) 2021-2030**[11] includes the necessary measures to be applied to promote the ecological transition in Spain over the next decade, in line with the Strategic Framework for Energy and Climate. The objectives set out in the PNIEC are addressed from the following five dimensions:

- **Decarbonisation** Dimension
- **Energy Efficiency** Dimension
- **Energy Security** Dimension
- Dimension of the **Internal Energy Market**
- **Research, Innovation and Competitiveness** Dimension

It should be noted that at the time of writing this report, the update of the Plan for the period 2023-2030 was being processed, following the completion of a Public Consultation[12] . Although the final version of the draft is pending publication, the relevant changes in terms of gender in the new proposal, compared to the current approved version (2021-2023), are also included here. The 2021 version of the Plan includes very limited references to gender issues; the updated draft version for 2023 incorporates greater gender considerations: as part of the Policies and Measures included, in the chapter "Cross-cutting Aspects in the Ecological Transition", a specific sub-section dedicated to the gender perspective has been included.

The targets according to the updated plan in 2023 implement the achievement of the following milestones by 2030:

- 32% reduction in greenhouse gas emissions compared to 1990
- 48% renewables of energy end use
- 44% improvement in energy efficiency in final energy terms
- 81% of renewable energy in electricity generation
- Reduction of energy dependence by up to 51%.

The investment plan necessary to achieve the objectives of the PNIEC 2021 is estimated at 241 billion euros (M€), which, as shown in Table 1, is divided in percentage terms into savings and efficiency (35%), renewables (38%), grids and electrification (24%) and the remaining measures (3%). Of the total of

[11] Ministry of Ecological Transition and Demographic Challenge (2020). *National Energy and Climate Plan 2021-2030*. Government of Spain. Available at: https://www.miteco.gob.es/content/dam/miteco/es/ministerio/planes-estrategias/plan-nacional-integrado-energia-clima/plannacionalintegradodeenergiayclima2021-2030_tcm30-546623.pdf

[12] Ministry of Ecological Transition and Demographic Challenge (2023). Public consultation on the draft update of the PNIEC 2023-2030. Government of Spain. Available at: https://energia.gob.es/es-es/Participacion/Paginas/DetalleParticipacionPublica.aspx?k=607

€241M of targeted investments, **€196M** of investment is considered to be directly resulting from the PNIEC itself. In terms of the origin of the investment, the 2021 plan targets a public-private distribution of 20%-80%, as detailed in the data in Table 1. In the 2023 draft update, public, private and European investment is differentiated.

TABLE 1. Planned PNIEC investments Period 2021-2030

Category	Investment (M€)* (M€)* (M€)* (M€)* (M€)* (M€)	Total investment (%)
Savings and efficiency	83.540	35%
Renewables	91.765	38%
Networks and electrification	58.579	24%
Other measures	7.528	3%

Source: Own elaboration. Data: PNIEC.

The PNIEC includes an impact study that simulates how the proposed measures will affect economic, employment, social and public health outcomes. To this end, it compares a Trend Scenario (continuity with the previous trajectory) with the Target Scenario, achievable by applying the proposed measures; the comparison resulting from this modelling points to a positive impact on lower-income households and vulnerable groups, although the comments in the report state that this impact is of little relevance in the indicators studied.

The Draft PNIEC for the period 2023-2030 is presented as an update that expands on the objectives of the previous plan. The PNIEC-2023 version recognises the existence of the gender gap in the sector, in terms of employment and business leadership, entrepreneurship and innovation. In this sense, the development of studies to deepen the knowledge of the state of the energy sector from a gender perspective; to promote the participation and leadership of women in new green jobs; and to promote gender equality in the planning of mobility and transport policies are marked as mechanisms for action.

Finally, the Plan includes a list of the responsible administrations and the interested public consulted, which does not include equality bodies such as the Women's Institute or its corresponding counterpart in the case of the Autonomous Communities.

4.3. Climate Change and Energy Transition Law

Law 7/2021, of 20 May, on climate change and energy transition[13] raises to legislative level the international commitments acquired by the Spanish State in its PNIEC. The Law establishes the necessary regulatory framework to meet the commitments made in the Paris agreement on the reduction of greenhouse gases. It also aims to promote adaptation to the impacts of climate change and to do so in accordance with the 2030 Agenda for Sustainable Development. Its guiding principles include the protection of vulnerable groups and equality between men and women.

Gender considerations begin in Article 27, on the *Just Transition Strategy*, since this and the instruments derived from it must take into account the gender perspective in their elaboration. Article 28 includes the *Just Transition Agreements* to facilitate the transition for sectors affected by the transition. Without mentioning gender, these agreements will have a very different effect on men and women, particularly in the energy sector, where the majority of employees are men and the transformation needs are pressing.

Gender considerations do not reappear until the provisions on governance and participation. Article 37, which obliges an equal composition of the Committee of Expert Persons on Climate Change and Energy Transition, as well as Article 39 recommends the establishment of regional assemblies with a balanced representation of men and women.

Finally, the fourth final provision states that "*In land-use planning, taking into account the gender perspective, the principles of universal accessibility, mobility, energy efficiency, guaranteed water supply, prevention of natural risks and serious accidents, prevention and protection against pollution and limitation of its consequences for health or the environment*".

4.4. Just Transition Strategy

The **Just Transition Strategy**[14] **(ETJ)** starts from the context analysis and diagnosis of the impact of the energy transition on different economic sectors; and focuses on economic and employment impacts. The strategy is framed in the period 2021-2024.

The objective of the ETJs is to optimise the opportunities in activity and employment of the ecological transition towards a green and low-carbon economy and to minimise the negative economic and social impacts that may arise. Thus, it includes eleven strategic objectives on which different measures are developed. Broadly speaking, these objectives focus on ensuring opportunities for employment and

[13] Spain. Law 7/2021, of 20 May, on climate change and energy transition. *Official State Gazette*. 21 May 2021, no. 121. Available at: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2021-8447

[14] Ministry of Ecological Transition and Demographic Challenge (2020). *Just Transition Strategy*. Government of Spain. Available in: https://www.transicionjusta.gob.es/Documents/Convenios_transicion_justa/common/Estatregia_Transicion_Justa_Def.PDF

competitiveness, and on counteracting the impacts of the green transition in the different sectors and territories.

It mentions the public administration as responsible for dynamic observation, and also together with the Autonomous Communities and local authorities, the coordination of different measures, especially in financing and business support bodies, especially in R&D&I activities. As actors and structures involved, it refers to sectoral participation forums.

In terms of gender, Strategic Objective 2 (SO2) aims to introduce gender equality measures to reduce employment inequalities for women in the ecological transition, together with other measures for other disadvantaged groups. Among the proposed actions are to ensure the incorporation of women into employment opportunities and, based on the Employment Plan, to reduce the gender gap.

In order to achieve the objectives set, 8 Axes of Measures are deployed on which to act in order to ensure Just Transition.

- Axis A. Measures to Promote the Ecological Transition of Economic Sectors
- Axis B. Specific Accompanying Measures for Strategic Industrial Sectors
- Axis C. Measures To Reduce Inequality And Support Consumers
- Axis D. Reactivation Measures
- Axis E. Active Green Employment and Social Protection Policy Measures
- Axis F. Green Vocational Training Measures
- Axis G. R&D&I Measures
- Axis H. Measures to Improve Knowledge of the Impact of Ecological Transition on Employment

In the measures, Axis C mentions that the Transition should reduce inequality, pointing to access to resources and services in the context of energy poverty, but without referring to the different impacts that may be suffered depending on gender or other factors. Finally, in the detailed development, the focus of action is on the territories that are being affected by the cessation of the mining and nuclear industry in the region, and does not go into detail on specific disadvantaged groups, beyond the reference to the loss of employment or activity. On the other hand, Axis H envisages the development of periodic analyses of the energy transition, including gender segregation of data in order to propose appropriate gender strategies.

In the ETJ, the Urgent Action Plan and the Just Transition Agreements stand out as tools for achieving objectives. Here again, the changes in the application of these tools focus mainly on the territories affected by the cessation of economic activity in the face of the energy transition (closure of the coal industry, nuclear power plants), and the territories affected by the risk of depopulation. They are proposed as support for certain affected sectors or companies, with support that may be technical, legal or financial. There is no provision for participation or tools to ensure the participation of social

groups or other affected groups in the area. For the establishment of the agreements, different financing channels are suggested as a possibility, which will have to be defined for each particular agreement.

4.5. PERTE on Renewable Energies, Renewable Hydrogen and Storage [15]

The **Strategic Projects for Economic Recovery and Transformation (PERTE)** are public-private partnership projects that aim to promote specific and priority initiatives for the Spanish economy. They are framed within the Recovery, Transformation and Resilience Plan, which is the plan proposed by the Spanish State in the context of the European NextGenerationEU plan. Specifically, the PERTE for renewable energies, renewable hydrogen and storage (ERHA)[16] , approved in mid-December 2021, is one of the PERTEs that supports more funds and strategies of the country within the Spain Can Recovery Plan.

This PERTE proposes an energy transition "*designed & made in Spain*", which aims to maximise achievements and opportunities at the industrial, economic, employment and innovation levels, involving citizens and SMEs. The PERTE budget is close to 16.3 billion euros, of which the public sector will provide more than 6.9 billion, which is expected to attract private investment of around 9.5 billion. In summary, the PERTE ERHA aims to develop and deploy technology, industrial capacities and new business models, research and knowledge that reinforce Spain's leading position in the field of renewable energies.

This PERTE is articulated through four key elements:

- 25 transformative measures, channelled as specific investment instruments, dedicated to innovative renewables; storage, flexibility and new smart energy management models; renewable hydrogen; the Just Transition Strategy; and complementary R&D&I plans. The transformational measures have a MITECO public budget of 3,558 million, which would allow a further 5,390 million to be raised from private investors.
- 17 facilitating or accompanying measures: for energy transition; mobility with renewable gases; skills, vocational training and employment; and technology and digital. The facilitating measures have 3.362 billion of public money, and it is estimated that it will channel another 4.060 billion of private capital.
- The NextGen Energy label, a labelling, classification and monitoring system to which integral projects containing or representing different actions and instruments of the Recovery Plan will

[15] This chapter is a summary of the more extensive analysis "PERTE energías renovables, hidrógeno renovables y almacenamiento: soluciones empresariales y tecnooptimistas para la transición" by Irene González Pijuan and Mònica Guiteras Blaya (Enginyeria sense Fronteres, 2022). Available at: https://odg.cat/wp-content/uploads/2023/03/Perte_energia_analisis_odg.pdf

[16] Government of Spain (2021) . PERTE on Renewable Energies, Renewable Hydrogen and Storage. Available in: https://planderecuperacion.gob.es/sites/default/files/2021-12/PERTE_Energias%20renovables_14122021.pdf

have access, which will give them visibility in the eyes of national and international clients and projects, for better referencing.

- A system for monitoring, evaluating and analysing the impact on the energy transition value chain in Spain, in terms of economies of scale and added value.

PERTE ERHA is based on four main drivers: ecological transition, digital transformation, social and territorial cohesion and gender equality. The latter is deployed on the basis of three strategies. Firstly, the aid and investment lines will incorporate the gender perspective when selecting initiatives, supporting the development and promotion of equal opportunities.

Secondly, the plan's measures are expected to be committed to achieving a balanced representation of women and men and their full, equal and meaningful participation at all levels, both in governing bodies and in staff. However, while the plan recognises the need to involve various important actors for the achievement of proposed objectives and goals, including different levels of administration or also key actors such as social partners, no specific mention is made of participation quotas for the representation of women or other social groups.

In addition, due to the multitude of actors involved in the various actions planned, the creation of an inter-ministerial governance space is envisaged, involving the Ministries of Ecological Transition and the Demographic Challenge; Industry, Trade and Tourism; Economic Affairs and Digital Transformation; Education and Vocational Training; and Transport, Mobility and the Urban Agenda. However, it does not include the Ministry of Equality or other ministries that could ensure the fulfilment of the social goals proposed.

Thirdly, the PERTE ERHA recognises that although the rate of jobs occupied by women in the renewable energy sector is higher than in the oil and gas industry, there is still a gap that entails the risk that job opportunities arising from renewables are not equally distributed. For this reason, in the framework of actions aimed at gender mainstreaming in public policies to support activation for employment, it is planned to direct more than 26 million euros to the development of green skills and jobs.

4.6. National Fuel Poverty Strategy

In May 2019, the Spanish government approved the so-called **National Strategy against Fuel Poverty 2019-2024**[17] , the first institutional framework document addressing the problem. The Strategy was developed by the Ministry of Ecological Transition, in accordance with the provisions of Royal Decree 15/2018 of 5 October, which establishes urgent measures for energy transition and consumer

[17] Ministry of Ecological Transition and Demographic Challenge (2019). *National Strategy against Energy Poverty 2019-2024.* Government of Spain. Available at: https://www.miteco.gob.es/content/dam/miteco/es/prensa/estrategianacionalcontralapobrezaenergetica2019-2024_tcm30-496282.pdf

protection. This strategy was subject to public review and the final document, which was submitted for public consultation, received the approval of the Council of Ministers on 5 April 2019.

For the first time, the Strategy defines the situation of energy poverty and the category of vulnerable consumers. It analyses the situation in Spain, identifies priority areas for action and sets targets to tackle this social challenge. The document is significant enough because it makes a selection of indicators to monitor the problem: disproportionate expenditure (2M), hidden energy poverty (HEP), inability to keep the home at an adequate temperature and late payment of bills.

In addition, the Strategy articulates 4 axes, containing 9 lines of action and 19 concrete measures. The axes are:

- Improving awareness of fuel poverty
- Improving the response to the current fuel poverty situation
- Creating structural change for the reduction of fuel poverty
- Consumer protection and social awareness measures

As far as the gender perspective is concerned, it is worth noting that the document includes references to it on multiple occasions. Firstly, the text admits the need to "have statistical data that allow us to understand the phenomenon of energy poverty from a gender perspective. Disaggregation by gender makes it possible to advance in the study and to have access to data that allow us to analyse intra-household inequalities. The lack of disaggregation can hide the feminisation of fuel poverty". For this reason, it is established that the operational plans approved to develop the Strategy should include the "[a]ctualisation of indicators disaggregated by sex".

In this sense, women are seen as a population group that is particularly vulnerable and therefore requires special protection. This vulnerability is justified by "the phenomenon of the feminisation of poverty and the higher incidence of precarious employment situations and wage gaps, as well as households where women are the sole income earners". The analysis also identifies pregnant women as the population most vulnerable to thermal extremes. As will be specified in the following section, it also includes among the requirements for obtaining the social bonus the prioritisation of victims of gender violence and single-parent family units.

In the section on specific measures, in those relating to the comprehensive refurbishment of buildings and vulnerable households, the Strategy recommends that the different public administrations include award criteria that incorporate the gender perspective in competitive tendering processes for energy service providers. In relation to this, in the list of existing good practices included in the document, the text highlights certain measures of Barcelona City Council linked to the fight against energy poverty, such as "the inclusion of the gender perspective in the calls for applications for aid for the refurbishment of homes and buildings, or the increase in aid for refurbishment, assuming 100% and revision of the access criteria by income level, establishing a higher income in the case of single-parent households".

4.7. “Bonos sociales”, a discount applied to tariffs

The “bono social eléctrico” is a government mechanism aimed at granting discounts on electricity bills, with the purpose of protecting specific groups of consumers who are in a more vulnerable economic or social situation. This discount is applied on the Voluntary Price for Small Consumers (PVPC, in its Spanish acronym), limiting the maximum amount of energy during the billing period.

Real Decreto 897/2017[18] establishes the conditions and socio-economic criteria necessary to qualify as a vulnerable consumer and access the discount, in addition to regulating this figure and other protection measures for domestic electricity consumers. In addition, the application of the electricity discount has been temporarily extended to other low-income households through Real Decreto-Ley 18/2022[19] .

The criteria for accessing such a mechanism could be interpreted indirectly gendered. First, the income limits for eligibility are extended for single-parent households with at least one child (83% of which are headed by a woman). Second, these limits are also extended for cases in which the consumer or any of the members of the cohabitation unit is a victim of gender-based violence.

On the other hand, the “bono social térmico” is an initiative aimed at assisting the most vulnerable consumers in covering the costs related to heating, hot water and cooking, on account of the General State Budget.

This programme was established in article 5 of Real Decreto-Ley 15/2018[20]. Its purpose is to complement the aid received through the “bono social eléctrico”, providing support to vulnerable consumers in terms of the energy used for heating, hot water and cooking, regardless of the source of energy used. In this case, unlike the electricity discount, it is a direct payment into the beneficiary's current account and its access corresponds to all beneficiaries of the “bono social eléctrico”, with the same comments as above.

[18] Spain. Royal Decree 897/2017, of 6 October, which regulates the figure of the vulnerable consumer, the social bonus and other protection measures for domestic electricity consumers. *Official State Gazette*. 7 October 2017, no. 242. Available at:
https://www.boe.es/buscar/doc.php?id=BOE-A-2017-11505

[19] Spain. Royal Decree-Law 18/2022 of 18 October, approving measures to reinforce the protection of energy consumers and to contribute to the reduction of natural gas consumption in application of the "Plan + seguridad para tu energía (+SE)", as well as measures regarding the remuneration of public sector staff and the protection of temporary agricultural workers affected by the drought. *Official State Gazette*. 20 October 2022, no. 251. Available at:
https://www.boe.es/buscar/doc.php?id=BOE-A-2017-11505

[20] Spain. Royal Decree-Law 15/2018, of 5 October, on urgent measures for energy transition and consumer protection. *Official State Gazette*. 6 October 2018, no. 242. Available at:
https://www.boe.es/buscar/doc.php?id=BOE-A-2018-13593

5. Women*'s representation and participation in the energy sector

Political representation

According to the Inter-Parliamentary Union[21], Spain is among the only thirteen countries in the world with 50% or more women in ministerial positions. Until 2017, the presence of women in the Government, Vice-Presidencies and Ministries remained below 40%, however, the arrival of Pedro Sánchez's government in 2018 meant the formation of a Council of Ministers with 65% of women. According to the latest report on main statistical indicators of the Ministry of Equality[22], in 2022, out of a total of 23 members of the Council of Ministers, 14 Ministries and Vice-Presidencies were occupied by women. This represents a female presence in the Council of Ministers of 60.9%, including the Ministry for Ecological Transition and the Demographic Challenge, headed by Teresa Ribera Rodríguez.

In March 2023, the Council of Ministers itself approved the Preliminary Draft Organic Law on Equal Representation of Women and Men in Decision-Making Bodies. This initiative extends the guarantees of Ley Orggánica 3/2007, of 22 March, for the effective equality of women and men. Specifically, it imposes on the Council of Ministers the principle of balanced representation, which means that there must be no less than 40% of women or men. The obligation extends to all state public sector entities, listed companies, large companies and public interest entities and professional associations. In addition, the new regulation establishes the obligation to have “zip lists” (candidates made up of men and women alternately) in elections for members of Congress, the Senate, the European Parliament, regional assemblies, municipalities, island councils and island councils.

So far, in the year 2022, the total number of executive positions in political parties stood at 47.0%. In terms of legislative political power, at the end of 2022 there was a representation of 42.7% of women in the Congress of Deputies, 39.4% in the Senate and 47.5% of the seats of the Spanish State in the European Parliament. In the year 2022, the percentage of women occupying higher and senior positions in the General State Administration (up to Director General, and not counting Administration posts below the level of Director General) rose with respect to the previous year by almost 5 points, to 48.4%.

Stakeholder input

[21] Inter-Parliamentary Union (2021). "Women in Politics: 2021. United Nations. Available at: https://www.ipu.org/women-in-politics-2021

[22] Women's Institute (2023). "Main statistical indicators of equality". Ministry of Equality. Available at: https://www.inmujeres.gob.es/MujerCifras/Informes/Docs/principales_indicadores_2023.pdf

According to the stakeholders interviewed,

- In the institutional sphere there is a certain parity, more so than in the private sphere.
- Parity does not necessarily imply changes towards more feminist policies.
- The representation of a feminist agenda goes beyond the presence of women, changing the very patriarchal structures of the system.
- It is necessary to make visible women of reference and their feminist contributions in politics.
- There is a need to support the creation and development of measures that enable citizen participation in the energy system.

5.2. Economic representation

The energy sector has been and remains a male-dominated field. According to the International Energy Agency[23] , on average, there are 76% fewer women than men working in the energy sector, a significant difference with respect to the average gap of 8% observed in the total workforce, according to 2018 data from 29 countries (22 IEA members). In the specific case of Spain, the gap is moderately larger than average, with 78.4% fewer women than men in the sector. It is also noteworthy that the bias is positive, with 16.4% more women in the non-energy sectors (see Table 2).

TABLE 2. Comparison of the gender gap between the energy sector and the rest.

Indicator	Energy sector	Non-energy sectors
Employment gap	-78,4%	16,4%
Skills-driven gender pay gap	-14,7%	-15,5%
Gap in hours worked	-8,5%	-9,8%

Source: Own elaboration. Data: International Energy Agency, 2018.

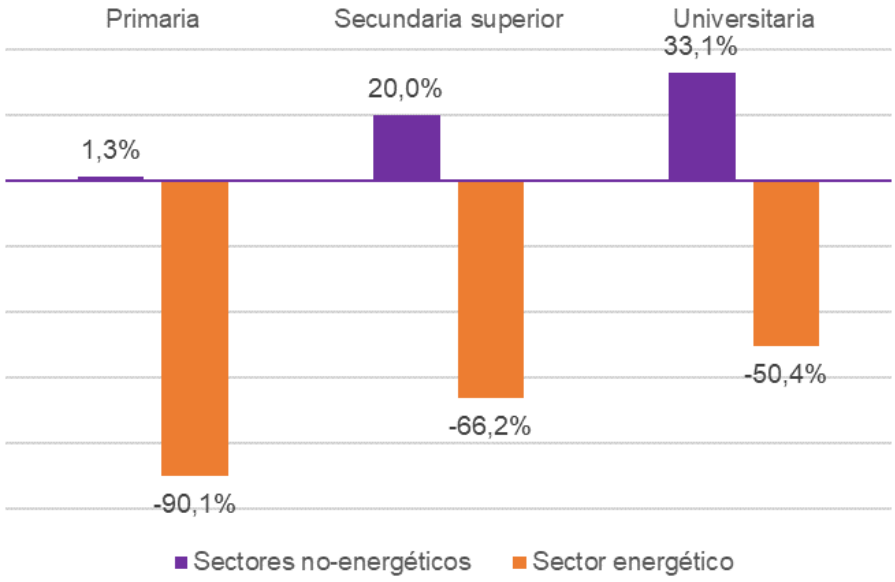
Globally, according to data collected by the IEA in 2018, the average gender pay gap for similar positions is approximately -15% in the energy sector, meaning that women working in the sector earn 15% less than men, even when they have similar skill levels. In the non-energy sector, the wage gap is slightly lower, at -13% (IEA). Turning to table 2, in the case of Spain, the gender pay gap conditional on skills is similar: -15.5% in the non-energy sectors and, slightly lower, -14.7% in the energy sector, although it is still unfavourable for women.

There are other indicators which, albeit indirectly, may show that women have other care burdens, such as the indicator of the gap in hours worked. In Spain, as table 2 shows, women work on average fewer

[23] Acker, Ashley; Haramboure, Antton; Hijzen, Alex; and Johnstone, Nick (2022). "Understanding Gender Gaps in Wages, Employment and Career Trajectories in the Energy Sector". International Energy Agency. Available at: https://www.iea.org/articles/understanding-gender-gaps-in-wages-employment-and-career-trajectories-in-the-energy-sector

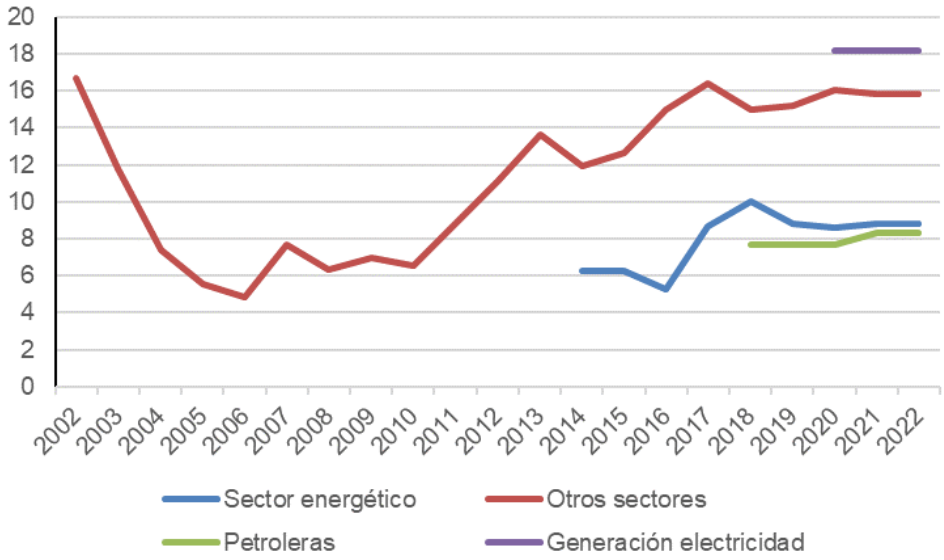
hours, presumably because they also carry out care tasks disproportionately to men. Moreover, there are notable differences depending on the level of education or the number of hours worked. On the one hand, in university-level jobs, there are more women than men in economic sectors not associated with the energy sector, but many more men than women in the energy sector. The gap becomes much wider as the level of education goes down, as Figure 2 shows.

FIGURE 2. Gender gap in female employment by educational attainment and sector in 2018.



Source: Own elaboration. Data: International Energy Agency.

FIGURE 3. Evolution of the percentage of women in leadership positions by sector.



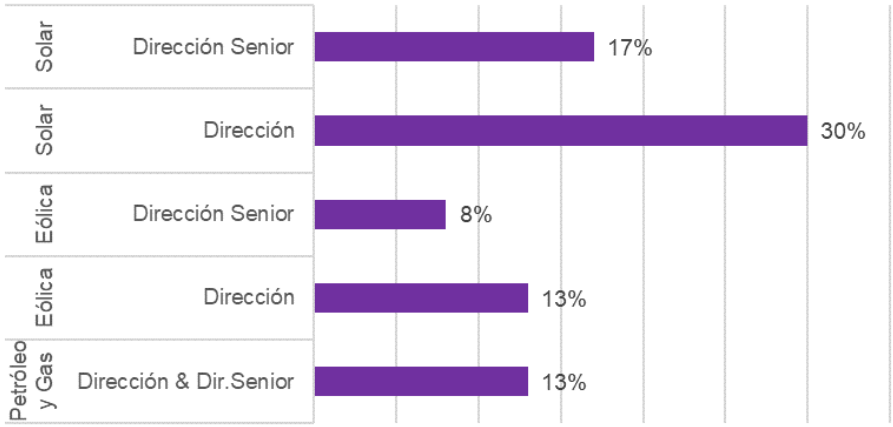
Source: Own elaboration. Data: International Energy Agency.

According to IEA data and following the results in Figure 3, the differences in leadership positions within

the different economic sectors are also evident. On average, the percentage of women does not exceed 20% in any of the sectors, a far cry from equal representation. However, it is worth noting that the case for the energy sector is notoriously worse than others. Within the industries of the sector, the oil and gas industry has less representation of women than the electricity generation industry and, moreover, it is worth noting that the time evolution has hardly changed over the last 20 years, remaining below 10%.

On the other hand, as shown in Figure 4 based on data from the International Renewable Energy Agency[24] , there is a slightly different overall trend in management positions in the renewable energy sector, especially in the solar sector, where the percentage of women in charge exceeds that of the rest of the non-energy sectors (see Figure 3).

FIGURE 4. Percentage of women in management positions in renewable energy in 2021.



Source: Own elaboration. Data: International Renewable Energy Agency.

On the other hand, the report published by the Ministry for Ecological Transition and the Demographic Challenge[25] contains a first approximation of the situation of new jobs related to the just transition sector, which includes the five subsectors:

- electricity, grids and self-consumption,
- energy refurbishment and installation of heating and cooling equipment
- energy efficiency in transport
- energy consulting
- related activities suppliers of goods and services to the above sub-sectors.

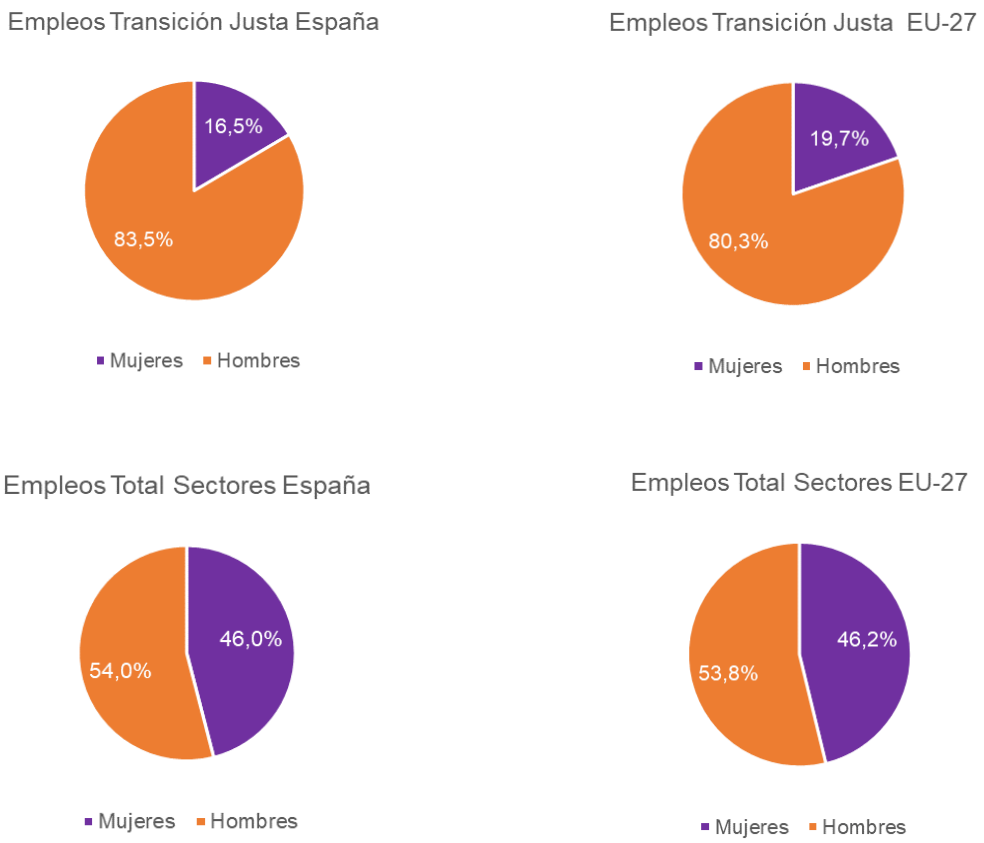
Figure 5 shows the results of the aforementioned report, offering a comparison of the presence of women in reference to the total number of sectors at the Spanish level (left-hand side graphs), and as

[24] IRENA (2022). *Solar PV: A gender perspective. International Renewable Energy Agency*, Abu Dhabi.

[25] Martínez Martín, María Isabel; Santero Sánchez, Rosa; Castro Núñez, Belén; de Cabo Serrano, Gema; and Rodríguez del Barrio, Belén (2023). "El empleo de las mujeres en la transición energética justa en España" (Women's employment in the just energy transition in Spain). Ministry for Ecological Transition and the Demographic Challenge. Available at: https://www.miteco.gob.es/es/ministerio/planes-estrategias/igualdad-de-genero/informe-el-empleo-de-las-mujeres-en-la-transicion-energetica-jus.html

a comparison with the EU-27 data (right-hand side graphs). In Spain, the participation of women in the just energy sector represents a value of 16% compared to 46% for all sectors (data from 2021); when compared to the EU-27 values, although the total participation is equivalent in Spain and the EU-27, in Spain the presence of women in the just transition is lower than the European average: 16%, compared to 20% in the EU.

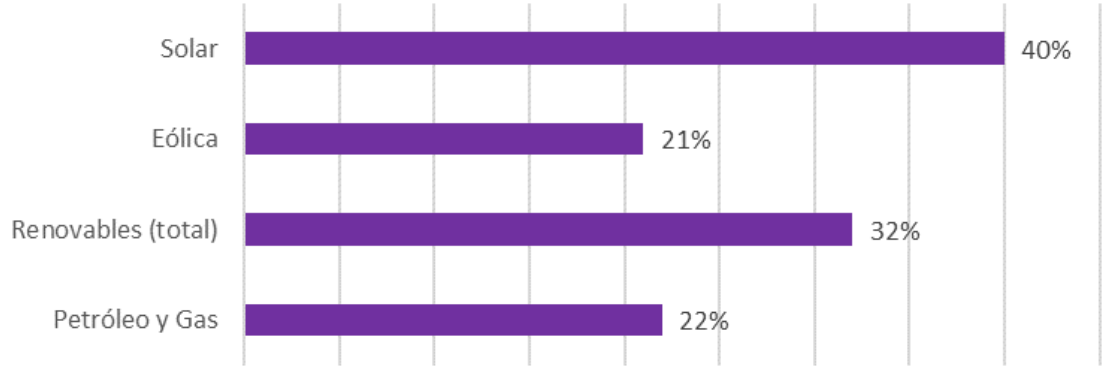
FIGURE 5. Percentage of women in energy transition employment and in the total economy in Spain and EU-27 countries.



Source: Prepared by the authors. Data: Ministry for Ecological Transition and the Demographic Challenge.

In the analysis of the renewables sector, IRENA's overall employment data show different trends in renewables employment across technologies. As Figure 6 shows, the percentage of women employed improves slightly in the case of renewables, especially solar, but not in the wind sector, where levels are similar to the oil-gas industry.

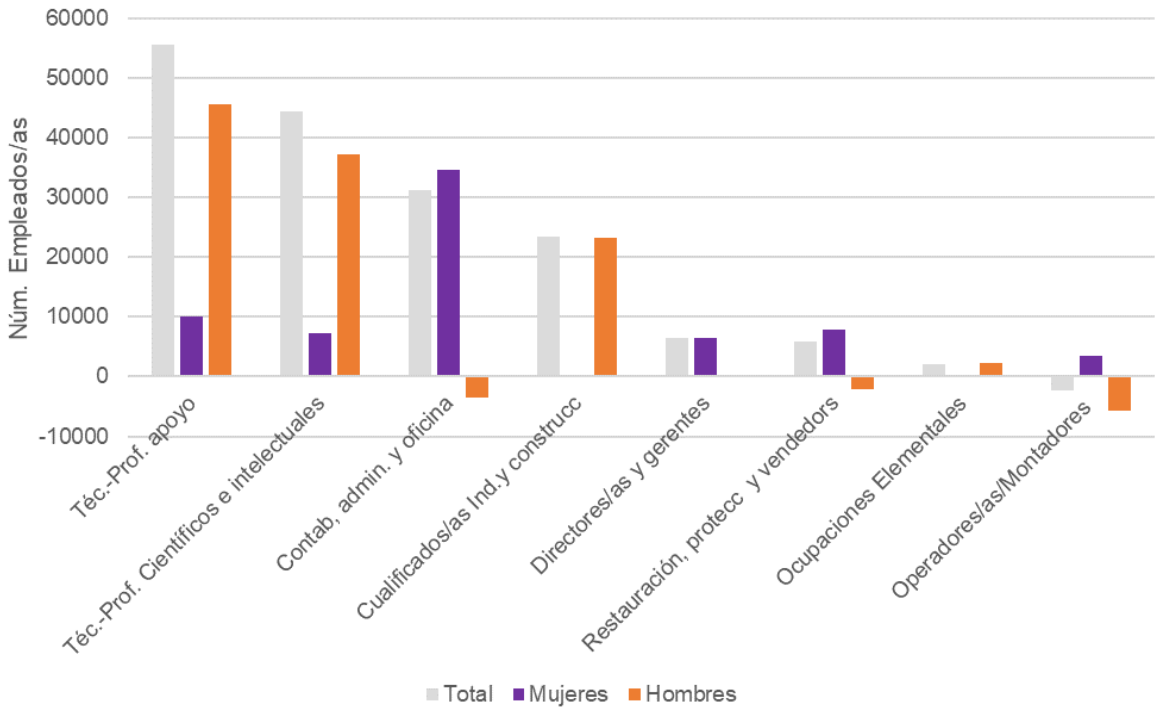
FIGURE 6. Percentage of women employed in the global energy sector in 2021.



Source: Own elaboration. Data: International Renewable Energy Agency.

Figure 7 shows the creation of new Just Transition jobs between 2015 and 2022, broken down by type of professional profile. It conveys that total job creation has been concentrated in high-skilled jobs, but at the same time, the number of women in these categories is significantly lower. Low-skilled sectors have not seen a commensurate increase, which in turn suggests that the generation of employment associated with the Just Transition is not contributing to the mitigation of social differences, i.e. the creation of job opportunities has not been equitable throughout society, rather the opposite, leaving fewer opportunities for those with less access to training.

FIGURE 7. New energy transition jobs by gender between 2015-2022.

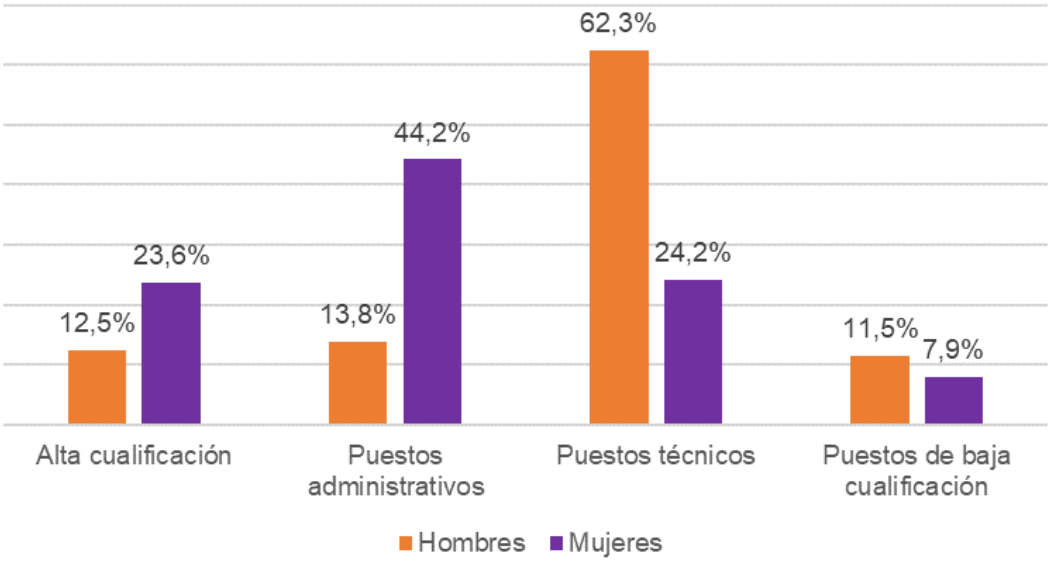


Source: Prepared by the authors. Data: Ministry for Ecological Transition and the Demographic Challenge.

In fact, as shown in Figure 8, which shows the distribution by gender grouped by professional category,

there is a significant inequality in administrative posts: 44% of women compared to 13.8% of men. At the other extreme, technical positions are occupied by only 24.2% of women, compared to 62.3% of men.

FIGURE 8. Distribution of jobs by occupational category by gender in 2021.



Source: Own elaboration. Data: Continuous Sample of Working Lives.

Stakeholder input

According to the stakeholders interviewed,

- The energy transition cannot be just if it only involves a change of technology.
- Industry parity for *business as usual* is not a transformative factor in itself.
- The transformation of the energy model must include feminist policies and the redistribution that goes with them.
- From civil society, the Women's Network for an Ecofeminist Energy Transition started to build a database of women working for the change of energy model.

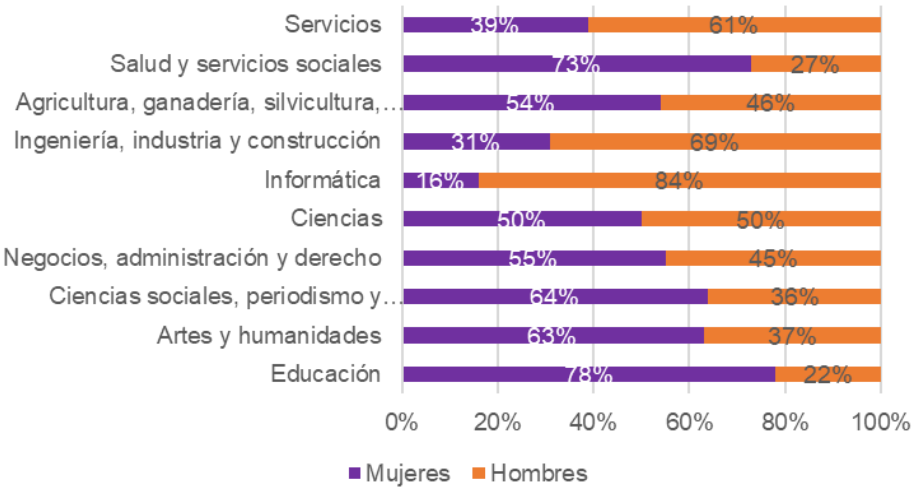
5.3. Participation in educational programmes

According to data from the Ministry of Universities (2023)[26], during the academic year 2021-2022 women were in the majority in the total number of enrolments (56.3%) and graduates (60.0%) in undergraduate studies. In fact, women have a higher level of education than men among the population aged 25-34, the ratio in Spain being 54% to 43%. However, as Figure 9 shows, the presence of women is unequal in the different branches of knowledge, with a majority only in those linked to the field of health and welfare. Specifically, the fields with the highest percentage of women are Education (78%) and Health

[26] Subdirección General de Actividad Universitario Investigadora de la Secretaría de Universidades (2023). "Datos y cifras del Sistema Universitario Español" (Spanish University System Facts and Figures). Ministry of Universities. Available at: https://www.universidades.gob.es/wp-content/uploads/2023/04/DyC_2023_web_v2.pdf

and Social Services (73%), while men are in the majority in Computer Science (84%) and Engineering, Industry and Construction (69%).

FIGURE 9. Percentage of students enrolled in Bachelor's degrees by field of study and sex in the academic year 2022-2023.

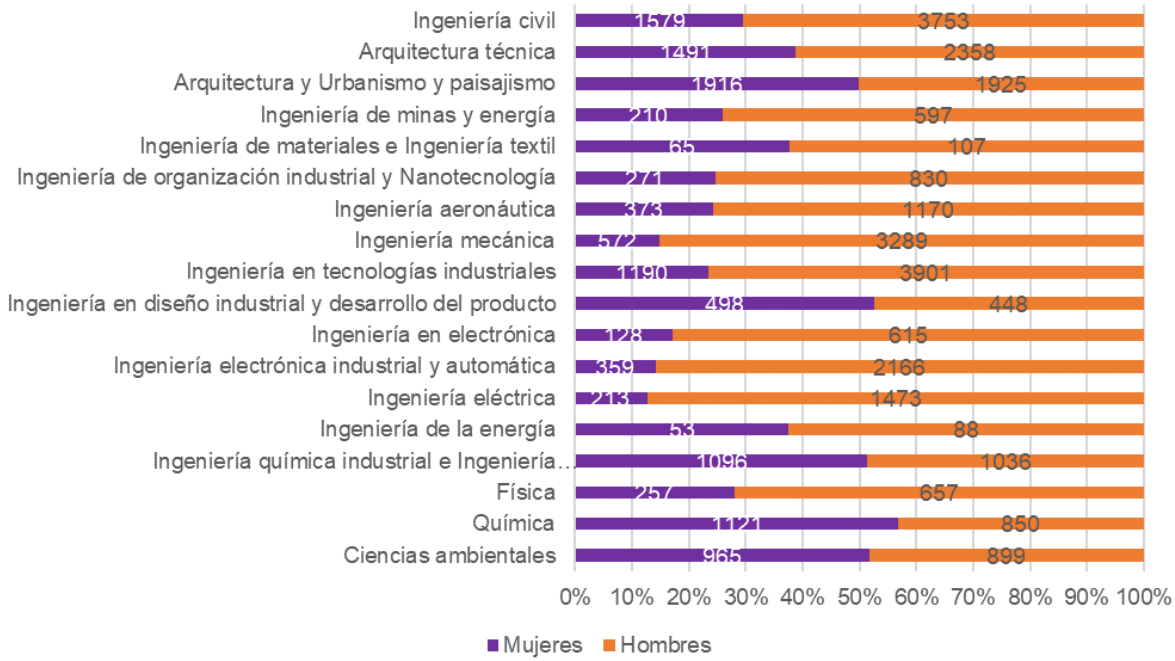


Source: Prepared by the authors. Data: Ministry of Universities (advance).

The bias is therefore seen in the technological field and not so much in the scientific field, which is evenly represented. In this sense, while women are the most professionalised in the field of care, which is essential for carrying out a just energy transition, those technical qualifications that are also related to energy are mainly occupied by men. An example of this is the data available in Figure 10, from the 2013-2014 academic year, with the total number of graduates in those technical fields related to the energy transition. A second bias emerges from these disaggregated data: degrees related to environmental sustainability are more feminised. Thus, of the five degrees that achieve parity, two are Environmental Sciences and Renewable Energy Engineering[27] .

Graduates by degree related to energy transition and gender in the 2013-2014 academic year.

[27] The available data show the aggregate number of graduates in Industrial Chemical Engineering and Renewable Energy Engineering.



Source: Own elaboration. Data: National Institute of Statistics.

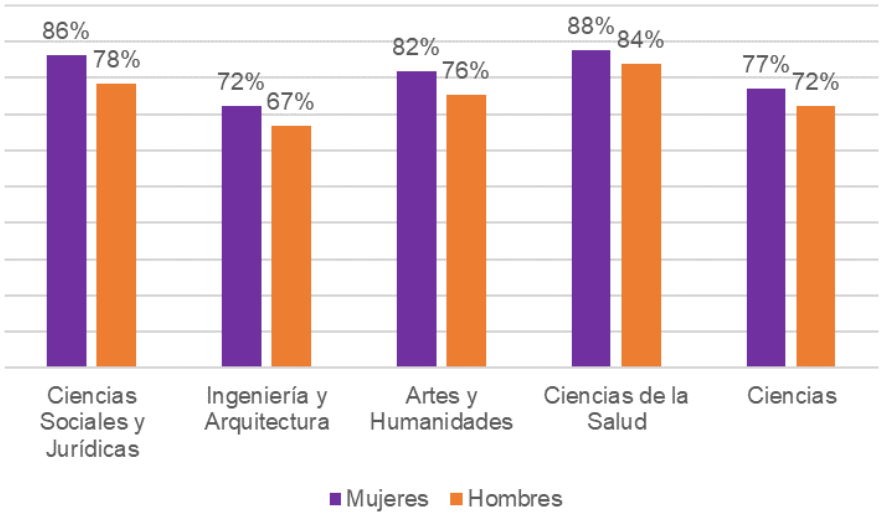
Similarly, there is a marked gender segregation in enrolment in professional training. According to the report of the MEPF Equality Unit (2022), female students are in the majority in the training cycles of Health, Chemistry and Food Industries, while their absence is significant in the technical fields. This is the case of the Energy and Water branch, with 5.7% of female students enrolled in the 2019-2020 academic year. The same trends also prevail among master's and doctoral students. Furthermore, it is noteworthy that while women are in the minority among research teaching staff, especially in the university professorships, they represent almost two thirds of the administrative and services staff.

According to the team of the Equality Unit of the Ministry of Education and Vocational Training (2022)[28], although women obtain higher average marks in the Bachillerato and in the University Entrance Exams, they have a low confidence and self-perception of their talent and of their professional expectations in technical fields. However, contradicting such aspirations, the Bachelor's degree attainment rate, for instance, the percentage ratio between the number of credits passed and the number of credits enrolled, is higher among female students (84.6%) than male students (75.0%). As Figure 11 shows, this is also true for the technical fields.

FIGURE 11. Rate of return in Bachelor's degree by branch of education and gender in the

[28] Grañeras Pastrana, Montserrat; Moreno Sánchez, María Elena and Isidoro Calle, Noelia (2022). "Radiography of the gender gap in STEAM training". Ministry of Education and Vocational Training. Available at: https://alianzasteam.educacionyfp.gob.es/publicaciones/informes-alianza-steam.html

academic year 2020-2021.



Source: Own elaboration. Data: Ministry of Universities.

Given the above data, the Ministry of Education and Vocational Training launched in 2021 the *STEAM Alliance for Female Talent. Girls on their feet,* an initiative that aims to reduce the gender gap in STEAM (Science, Technology, Engineering, Arts and Mathematics). Thus, it aims to inspire girls to trust in their technical learning abilities, awaken their passion for science and technology, discover the potential of a STEAM education and make women leaders in the field known. Some of its actions are the announcement of awards for educational projects, curricular materials and educational or training innovations; the creation of a Statistical Observatory to measure the gender gap in STEAM education in Spain; and, finally, to generate a repository of initiatives promoted by companies and organisations that are members of the STEAM Alliance.

Stakeholder input

According to the stakeholders interviewed, there is a notable lack of trained women in the energy field to be able to bring about a transformation of the energy system. In this regard, the following considerations should be taken into account:

- More women need to be attracted to technical education, including degrees related to the energy transition.
- An integrated energy culture should be promoted at all levels of education to contribute to a better understanding of energy.
- At the same time, the issue of energy transition must be approached beyond the technicalities and tackle the social and care spheres already occupied by women.
- In this sense, the training curriculum must be transformative in the very conceptualisation of energy, situating it as something essential for life and, therefore, in care.
- Educational spaces must recognise and adapt to the barriers women face, legitimising their contributions and curbing possible aggressions from the environment.

Energy poverty

Energy poverty is, together with extractivism, one of the most negative consequences of the current energy model. The National Strategy against Energy Poverty defines it as:

Fuel poverty is the situation of a household in which basic energy supply needs cannot be met as a result of an insufficient level of income and may be aggravated by energy inefficient housing.

The Strategy itself recognises, as reported in the relevant section above, that fuel poverty has a strong gender component, a fact also affirmed by various scientific publications. Not only are women more likely to be in energy poverty, but gender also plays a role in how different household members develop strategies for living in fuel poverty and in the emotional consequences of not having decent access to energy services. Thus, women are also the ones who spend more time on household and care tasks, which are intrinsically linked to domestic energy consumption. On the other hand, economic factors such as the wage and pension gap and labor market segmentation increase the likelihood of female-headed households experiencing energy poverty.

The Ministry for Ecological Transition and Democratic Challenge does not provide official data on energy poverty disaggregated by gender, as we have previously mentioned. However, in the latest update of published indicators, we see, for example, that in households consisting of an adult person with children (who in more than 80% of cases is a woman), the figures for not being able to reach an adequate temperature in winter rise to 25.1% of households in 2021. Late payment of bills also reaches 21.7% of households.

For example, a project called FEMENMAD[29] , which was developed in the city of Madrid, showed that in 2018, 32% of households with female main breadwinners were at risk of energy poverty. In the case of single women over 65 years of age, the percentage rose to 45%, exceeding 50% in the case of single-parent households.According to the Technical Study on energy poverty in the city of Madrid, 23% of the general population of Madrid is at risk of energy poverty.

[29] https://abio-upm.org/project/proyecto-femenmad/#:~:text=FEMinisaci%C3%B3n%20of%20energy%20poverty,%20households%20that%20suffer%20poverty.

6. Conclusions and recommendations

The **Spanish State's legislative framework on gender equality has been** enriched since the approval of the first Ley Orgánica 3/2007, for effective equality between men and women. This law regulates aspects such as parity in public and private administration, in positions of responsibility, equal opportunities in the workplace, non-discrimination based on sex, the fight against harassment at work and the conciliation of personal, family and working life.

As far as the energy sector is concerned, the III Strategic Plan for the Effective Equality of Women and Men 2022-2025 defines a **line of work aimed at building a quality and equal labor market for women**, which specifies the promotion of the presence of women in scientific-technological areas and in sectors linked to the green economy (in which we could also include the energy transition). There are also plans to support the entrepreneurship of women promoters of employment and self-employment (with special attention to rural and migrant women) in the environmental economy; as well as developing specific measures for the participation of women in training and capacity building to access new jobs linked to renewable energies, among other measures.

On the other hand, in 2021, the Ministry for Ecological Transition and the Demographic Challenge and the Women's Institute signed a **general collaboration protocol to reinforce the gender equality approach in all their actions and areas and thus reduce the existing gender gap**. The agreement was therefore intended to facilitate gender-sensitive input into the drafting of new strategic and policy initiatives.

However, although the roadmap encourages such a paradigm shift, the energy sector in Spain, following the global trend, continues to be strongly masculinised. The representation and participation of women* work in the workplace is much lower than that of men, with **78.4% fewer women in the sector** who, moreover, suffer a **wage gap of -14.7%** for positions similar to their peers (IEA, 2018). In this sense, the energy transition is seen as an opportunity to reverse this trend, and this is reflected in the new proposals for the legal framework of the energy sector. However, although the representation of **women employed in renewable energy is somewhat higher, at 16.5%** (IRENA, 2021), it is still an unfavourable figure for women.

On the other hand, the creation of **new** Just Transition **jobs** between 2015 and 2022 has been **concentrated in highly qualified positions,** but at the same time the incorporation of women in these categories is significantly lower (MITECO, 2022). In this regard, it is noteworthy that the participation of women in technical education programmes, such as **engineering, industry and construction, is only 31%** among female undergraduate students (Ministry of Universities, 2022). Some of the reasons are to be found in a **low confidence and self-perception** about their talent and career expectations in technical fields (Ministry of Education and Vocational Training, 2022). However, there is a **greater**

interest in degrees related to environmental sustainability.

Differences are also evident in terms of leadership positions in the private sector, which have never exceeded a representation of more than 10% of women (IEA, 2022). On the other hand, it is noteworthy that **the political representation of women in the Spanish state complies with** overall **parity.** In fact, in March 2023, the Government approved the draft of the Ley Orgánica on equal representation of women and men in decision-making bodies. In this way, the **imposition of 40% of women or men** will be extended beyond state public sector entities, to the boards **of directors of listed companies and large corporations**.

In this way, it is evident that **public policies on gender equality are not managing to permeate the energy sector**, while the representation and participation of women in the economic and educational spheres continues to be far below parity criteria. On the other hand, as all the women interviewed remarked, **parity is not a goal in itself**, but rather the entry of a feminist perspective in the energy sector that is truly transformative.

Furthermore, the inclusion of a gender perspective in energy policies is, in many cases, in the form of promoting women's participation and leadership in new jobs for the energy transition. In other words, the **structural causes for the eradication of inequalities in the sector are not addressed**. According to the 3rd Strategic Plan for Equality, there is a need to **move towards a culture that assumes the limits of nature and interdependencies**, that promotes eco-feminist literacy, a fairer distribution and sharing of wealth and a sustainable urban, rural, relational and environmental environment for life. However, energy policies continue to promote economic growth that is disconnected from planetary boundaries and an ecofeminist perspective that puts life at the centre.

Similarly, energy poverty, together with extractivism, is one of the most negative consequences of the current energy model, a problem that women suffer to a greater extent. There is still no official data disaggregated by sex/gender and, although the subsidies in force include elements of positive discrimination for single-parent households or women victims of gender violence, these are still insufficient.

It is definitely necessary and urgent to address the gender perspective from a transversal and structural approach in the energy sector.

Based on the above conclusions, we propose the following recommendations:

- Generate information, data and reports segregated by sex/gender. It is necessary to increase knowledge on equality and equity in a key sector such as the energy sector, whether in the field of employment and salaries, education, politics or the impacts of the model in the form of energy poverty. It should be borne in mind that although the disaggregation of data by sex/gender is necessary, it is not sufficient. It is essential to publish data disaggregated by sex/gender, age, social position and other variables to capture social inequalities arising from racialisation,

functional diversity or gender preferences, among others.

- Integrate the gender perspective in the processes of assessing energy demand and in the configuration of the most appropriate energy technologies and their territorial implementation and management. It is necessary to improve acceptance of the energy transition and mobilise more citizens to actively participate in this transition.
- Adopt definitive and structural measures to put an end to energy poverty, such as a ban on cuts, debt cancellation or a real social tariff. Energy poverty has a strong impact on women and devastating consequences on their mental and physical health.
- Include a gender and social justice perspective as a priority in all transformative energy transition initiatives, such as energy communities, prioritising issues such as care, decision-making processes, availability of time for participation, technical inclusiveness or economic capacities.
- Broaden curricula in all energy-related studies to be transformative, situating energy as essential to life and therefore in care, and recognising its social and environmental impacts. While policies to promote parity in STEM studies are necessary, it is also essential to rethink and broaden energy education beyond the technical and/or economic spheres.
- Integrate professionals from other areas into the energy sector, beyond technology and economics, recognising the value of care and social issues in the sector. It is necessary to promote diversity in all areas of energy, beyond the gender gap.
- Conduct specific training for men in the private sector that addresses gender issues, feminism or power analysis. Also promote segregated spaces that strengthen the situation of women working in the sector.
- Make gender policies more cross-cutting and permeate other ministries such as MITECO. Raise public awareness of the need to include the gender perspective in the sector, beyond parity, within the framework of ecofeminism and environmental and social justice.
- Given that organisations and social movements in the field of energy, environmental justice and the defence of energy rights are highly feminised, include them in the definition of energy policies and plans. In general, include women's expertise in legislative processes to make them more responsive to real diversity.
- Promote the real democratisation of the energy model towards a distributed, socially and environmentally just one. The representation of a feminist agenda goes beyond the presence of women; it is necessary to change the patriarchal decision-making structures themselves in order to integrate a real gender perspective.

7. Bibliography

Acker, Ashley; Haramboure, Antton; Hijzen, Alex; and Johnstone, Nick (2022). *Understanding Gender Gaps in Wages, Employment and Career Trajectories in the Energy Sector*. International Energy Agency. Available at: https://www.iea.org/articles/understanding-gender-gaps-in-wages-employment-and-career-trajectories-in-the-energy-sector

European Institute for Gender Equality (2023). *Gender Equality Index*. Available at: https://eige.europa.eu/gender-equality-index/2023/country/ES

Spain. Royal Decree 897/2017, of 6 October, which regulates the figure of the vulnerable consumer, the social bonus and other protection measures for domestic electricity consumers. *Official State Gazette*. 7 October 2017, no. 242. Available at: https://www.boe.es/buscar/doc.php?id=BOE-A-2017-11505

Spain. Royal Decree-Law 15/2018, of 5 October, on urgent measures for energy transition and consumer protection. *Official State Gazette*. 6 October 2018, no. 242. Available at: https://www.boe.es/buscar/doc.php?id=BOE-A-2018-13593

Spain. Law 7/2021, of 20 May, on climate change and energy transition. *Official State Gazette*. 21 May 2021, No. 121. Available at: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2021-8447

Spain. Royal Decree-Law 18/2022 of 18 October, approving measures to reinforce the protection of energy consumers and to contribute to the reduction of natural gas consumption in application of the "Plan + seguridad para tu energía (+SE)", as well as measures regarding the remuneration of public sector staff and the protection of temporary agricultural workers affected by the drought. *Official State Gazette*. 20 October 2022, no. 251. Available at: https://www.boe.es/buscar/doc.php?id=BOE-A-2017-11505

Government of Spain (2021). *PERTE on Renewable Energies, Renewable Hydrogen and Storage*. Available in: https://planderecuperacion.gob.es/sites/default/files/2021-12/PERTE_Energias%20renovables_14122021.pdf

González Pijuan, Irene (2017). *Gender inequality and energy poverty*. Enginyeria sense Fronteres. Available in:

ttps://esf-cat.org/blog/2017/01/24/esferes17-desigualtat-genere-pobresa-energetica-factor-risc-oblidat/

González Pijuan, Irene and Guiteras Blaya, Mònica (2022). *PERTE renewable energies, renewable hydrogen and storage: business and techno-optimistic solutions for the transition*. Enginyeria sense Fronteres. Available in:
https://odg.cat/wp-content/uploads/2023/03/Perte_energia_analisis_odg.pdf

Grañeras Pastrana, Montserrat; Moreno Sánchez, María Elena and Isidoro Calle, Noelia (2022). *Radiography of the gender gap in STEAM training*. Ministry of Education and Vocational Training. Available at:
https://alianzasteam.educacionyfp.gob.es/publicaciones/informes-alianza-steam.html

Women's Institute (2023). *Main statistical indicators of equality*. Ministry of Equality. Available at:
https://www.inmujeres.gob.es/MujerCifras/Informes/Docs/principales_indicadores_2023.pdf

Women's Institute (2022). III Strategic Plan for the Effective Equality of Women and Men 2022-2025. Available at:
https://www.planestrategicodeigualdad.es/

Inter-Parliamentary Union (2021). *Women in Politics: 2021*. United Nations. Available at: https://www.ipu.org/women-in-politics-2021

IRENA (2022). *Solar PV: A gender perspective. International Renewable Energy Agency*. Abu Dhabi.

Martínez Martín, María Isabel; Santero Sánchez, Rosa; Castro Núñez, Belén; de Cabo Serrano, Gema; and Rodríguez del Barrio, Belén (2023). *The employment of women in the just energy transition in Spain*. Ministry for Ecological Transition and the Demographic Challenge. Available at: https://www.miteco.gob.es/es/ministerio/planes-estrategias/igualdad-de-genero/informe-el-empleo-de-las-mujeres-en-la-transicion-energetica-jus.html

Ministry of Ecological Transition and Demographic Challenge (2019). *National Strategy against Energy Poverty 2019-2024*. Government of Spain. Available at:
https://www.miteco.gob.es/content/dam/miteco/es/prensa/estrategianacionalcontralapobrezaenergetica2019-2024_tcm30-496282.pdf

Ministry of Ecological Transition and Demographic Challenge (2020). *Just Transition Strategy*. Government of Spain. Available in:
https://www.transicionjusta.gob.es/Documents/Convenios_transicion_justa/common/Estatregia_Transicion_Justa_Def.PDF

Ministry of Ecological Transition and Demographic Challenge (2020). *National Energy and Climate Plan 2021-2030*. Government of Spain. Available at: https://www.miteco.gob.es/content/dam/miteco/es/ministerio/planes-estrategias/plan-nacional-integrado-energia-clima/plannacionalintegradodeenergiayclima2021-2030_tcm30-546623.pdf

Ministry of Ecological Transition and Demographic Challenge (2023). *Public consultation on the draft update of the PNIEC 2023-2030*. Government of Spain. Available at: https://energia.gob.es/es-es/Participacion/Paginas/DetalleParticipacionPublica.aspx?k=607

OECD (n.d.) *Indicators for Gender Equality and Women's Empowerment - An Introduction*. Available at: https://www.oecd.org/dac/gender-development/43041409.pdf. (Last accessed on 7.6.2023.)

Petrova, S. & Simcock, N. Gender and energy: domestic inequities reconsidered. Soc. Cult. Geogr. 00, 1-19 (2019).

Robinson, C. Energy poverty and gender in England: A spatial perspective. Geoforum 104, 222-233 (2019).

Sánchez-Guevara Sánchez, C., Sanz Fernández, A., Núñez Peiró, M. & Gómez Muñoz, G. Feminisation of energy poverty in the city of Madrid. Energy Build. 223, (2020).

Subdirección General de Actividad Universitario Investigadora de la Secretaría de Universidades (2023). *Facts and figures of the Spanish University System*. Ministry of Universities. Available at: https://www.universidades.gob.es/wp-content/uploads/2023/04/DyC_2023_web_v2.pdf