

WOMEN FOR MARKET UPTAKE OF RENEWABLE HEATING AND COOLING

POLICY RECOMMENDATIONS

**CO-CREATION, MUTUAL LEARNING AND GOOD PRACTICE
EXCHANGE BETWEEN QUADRUPLE HELIX STAKEHOLDERS**

Deliverable 5.4 | WP5

Project title: W4RES – Scaling-up the involvement of women in supporting and accelerating market uptake of renewable energy sources for heating and cooling | **Grant agreement:** 952874 | From November 2020 to October 2023 | **Prepared by** European Green Cities APS (EGC) | **31/10/2023**



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Policy Recommendations

Deliverable 5.4

WP5. Co-creation, mutual learning and good practice exchange between quadruple helix stakeholders

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EXECUTIVE SUMMARY

Women hold great potential as agents of change, supporting and accelerating the market uptake of renewable energy for heating and cooling, while also helping us get closer to meeting the EU's renewable energy targets for 2030. Currently, renewable energy employs about 32% women, compared to 22% in the overall energy sector.¹ However, women are underrepresented in STEM (Science, Technology, Engineering, and Mathematics) jobs, as well as in leadership and management positions. The EU-funded project, W4RES, which aims to empower women in the Renewable Heating and Cooling (RHC) sector and boost RHC deployment, has created policy recommendations to support a more competitive, inclusive, and gender-responsive Renewable Heating and Cooling landscape.

Since September 2021, W4RES partners have been researching and supporting women in the RHC sector in eight European countries: Belgium, Bulgaria, Denmark, Germany, Greece, Italy, Norway, and Slovakia. More than fifty women-led projects have received innovation, technical, or business support, further informing a mixed qualitative and quantitative study based on the eight countries and 240 responses. The outcome of this work includes, among other tools and strategies, five sets of policy recommendations.


The recommendations emphasise that to build a more sustainable energy sector, we must prioritise diversity and inclusivity, ensuring that women have equal opportunities to drive the green transition. Furthermore, we must create a more inclusive and supportive work environment within the RHC industry, make STEM education more accessible to women, and break down barriers within STEM fields. Additionally, the RHC sector must embrace gender-equitable communication, inclusive decision-making, and a workplace that demonstrates gender sensitivity. Moreover, there is a need to raise awareness of women's positive impact on the RHC sector, creating gender-inclusive work environments to include more women in the sector and raise awareness of the opportunities for women wanting to enter the sector.

LIST OF RECOMMENDATIONS

Recommendation 1: Support a Gender Balanced RHC Sector for the Future Generations

To support women in the RHC sector, prioritise school awareness campaigns, link STEM to climate protection, foster school-company partnerships, and provide technical support and re-skilling for unemployed women. Address early gender biases in STEM, leveraging positive influences from parents and teachers to dispel stereotypes and encourage women's interest in RHC careers.

¹ <https://www.irena.org/publications/2019/Jan/Renewable-Energy-A-Gender-Perspective>

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Recommendation 2: Promoting an Inclusive Workplace in the RHC Sector

To promote an uplifting workplace in the healthcare sector, implement gender quotas, provide entrepreneurial support, and create networking and mentoring programs for women. Implement gender- and family-friendly policies, gender-responsive budgeting, and safe reporting procedures to address workplace issues. Attract a diverse workforce by offering flexible work options with childcare support and ensure career advancement for part-time employees.

Recommendation 3: Advancing Gender Equity in the RHC Sector

Support a gender-just RHC sector by providing inclusivity training, collecting gender-disaggregated data, and organising consultations with gender quotas. Employ gender-inclusive communication, management training on gender issues, and develop gender-smart policies to address disparities. Schedule decision-making activities with consideration for work hours and gender quotas to promote diversity.

Recommendation 4: Institutionalise Awareness on Gender Mainstreaming

Institutionalise gender mainstreaming by launching awareness campaigns, providing gender-sensitive training, and promoting women's involvement in the energy sector. Increase the visibility of women-led initiatives as role models and provide tools and training for a culture that supports gender equality.

Recommendation 5: Raise and Provide Funds for Women-led Projects in the RHC Sector

Raise awareness of financial barriers, set quotas for gender-inclusive projects, and establish dedicated funding for women-led initiatives. Encourage women's participation in research related to renewable energy to bridge the gender gap. Enhance accessibility to renewable energy solutions and reduce disparities in the sector.

ABBREVIATIONS

KPI: Key Performance Indicator

RHC: Renewable Heating and Cooling

STEM: Science, Technology, Energy, and Mathematics

STEAM: Science, Technology, Energy, Arts, and Mathematics



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1 INTRODUCTION

This document presents recommendations categorised into five sets, addressing key aspects of gender-related issues in the energy sector's complexity, focusing on awareness, inclusivity, and financial support. These recommendations are part of the outcome of the W4RES project, which aims to enhance women's involvement in advancing the adoption of renewable energy sources for heating and cooling. They are designed for policymakers and stakeholders with the following objectives:

- Support women in driving the adoption of Renewable Heating and Cooling (RHC).
- Expedite the deployment of RHC.
- Promote an equitable energy transition.

Policy Recommendations for Energy Policymakers and Decision Makers

The recommendations are tailored for organisations and individuals responsible for shaping energy policies and making critical decisions in the energy sector. Additionally, they will also be relevant for other entities working on environmental issues, particularly from a STEM perspective. Furthermore, venture capitalists and other funding organisations can benefit from our financially related recommendations.

The five sets of recommendations are created with the intend of:

1. Enhancing Awareness of the Intersection of Gender Equality and Renewable Energy


The recommendations aim to deepen the understanding of the intricate relationship between gender equality and the renewable energy domain. By exploring this connection, policymakers can gain valuable insights into the multifaceted dynamics governing sustainable energy.

2. Providing Practical Steps for Incorporating Gender Considerations into Renewable Energy Policies

Furthermore, the recommendations offer a valuable set of actionable steps and best practices for effectively integrating gender perspectives into the development of renewable energy policies, plans, and strategies.

3. Addressing Gender Imbalance in Energy Sector Decision-Making

Moreover, the recommendations seek to rectify the gender disparity prevalent in decision-making processes within the renewable heating and cooling sector. They provide essential guidance on how to

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confront and overcome this challenge, with the goal of creating a more equitable and representative energy landscape.

In essence, the recommendations serve as a comprehensive resource, equipping policy, and decision makers in the energy sector with the knowledge, tools, and strategies needed to advance both gender equality and renewable energy initiatives. By bridging these vital dimensions, we pave the way for a more sustainable and inclusive energy future.

Structure of the document

The next section will describe the current situation in the EU regarding renewable heating and cooling, after which the empirical background of the recommendations will be explained. The following section unfolds the policy recommendations, divided into five sets:

1. Support a Gender Balanced RHC Sector for the Future Generations,
2. Promoting an Inclusive Workplace in the RHC Sector
3. Advancing Gender Equity in the RHC Sector
4. Institutionalise Awareness on Gender Mainstreaming
5. Raise and Provide Funds for Women-led Projects in the RHC Sector.

After the recommendations, the report ends with conclusions and the recommendations as policy briefs in the annex.

1.1 Current Situation in the EU


Energy Consumption in the EU – Energy Poverty

According to data from the European Commission in 2016, approximately 50% of Europe's final energy demand is attributed to heating and cooling, with a significant portion of this energy going to waste.² In 2021, renewable energy accounted for 22.9 % of total energy use for heating and cooling in the EU, increasing from 21 % in 2018.³ Developments in the industrial sector, services and households contributed to this growth.⁴

² European Commission, 2016b. An EU Strategy on Heating and Cooling. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2016) 51 final.

³ Eurostat, 2020. Renewable energy used for heating and cooling.

⁴ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable_energy_statistics#Share_of_renewable_energy_more_than_doubled_between_2004_and_2021

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Additionally, the Institute of Electrical and Electronics Engineers reported in the same year that the heating sector accounts for roughly 38% of emissions in the EU.⁵ Research suggests that the heating and cooling sector faces challenges such as a lack of clear policy, guidance, and financial stability,⁶ resulting in slower progress compared to the electricity and transportation sectors.⁷

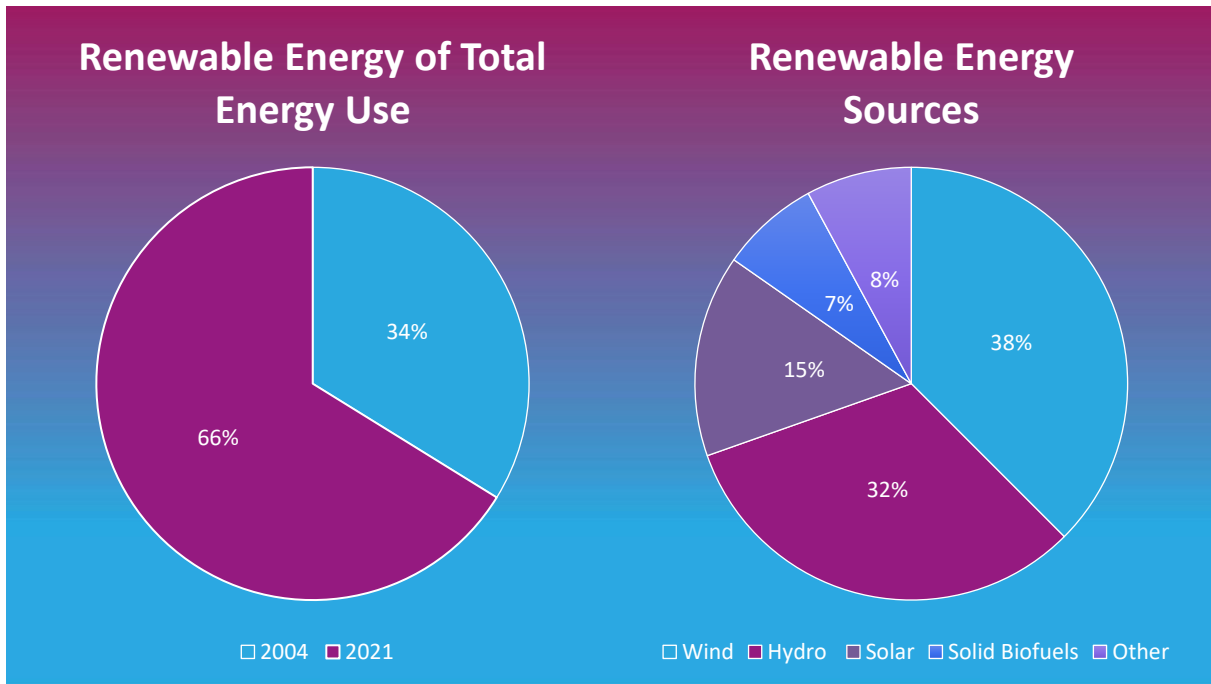



Figure 1: Renewable Energy Statistics

Since 2011 the two renewable energy sources, wind power and solar power has expanded across the EU. The growth in electricity from solar power has increased from 7,4 TWh in 2008 to 163,8 TWh in 2021. In total renewable energy sources made up 37,5% of gross electricity consumption in the EU. The renewable energy is mainly divided between the five sources of wind, hydro, and solar power, and solid biofuels and other renewable sources. See Figure 1.

⁵ Institute of Electrical and Electronics Engineers (IEEE), Heating and Cooling Future of Europe and Interactions with Electricity, An IEEE European Public Policy Committee Position Statement. 2018.

⁶ IRENA, 2018. Renewable Energy Policies in a Time of Transition

⁷ European Commission, 2016c. Impact Assessment Accompanying the document “Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast)” SWD (2016) 418 final.

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In line with the European Commission’s recommendations for mitigating energy poverty in the EU Member States as of October 2023,⁸ the five sets of policy recommendations from W4RES advocates increased use of renewable energy as a more affordable solution for consumers. Rising energy prices have a significant impact on single-person households that rely on a single income, the majority of which are female-headed households, and sometimes with children. As a result, women are more likely to suffer from energy poverty.⁹




Figure 2: EU's energy demand for heating and cooling

1.2 Background

The five sets of recommendations shared in this document are based on existing research, as well as research conducted by W4RES partners during the project's lifespan. W4RES is a project funded under the Horizon 2020 Framework Programme, which brings together 12 partners from eight European countries: Belgium, Bulgaria, Denmark, Germany, Greece, Italy, Norway, and Slovakia.

⁸ 2023/2407 COMMISSION RECOMMENDATION (EU) 2023/2407 of 20 October 2023 on energy poverty

⁹ Sánchez, Carmen & Sanz-Fernández, Ana & Aja, Agustín. (2014). Income, energy expenditure and housing in Madrid: Retrofitting policy implications. Building Research & Information. 43. 1-13. Available here

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During the initial phases of the project, members from the business, academia, authorities, and civil society were brought together to gain a better understanding of the framework conditions that act as either barriers or drivers for the market uptake of RHC and the involvement of women across the eight countries. A co-designed portfolio of market uptake support measures, encompassing a blend of business and technical support measures, capacity building, and awareness-raising campaigns, was developed. These measures were implemented in two rounds to be tested and validated through regional hubs established in each of the countries.

The project's outcomes highlight the potential of women as catalysts for accelerating progress toward the climate and energy targets set for 2030. The findings are derived from a comprehensive study that included an online survey conducted across the eight countries with over 240 respondents. This survey was informed by insights gathered from interviews with 40 stakeholders, exploring RHC solutions and the pivotal role of women, as well as the barriers they encounter in the sector. Our inquiry delved into various aspects, including needs, perceptions, misconceptions, and attitudes, among others, to gain deeper insights into the factors influencing acceptance, utilisation, and investment in these solutions.

The data collected from these responses was meticulously analysed, with a particular focus on gender-disaggregated data. This approach allowed us to gain a better understanding of gender-specific obstacles, stereotypes, inequalities, and networks within the RHC sector.¹⁰

Market Uptake of RHC Solutions and Gender Aspects

The top measures from the research were selected for further discussion, and action plans were co-created to implement them, identifying potential barriers and impacts. Read more about the Co-Creation Workshops [here](#) and in the Replication Guide¹¹. The co-created action plans focused on three main points:


- Financial support, such as funding and tax incentives to encourage investments.
- Awareness-raising campaigns.
- Encouraging women to pursue STEM studies and technical careers in the RHC sector.

The outcome of the survey across the eight countries covered a combination of recommendations for the market uptake of RHC solutions and gender-related aspects. Regarding the market uptake of renewable energy solutions, the most selected recommendations focused on two aspects:

- Facilitating participation in establishing and promoting awareness of energy communities.

¹⁰ https://w4res.eu/wp-content/uploads/2021/04/D1.2_NeedsPerceptionsChallenges_v1.pdf

¹¹ Link will be added i November 2023

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- Providing political support to female innovators and local authorities' training.

In terms of women's involvement in the RHC sector, the recommendations focused on the following three points:

- Introducing gender-sensitive workplace policies related to parental leave and flexible work conditions that address household duties.
- Addressing educational aspects with a focus on young women, improving their access to STEM studies and encouraging them to pursue such studies.
- Increasing support for facilities and services like day-cares or childcare centres.


This focus served as the empirical foundation that W4RES has worked on and further developed throughout the project's lifespan. The present recommendations are the result, written from a holistic perspective, which is essential for driving the transformative changes that W4RES aspires to achieve. Consequently, the recommendations are directed towards authorities, businesses, academia, and civil society at local, regional, and national levels.

Gender

Gender can be conceptualised as the complex interrelationship between an individual's physical body, their gender identity (how they view their gender), and their social gender (the attributes society assigns). This interrelationship is dynamic, and these categories are not fixed; a person's gender can change.¹² W4RES holds an intersectional view of gender barriers. Read more in the W4RES Gender Glossary [here](#).¹³

¹² Gender Spectrum, Understanding Gender, <https://genderspectrum.org/articles/understanding-gender>


¹³ Link will be added November 2023

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2 POLICY RECOMMENDATIONS

The following section will outline the five sets of policy recommendations. In the annex, the five recommendations are attached as policy briefs for easy dissemination. The five sets of recommendations are:

1. Support a Gender Balanced RHC Sector for Future Generations
2. Promoting an Inclusive Workplace in the RHC Sector
3. Advancing Gender Equity in the RHC Sector
- 4.

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Institutionalise Awareness on Gender Mainstreaming

5. Raise and Provide Funds for Women-led Projects in the RHC Sector


To advance the green transition and meet the European goals for 2030, it is imperative that we embrace diversity within the Renewable Heating and Cooling (RHC) sector. This entails actively removing the barriers that have historically excluded a significant portion of the population from this essential sector. It is important to recognise that despite women making up more than 50% of the European population,¹⁴ they currently represent less than a third of self-employed entrepreneurs and employees in the European renewable energy sector.¹⁵ The elimination of these barriers, which extend beyond the workplace and infiltrate access to STEM fields, is critical for advancing the green transition.

The objective of these recommendations is to create a more gender-just RHC sector, meaning the removal of disparities between women, men, and other genders. These disparities are both produced and reproduced at various levels, from families to local, national, and EU levels, in communities, and in the industry and market.¹⁶

¹⁴ European Commission and European Investment Bank, 2020. Funding women entrepreneurs How to empower growth.

¹⁵ IRENA, 2019. Renewable Energy: A Gender Perspective.

¹⁶ UNIFEM, UN Women. 2010. Gender Justice: Key to Achieving the Millennium Development Goals.

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2.1 Support a Gender Balanced RHC Sector for Future Generations

Gender barriers begin to form early in life, affecting girls during their formative years in schools and homes.¹⁷ Confronting these gender biases at this stage is fundamental to encouraging girls to pursue careers in RHC, which encompass both academic and technical aspects. The first set of recommendations aims to raise awareness of the positive impact of women in the RHC sector and address the persistent obstacles in STEM fields.

These recommendations target various stakeholders, including:

- Families - parents and their daughters
- Educational institutions at all levels
- Industry players in the energy sector

2.1.1 Promoting Awareness in Schools


Gender stereotypes are deeply ingrained in early childhood, and it is well-established that children exposed to parents working in STEM fields are more likely to develop an interest in STEM subjects. This dispels the misconception that STEM careers are incompatible with family life.¹⁸ Moreover, evidence points to female teachers playing a crucial role in shaping students' perceptions, interests, and confidence in STEM subjects.¹⁹ Hence, it is essential to begin raising awareness within families who have young children, where both parents and teachers can positively influence their children, encouraging them to explore STEM careers irrespective of gender.

To have a significant impact on female students and children, awareness campaigns should spotlight successful cases of female-led projects and entrepreneurs in the RHC sector. These women can serve as ambassadors, providing valuable representation. Such campaigns should also incorporate the technical aspects of the RHC sector to ignite girls' interest in STEM and RHC, and not just focus on academic

¹⁷ McGuire L., et al, 2020. STEM gender stereotypes from early childhood through adolescence at informal science centers. *J Appl Dev Psychol.* Mar-Apr; 67: 101109.

¹⁸ Tan E., Calabrese Barton A., Kang H. O'Neill T., 2013. Desiring a career in STEM-related fields: How middle school girls articulate and negotiate identities-in-practice in science. *Journal of Research in Science Teaching*, Vol. 50, No. 10, pp. 1143-1179.

¹⁹ Unterhalter, E., et al. 2014. Interventions to Enhance Girls' Education and Gender Equality. *Education Rigorous Literature Review*. London, Department for International Development.

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interests. It is important to represent women in all facets of the RHC sector, not only showcasing female leaders or entrepreneurs but also female technicians and engineers working behind the scenes. Read more about Awareness Raising Campaigns [here](#) or in the Replication Guide [here](#).


To engage more girls and women in STEM and the RHC sector, it is not enough to emphasise the benefits of increased female representation alone. Identifying and addressing existing barriers is a crucial starting point for constructive discussions. This encourages both men and women to reconsider their work cultures and make them more inclusive.

Highlighting the connection between climate protection and STEM skills can serve as an additional motivator for young girls and women. By linking global climate issues to STEM work, it can become a strong motivational factor, especially in EU Member States or regions where it may not be culturally obvious for women to enter STEM fields. Additionally, showcasing women as role models who balance family life with STEM careers can dispel stereotypes that discourage women from pursuing STEM studies or employment in the sector.

2.1.2 Facilitating School-Company Cooperation

To create an effective awareness campaign, increase the visibility of initiatives led by women in the RHC sector to serve as role models and inspire others. It can have the dual effect of promoting a stronger involvement of women in the energy sector through targeted promotional campaigns. Successful campaigns can be facilitated through increased collaboration between educational institutions and the industry. Educational institutions at all levels, including kindergartens, schools, colleges, and universities, can collaborate with different segments of the RHC sector, such as local power plants, energy communities, solar panel farms, and local entrepreneurs. This collaboration can facilitate the exchange of valuable information, making the campaign more relevant by offering real-life examples of women in STEM. The industry can provide role models in the form of female figures working in the field, while educational institutions can provide potential targets. The collaboration can also lead to the creation of internships, networks, and mentorship programs connecting young girls and students with RHC professionals. In kindergarten, primary, and secondary schools, it is recommended to incentivise STEM projects, which can also be achieved through collaboration with the industry.

When engaging in STEM activities with young girls, it is a valuable opportunity to promote the development of their intercultural and social skills. This can enhance their career prospects and collaborative abilities within the RHC sector in the EU. Efforts should not only focus on educating the next generation of RHC sector professionals but also on providing skills training and technical support to women already in the RHC and STEM sector. This should include re-skilling programs tailored to the needs of unemployed women to enable them to access relevant job positions within the sector.

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The European Commission has provided recommendation to improve the skills of energy consumers in general in their recent publication as of October 2023²⁰, and the connection between gender and energy poverty is also mentioned. The Commission states that specific attention needs to be given to vulnerable households and those affected by energy poverty to help them enhance their energy, financial and digital literacy and overcome their disadvantaged starting position, especially in the context of adopting innovative technologies' uptake. Because some groups may have limited options to take necessary measures including those in rented accommodation, social housing, or other type of non-owned housing.²¹ It is crucial to also consider women as part of the group that requires reskilling and being vulnerable, to advance the green transition and mitigate the energy crisis.

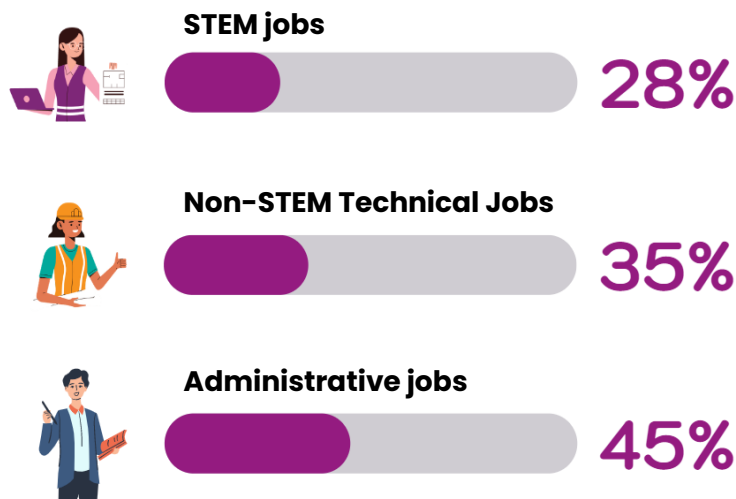



Figure 3: Shares of women in STEM, non-STEM and Administrative jobs in RE

Women, who comprise more than half of the population in the EU countries, must have equal opportunities to participate and advance in this sector. By addressing the barriers, they encounter from an early age, promoting awareness, and highlighting the significant role women can play in RHC and STEM, we can create a more inclusive, innovative, and effective green transition. Collaboration among families, educational institutions, and industry stakeholders is crucial for the success of this endeavour. It is a collective effort that benefits not only women but also the entire RHC sector and our environment.

²⁰ 2023/2407 COMMISSION RECOMMENDATION (EU) 2023/2407 of 20 October 2023 on energy poverty

²¹ Ibid.

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2.2 Promoting an Inclusive Workplace in the RHC Sector

Supporting women, both those entering and already established in the energy sector, whether as managers, employees, or entrepreneurs, is of paramount importance. This set of recommendations focuses on enhancing inclusivity within the RHC sector by implementing a wide range of gender- and family-friendly work policies. Simultaneously, we aim to provide dedicated entrepreneurial support that is easily accessible to women, ultimately creating gender-inclusive work environments and improving work-life balance. To achieve this, we need to prioritise diversity in leadership roles by implementing gender quotas and moving away from conventional business practices. Fresh perspectives, particularly from the underrepresented talent pool, which is comprised of women, should be welcomed.²²


The key stakeholders involved in this set of recommendations include various industry players, such as:

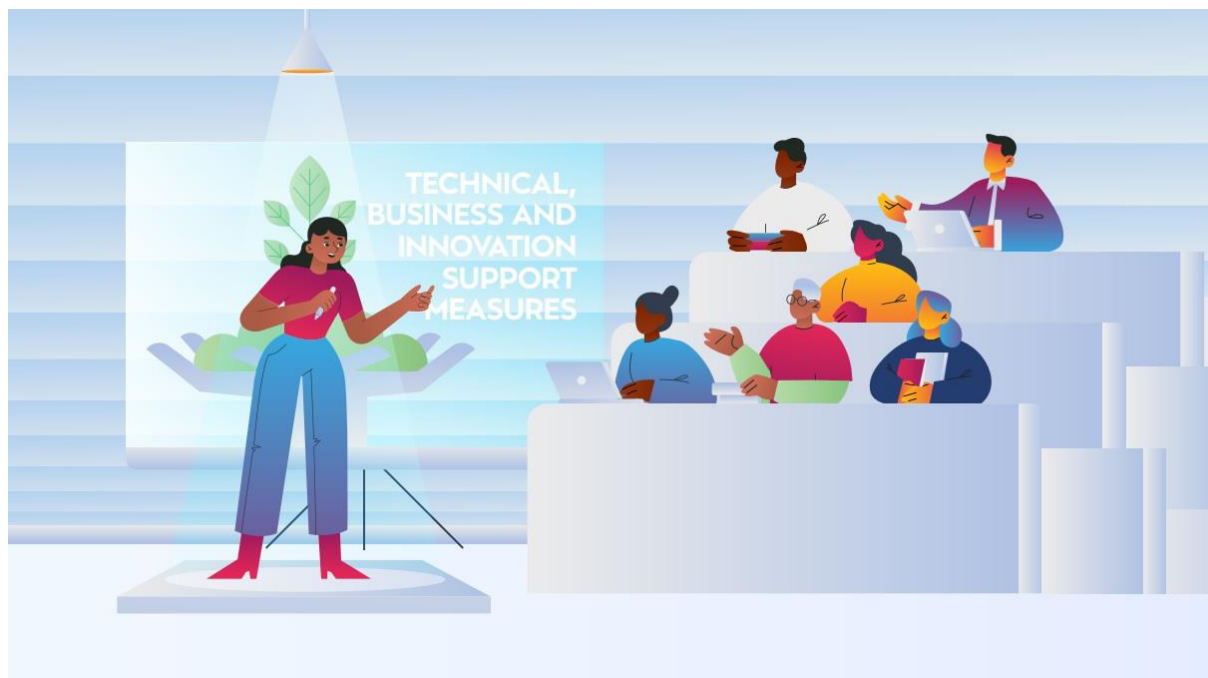
- Service energy companies
- Funding opportunities, including venture capitalists
- Decision makers responsible for budget allocation in projects
- Energy-related networks

2.2.1 Gender Quotas

Implement gender quotas for leadership positions across all divisions and departments to foster diversity within companies and organisations. Gender quotas serve as a valuable tool for breaking down horizontal and transversal career barriers that disproportionately affect women, as decision makers are compelled to include a broader range of individuals in their work. Quotas facilitate institutionalised change within an organisation and enhance overall inclusivity. However, it is essential to recognise the potential challenges for individuals serving on boards while also representing their gender, race, or culture, as this effectively doubles their workload. Please consider this when appointing one or more women to honorary and unpaid positions to comply with gender quotas. Additionally, to support the implementation of gender quotas, consider introducing gender-responsive budgeting for both internal and external projects to ensure equitable resource allocation, as will be recommended in section 0.

²² Pearl-Martinez R., Stephens J., 2016. Toward a gender diverse workforce in the renewable energy transition, Sustain. Sci. Pract. Policy 12 (1).

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2.2.2 Entrepreneurial Support

There are numerous aspects of barriers for women entering the RHC sector. Research shows that barriers for women entering the RHC sector encompass not only limited access to STEM fields but also challenges related to engaging in professional networks within the RHC sector. Additionally, funding opportunities for female entrepreneurs are significantly lower compared to their male counterparts.²³ W4RES has focused on yet another barrier for female entrepreneurs, which is the lack of access to both entrepreneurial and technical support services to facilitate the implementation of innovative solutions in the RHC sector. In W4RES, 56 projects have received support services from eight regional hubs that were established during the W4RES project in eight different countries in the EU. The regional hubs scouted for female entrepreneurs to support, and mapped companies who could provide the relevant support services. Additionally, the hubs were also the local starting point for regional awareness campaigns. Read more about regional hubs [online here](#), or in the report [here](#) and in the W4RES Replication Guide [here](#).

W4RES had specific requirements for the projects it supported, including the leadership of one or more women and a minimum women's engagement ranging from 30% to 50%. An example of the services

²³ IDC. 2022. International Data Corporation. European Women in Venture Capital.

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W4RES provided was to assess technology readiness levels, access to funding and digital modelling. Read more about the W4RES Support Services [here](#) and [here](#). When supporting female-led projects, keep in mind soft factors, like flexible working hours, salary equality and consideration of unpaid care-work, to better enable women-led projects. These factors will be elaborated in section 0.

We need to empower entrepreneurs in the RHC sector to take measures that enable households affected by energy poverty by investing more in energy efficiency and renewable energy sources. These measures have long-lasting impacts and contribute to a more equitable energy transition.²⁴

2.2.3 Networking Opportunities

As mentioned above, research has indicated that hiring practices present a significant obstacle for women seeking entry into the energy sector.²⁵ To address this obstacle, it is essential to establish networking and mentoring programs for women, as they often face challenges related to male-dominated

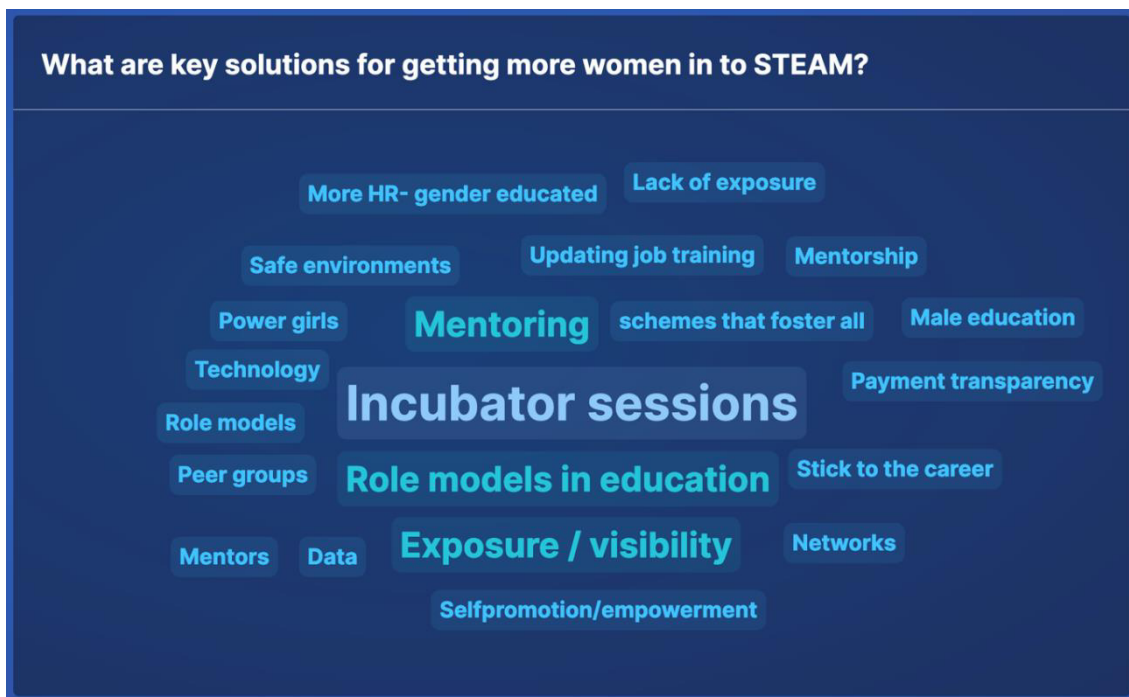



Figure 4: Proposed Solutions for more women in STEAM. W4RES Policy Roundtable July 2023

²⁴ 2023/2407 COMMISSION RECOMMENDATION (EU) 2023/2407 of 20 October 2023 on energy poverty.

²⁵ GWNET, 2019. Women for Sustainable Energy: Strategies to Foster Women’s Talent for Transformational Change.

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networks²⁶ in combination with limited access to funding.²⁷ The collaboration of educational institutions and industry, as mentioned in the set of recommendations above (see 2.1.2), regarding awareness campaigns can foster mentorships and create networking opportunities among women in the RHC industry.

Furthermore, networks not only provide more career opportunities but also support for women striving for impact as entrepreneurs. It can improve the exchange of knowledges helping to push the green transition forward. These networks can also support mentoring programs to guide women's career development within the sector.

A perspective that emerged from the W4RES policy roundtable at the International Congress of Architects in Copenhagen, Denmark in July 2023 (UIACPH2023)²⁸ was that the need for mentorship varies based on how gender-ready a research institute is. For example, a participant mentioned that her university lacked gender-ready policies, which increased her need for direct access to mentors, particularly women in STEM fields at her university. Young women entering the energy sector may also require funding for educational expenses or entrepreneurial start-ups, and in some cases, mentorships can help facilitate access to such funding. For more insights from the W4RES policy roundtable, see the box below. Additional information about networking can be found in the Replication Guide.


Insights from the W4RES policy roundtable in July 2023

- Young women in large institutions need networks, preferably grassroots networks facilitated by universities. These networks should facilitate the sharing of knowledge among peers, seniors, and even educators across various fields in STEAM (Science, Technology, Energy, Arts, and Mathematics), as well as insights from different workplaces.
- Consider creating incubator sessions that promote resource sharing between women who have resources and those who need them. For example, senior women or teachers can share financial support with junior students. In regions with limited institutional support for women in STEAM, it is recommended to keep the incubators small, fostering personal networks among a smaller group of individuals and gradually building a supportive community.

²⁶ European Commission, 2019b. She Figures 2018.

²⁷ IDC. 2022. International Data Corporation. European Women in Venture Capital.

²⁸ UIACPH2023 <https://uia2023cph.org/>

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2.2.4 Gender and Family-Friendly Policies

Within the workplace, it is imperative to implement policies that consider the gender and family needs of employees to attract a diverse workforce. Many women continue to bear the primary responsibility for caregiving duties within their families,²⁹ which means they often have different work-hour preferences than men. To accommodate this, develop policies that support work-life balance, including options for part-time work, childcare support, and remote work possibilities.

Implementing flexible work hours and part-time positions within your company will enhance accessibility for both women and men who have families or are starting families. It is important to ensure that part-time positions do not hinder career progression for anyone, as family responsibilities should not be viewed as a lack of professionalism or motivation. Additionally, childcare support is crucial for many families, and companies within the energy sector should actively promote their improved work policies to appeal to young employees who may be starting families.

Another possibility is to offer remote work, which can provide flexibility to maintain a work-life balance. It can enable women with family obligations to remain engaged in decision-making processes or projects, ensuring they do not become disconnected from the professional network.

2.2.5 Safe Reporting Procedures


In a workplace striving to become gender-ready and equipped with new gender-ready policies, unwanted behaviours from employees can still occur. To address these challenges, it is essential for employees to feel safe when reporting any unwelcome behaviour in the workplace. The aim is to create safe spaces within the workplace and establish structured reporting procedures for addressing disruptive or unfair behaviours.

Unwanted and inappropriate behaviour in the workplace can take various forms, such as physical touching, gestures or body language, verbal harassment, or the use of patronizing names and language. It can also encompass unfair practices deeply ingrained in the organisational culture, making them challenging to address since cultural practices are often difficult to recognize and acknowledge. To effectively address these issues, it is vital to designate dedicated and well-trained individuals responsible for handling such complaints. Standard staff representatives or HR personnel may not always

Insight from the W4RES policy roundtable in July 2023

“Create safe spaces and environments for women to share their work-related problems. A workplace is never perfect, and we are in a changing culture, we are bound to make mistakes. Let’s try to support that by making spaces for victims to share.”

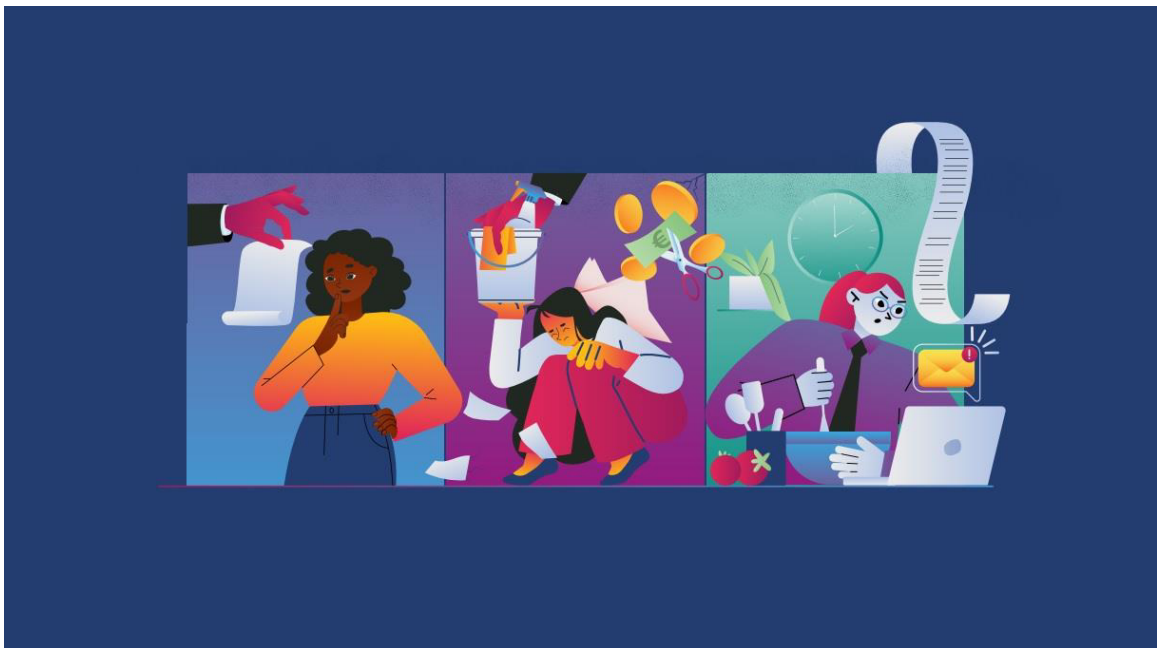
²⁹ SEforALL, 2017. Scaling sustainable access pathways for the most vulnerable and hardest to reach people.


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be fully aware of the barriers women face or how to effectively address them. As a result, companies should prioritise dedicated training in this regard. For more information on dedicated training at the management level, refer to section 2.3.1.

Another outcome of the W4RES policy roundtable mentioned above is the misconception that unwanted behaviour primarily stems from older generations of co-workers. However, female participants at the policy roundtable debunked this perspective, noting that inappropriate behaviour was experienced across all age groups of co-workers. This challenges the notion that a gender-ready workplace will naturally emerge as the older generation retires, emphasising the need for concrete and active actions now. An example of unwanted behaviour in the workplace that could be attributed to cultural context and, therefore, is challenging to change, is the use of diminutives for female co-workers' names. Some participants found this practice patronising and, in some cases, sexualised. Additionally, these participants were reluctant to report such behaviour to management due to fear of career repercussions, highlighting the need for safe spaces and structured reporting measures.

This set of recommendations can be used to create a more gender- and family-friendly workplace, attracting not only more women but also fostering a more diverse and inclusive workforce overall. Companies or institutions implementing gender-friendly work policies should actively promote this as part of their identity to pave the way for a more inclusive energy sector.



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2.3 Advancing Gender Equity in the RHC Sector

To support gender equity in the RHC sector, it is imperative that we recognise the significance of inclusivity, robust data collection, gender quotas, and gender-sensitive communication. This third set of recommendations will focus on how both governments and industry can up-qualify the RHC sector.

Cultivate gender-smart policies that target stakeholders such as:

- National governments
- Local governments
- Energy service companies
- Energy cooperatives
- Local communities

2.3.1 Gender-Smart Policies


As discussed in the section above (see 0) developing policies, such as part-time positions and flexible work hours within the RHC sector is a part of creating gender-smart policies. However, gender-smart policies encompass more than work hours and safe reporting procedures, as discussed above. It also involves implementing regular training for management, local governments, and communities to being gender-sensitive, and communicating inclusively, which will be further detailed in this section below.

Local governments and communities should undergo inclusivity training, with a focus on gender-sensitive programs and relevant strategies. This training aims to help them understand the structural disparities between genders and provide concrete tools to mitigate them. W4RES has developed numerous tools for capacity building and training-of-the-trainers. For more information about capacity building, please refer to [here](#) and the W4RES Replication Guide.

As mentioned above, the burden of care work often falls on women,³⁰ potentially limiting their participation in decision-making processes held outside standard business hours. Globally, women occupy only 6% of ministerial positions in national energy policies and programs.³¹ Yet, research underscores

³⁰ SEforALL, 2017. Scaling sustainable access pathways for the most vulnerable and hardest to reach people.

³¹ EIGE, 2016. Gender and Energy, Luxembourg: Publications Office of the European Union.

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the importance of achieving gender parity in the workplace, as it leads to more effective decision-making.³²

To promote greater diversity in decision-making, it is imperative to schedule activities with consideration for work hours and participant availability. Implementing gender quotas for significant meetings can also enhance diversity. If an organisation is required to have these quotas, it will be easier to re-schedule important decision events to accommodate a more diverse range of employees.

Another aspect of gender-smart policies involves implementing additional financial support, such as parental leave and services like day-care centres, as well as support for creating home offices. Additionally, while parental leave and flexible work hours are legally accepted, they should also be culturally embraced within a workplace.

2.3.2 Gender-Inclusive Communication


Inviting more women into decision-making positions, as discussed in section 2.2.1, is not enough on its own. It must be combined with communication strategies that are inherently gender-inclusive, creating a welcoming environment where everyone's perspectives and needs are valued.

Gender-inclusive communication is crucial for the internal culture of a company or organisation, forming part of the institutionalisation of a more gender-ready workplace. For energy service companies looking to expand their customer base and build trust, gender-inclusive communication is a valuable tool for attracting more customers. This involves adopting gender-sensitive language, which can cater to the growing number of female customers seeking RHC solutions. To ensure that gender-sensitive communication becomes ingrained within the company, governmental institution, or educational institution, it is essential to provide dedicated training for employees and management. This approach supports both women already working there and the attraction of a more diverse range of customers or students.

2.3.3 Gender-Disaggregated Data

To genuinely foster gender readiness within an organisation, it is advisable to closely monitor gender-disaggregated data. This practice enables the identification of areas for improvement and helps create an environment where both customers and potential employees feel more secure when engaging with the organisation. Collecting gender-disaggregated data involves using statistics, questionnaires, or

³² Allen, E., Lyons H., Stephens, Jennie, 2019. Women's leadership in renewable transformation, energy justice and energy democracy: Redistributing power. *Energy Research & Social Science*. 57. 101233.

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qualitative interviews. It is important to note that collecting this data takes time, as a baseline needs to be established before measuring the impact.

Examples of KPIs to collect gender-disaggregated data


- Wage-gap between genders
- Differences in career advancements for genders
- Gender differences in manager positions

As mentioned in the INTRODUCTION, the survey created by W4RES had a special focus on gender-disaggregated data. Specific Key Performance Indicators (KPIs) are used to create a baseline for measuring the impact of gender-ready policies. More information about measuring impact can be found in the W4RES Replication Guide.

Gender statistics encompass data that adequately reflect differences and inequalities in the situations of women and men in all aspects of life. These statistics involve data collected and presented disaggregated by sex as a primary and overall classification, reflecting gender issues and being based on concepts and definitions that adequately capture the diversity of women and men and all aspects of their lives. Data collection methods take into account stereotypes and social and cultural factors that may induce gender biases.³³

The process of beginning to generate data through a gender lens is also a process of viewing a company or organisation from a different perspective, encouraging new ways of thinking. As the data accumulates and patterns emerge, the process of questioning the causes of gender disparities evolves. The outcome can be a beneficial first step in becoming more aware of gender-related barriers that might be hidden within invisible cultures or organisational structures, such as why female co-workers may not be advancing in their careers at the same rate as their male colleagues. Gender-disaggregated data can reveal numerous disparities and shed light on these differences.

³³ European Institute for Gender Equality, Concept and definitions, <https://eige.europa.eu/gender-mainstreaming/concepts-and-definitions>

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2.3.4 Gender-Ready Energy Cooperatives

By employing gender-sensitive communication and leveraging regional hubs, as discussed earlier, local governments, energy service companies, or communities should actively encourage greater participation of women in both the creation and establishment of energy cooperatives. Research shows that women play a pivotal role as energy managers within their households, exerting significant influence over energy technology decisions in their homes.³⁴ This influential position offers an opportunity to promote the adoption of RHC technologies. Moreover, local energy initiatives and cooperatives should enhance their inclusivity of women, as evidence suggests that they thrive when women participate equally, particularly in leading RHC innovations.³⁵

Example of a structural barrier

On occasion, gender-related barriers can be as simple as the name on the energy bill. In some countries, there is a general culture of having the man of the family's name on the bill, but to enter an energy cooperative, sometimes you need your name on the energy bill, and thus the man is forced to be the member, proving a barrier for women to engage.


To achieve this, efforts should focus on removing the barriers that deter women from entering energy cooperatives. This can be accomplished by facilitating, incentivising, and making involvement in the creation of energy communities or other RHC communities economically viable. Additionally, participation in an energy community should have limited preconditions. Women, as energy managers in their homes, with potentially lower STEM education, can still benefit from participating while offering valuable insights into energy management for tenants or homeowners.

Facilitating different forms of participation and levels of engagement within cooperatives or communities is essential. Some women may prefer to manage a cooperative, while others may have limited time to spare. Research suggests that gender stereotypes and biased perceptions can undermine the self-efficacy of women engaging in STEM activities, affecting their performance and aspirations for STEM-related careers.³⁶ There's a clear link between the gender gap in science self-efficacy and science

³⁴ SEforALL, 2017. Scaling sustainable access pathways for the most vulnerable and hardest to reach people.

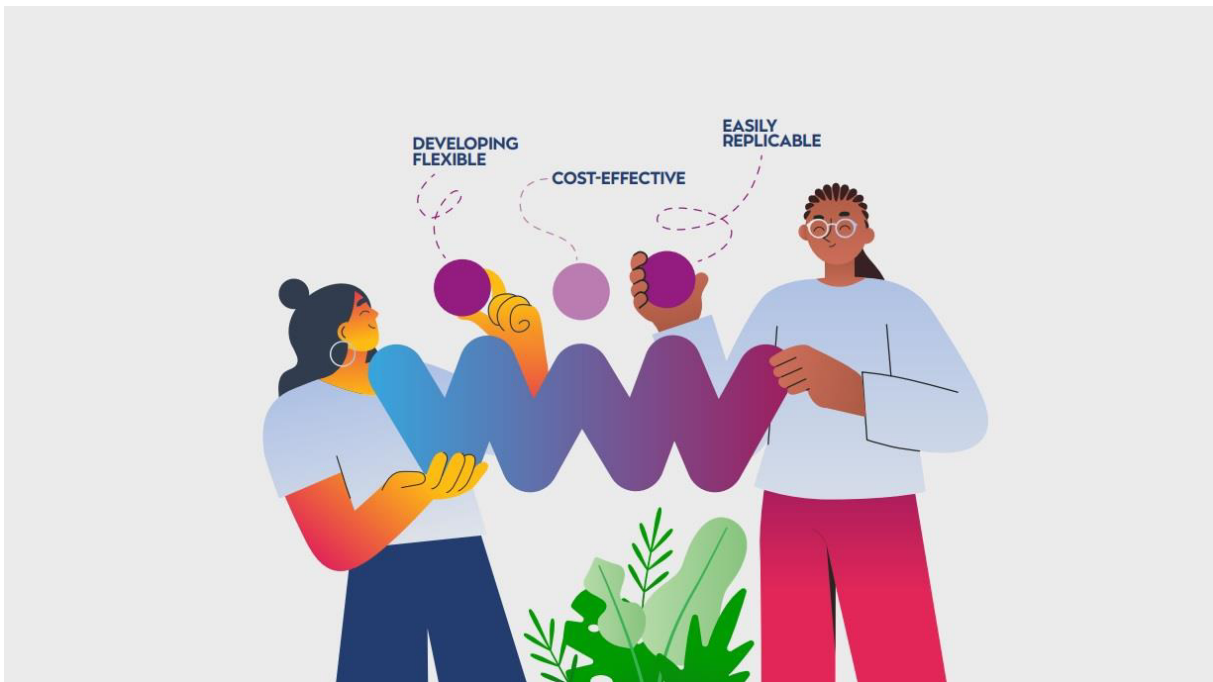
³⁵ OECD, 2020. Policies and Practices to Promote Women in Leadership Roles in the Private Sector.

³⁶ Adedokun, O. A., Bessenbacher, A. B., Parker, L. C., Kirkham, L. L. and Burgess, W. D. 2013. Research skills and STEM undergraduate research students' aspirations for research careers: Mediating effects of research self-efficacy. *Journal of Research in Science Teaching*, Vol. 50, No. 8, pp. 940-951.


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performance, especially among high-achieving students.³⁷ This highlights the need to raise awareness about the diverse opportunities and benefits that energy communities offer. Encouraging women in existing communities to be ambassadors for new members and implementing gender quotas can attract more women to these initiatives.

Energy cooperatives and communities offer multiple benefits, including affordability for consumers who gain direct access to the energy produced. Households affected by energy poverty often struggle to invest in RHC technology. By partnering in a cooperative as prosumers, they can make these investments more affordable and become more resilient in the face of ongoing climate and energy crises.



³⁷ OECD. 2016. PISA 2015 Results (Volume I): Excellence and Equity in Education. Paris, Organization for Economic Co-operation and Development.

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2.4 Institutionalise Awareness on Gender Mainstreaming

Institutionalising awareness of gender mainstreaming involves launching awareness campaigns focused on gender issues, implementing gender-smart training to create inclusive work environments, conducting promotional efforts, and showcasing women-led initiatives. This effort holds value not only in the RHC sector but can also be applied to the entire energy sector and the broader STEM community. This fourth set of recommendations will show that institutionalised awareness should begin with young children and follow them throughout their education, career paths, and as working parents themselves. Achieving this requires increased visibility of women in STEM through promotional and awareness campaigns, as well as gender-smart training.


To drive a lasting and positive change, we need to involve the following, to be part of the change:

- Governmental institutions
- Energy service companies
- Women entrepreneurs
- Educational institutions, from kindergarten to universities
- Families, both parents and their young girls

2.4.1 Awareness Campaigns in Industry

Launch awareness campaigns within governmental institutions and companies to educate employees about the barriers women face in workplace environments. Gender mainstreaming should become a lasting, permanent change that encompasses all levels of organisations and industries. Women encounter barriers at every level, and to initiate this process, we must acknowledge these barriers and raise awareness within companies, governmental organisations, and industry and policy organisations. This will make women entering the RHC sector aware of potential obstacles, enabling them to prepare and seek out companies that actively address these issues. This effort will not only enhance an organisation's reputation but also expand its customer base and attract new employees.

An awareness campaign should not only focus on barriers but also promote women's participation in the energy sector. Launching promotional campaigns can encourage greater female involvement in the energy sector, with a focus on targeting female students across all educational levels. To inspire girls to pursue STEM university programs, awareness efforts should also extend to girls in primary and secondary schools. Additionally, business schools can effectively raise awareness among future entre-

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preneurs about opportunities in the energy sector and women's participation. Keep in mind that parents are a critical audience to engage, as they can support their children in choosing energy-related career paths.

A campaign that highlights women-led initiatives as role models and provides visibility to women in the energy sector should offer reliable and accessible information to enhance understanding of gender equality. Gender awareness raising is a crucial method for integrating a gender perspective into policies, programs, projects, and services that cater to the diverse needs of people of all genders. It plays a pivotal role in informing individuals about the economic benefits of advancing gender equality in the RHC sector,³⁸ as well as the adverse effects of gender inequalities, including the increased risk of energy poverty for women.³⁹


2.4.2 Gender-Smart Training

Awareness alone is insufficient, as concrete training for personnel at all levels is essential, e.g., by providing teacher training at educational institutions and offering "train the trainer" support for larger organisations. Thus, promoting gender mainstreaming requires a two-fold approach. Firstly, it involves increasing awareness about fostering a gender-inclusive work environment and understanding the unique challenges faced by individuals of different genders. Secondly, it necessitates providing employers and management with practical tools and training to create a culture that actively supports gender equality. This will enable gender-sensitive training and the development of tools to support a culture of gender equality, making organisations better equipped to assist women in overcoming barriers. W4RES has developed capacity-building programs and specific tools for this endeavour.

By implementing awareness campaigns, gender-sensitive training, and targeted promotional initiatives, we can create a more inclusive energy sector where women have equal opportunities. This multifaceted approach will not only help break down barriers but also inspire and empower women to play a pivotal role in the transition to a more sustainable energy future.

³⁸ Allen, E., Lyons H., Stephens, Jennie, 2019. Women's leadership in renewable transformation, energy justice and energy democracy: Redistributing power. *Energy Research & Social Science*. 57. 101233.

³⁹ EIGE, 2017. Gender Equality Index 2017: measuring gender equality in the European Union 2005 – 2015, Report, Luxembourg: Publications Office of the European Union.

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2.5 Raise and Provide Funds for Women-led Projects in the RHC Sector


The RHC sector presents both opportunities and challenges for women, whether as contributors or consumers. Financial barriers persist, making the adoption of renewable energy systems economically challenging for various demographics.⁴⁰ High initial installation costs and the need for post-installation employee training further compound these challenges.⁴¹ In contrast, subsidies for conventional fossil fuels in the European Union remain readily available, exacerbating disparities. This fifth and last set of recommendations involves implementing gender-inclusive quotas for projects, establishing dedicated funding for women-led initiatives, and encouraging women's participation in RHC research.

To rectify these issues, we must work towards making renewable energy solutions more accessible, fostering broader participation in both production and consumption with the following stakeholders:

- EU-level governance
- National and local governments
- Energy service companies
- Venture capital funds
- Educational institutions

⁴⁰ European Commission, 2016c. Impact Assessment Accompanying the document “Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast)” SWD (2016) 418 final.

⁴¹ European Commission and International Labour Office, 2011. Skills and Occupational Needs in Renewable Energy.

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2.5.1 Raise Awareness of Financial Barriers

Raise awareness about the financial obstacles women encounter in the RHC sector and their far-reaching consequences. In addition to gender quotas, targeted funding for women with entrepreneurial potential in the RHC sector is crucial. This not only increases the number of gender-inclusive projects but may also encourages more women to seek the dedicated funding opportunities. Studies indicate that female-founded start-ups backed by venture capital generally outperform male-founded start-ups financially and deliver more revenue.⁴² Moreover, statistics show that in the Nordic countries, female- and mixed-founding teams are more than twice as likely to create an impact-driven company than male-founding teams.⁴³


Create financial incentives for CO₂-reducing initiatives to support female-entrepreneurs in the RHC sector by providing:

- Tax breaks.
- Financial support and incentives to join or form energy communities.
- Ensuring financial support benefits local communities and is correlated with actual energy savings.
- Provide more information on RHC solutions and make it available online.
- Educate the public through demonstrations of RHC solutions.
- Provide tailored advice to households both for tenants and homeowners.

Financial support offered to companies could be in the form of tax incentives, meant to be used, for instance, to establish day-care centres or provide distributed parental leave. It can further incentivize innovation and subsidise home renovation investments to increase RHC market uptake, thereby creating more opportunities for female-led entrepreneurs. Financial actions should also focus on legislative or regulatory aspects, such as mandating that large companies establish day-care facilities. Educational institutions could even use funding to revise the content of schoolbooks to eliminate gender-related biases. Funds are particularly necessary for organising events and meetings as part of awareness-raising campaigns.

⁴² Abouzahr, K., Krentz, M., Harthorne, J., and Brooks, F. 2018. Why Women-Owned Startups Are a Better Bet.

⁴³ Unconventional Ventures. 2022. The Funding Report. Unconventional Ventures-Nordic Startup Funding.

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Fortunately, the European Commission, considering the energy crisis, is now also campaigning for structural measures for upfront and continuous funding for both building renovation and renewable energy solutions, with a focus on supporting, developing, and scaling up innovative financing schemes for renewable energy and energy efficiency actions dedicated to energy-poor households affected by energy poverty,⁴⁴ which statistically often impacts women.

2.5.2 Quotas for Gender-Just Projects

On a European level, female-founded teams of start-ups of all kinds received only 4% of the available venture capital funding in 2018.⁴⁵ Yet research suggests that diversity increases innovation, competition, and societal progression,⁴⁶ highlighting the need to raise awareness of the multiple obstacles women often confront when entering the RHC sector. To address these barriers, it is imperative to implement gender-just quotas for RHC projects. This will increase the numbers of projects actively promoting gender inclusivity, contributing to broader awareness and representation. Establish quotas for funding women-led initiatives and create dedicated grants for women with entrepreneurial potential in the RHC sector. Implement quotas and indicators for projects promoting gender inclusivity within the energy sector.

2.5.3 Encourage Research Participation


Extending gender inclusivity to academia is vital. Promote greater participation of women in research related to RHC to bridge the gender gap in this field. This can be achieved by implementing gender quotas for research projects and including case studies featuring female entrepreneurs. This multifaceted approach will enrich the sector with diverse perspectives and innovative solutions, allowing us to accelerate the green transition.

By raising awareness of financial barriers, implementing gender-just quotas, supporting women-led initiatives, and encouraging research participation, we can promote gender equity in the renewable energy sector. These measures will not only bridge the gender gap but also enhance the sector's overall inclusivity and effectiveness.

⁴⁴ 2023/2407 COMMISSION RECOMMENDATION (EU) 2023/2407 of 20 October 2023 on energy poverty.

⁴⁵ IDC. 2022. International Data Corporation. European Women in Venture Capital.

⁴⁶ Gompers, P.A. and Wang, S.Q. 2017. Diversity in Innovation. Harvard University.

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3 CONCLUSIONS

W4RES, a three-year Horizon 2020 funded project, has a dual objective: to enhance the market adoption of renewable heating and cooling (RHC) solutions and to increase the active involvement of women in the RHC sector. This initiative is a timely response to the ongoing energy and climate crisis in Europe, where research has indicated that investing in RHC technologies represents a cost-effective and environmentally friendly approach.

The comprehensive recommendations provided in this project stem from a wealth of research activities, including surveys, studies, hackathons, co-creation sessions, and a policy roundtable. The recommendations are divided into five sets.

The first set of recommendations collectively strive to lay the foundation for a gender balanced RHC sector that not only addresses current disparities but also nurtures opportunities for future generations. Among the key aspects discussed are strategies to promote girls' access to STEM education and to facilitate closer collaboration between educational institutions and industry stakeholders. The second set of recommendations focuses on creating a more inclusive workplace within the RHC sector. This involves the establishment of gender quotas, provision of business and technical support for women entrepreneurs, the implementation of gender- and family-friendly workplace policies, and the introduction of robust structures for reporting unwanted behaviour in the industry. The third set of recommendations seeks to promote gender equity across the RHC sector by advocating for gender-smart policies, the collection of gender-disaggregated data, gender-inclusive communication strategies, and the establishment of more gender-inclusive energy cooperatives. The fourth set of recommendations centres on institutionalising awareness about gender mainstreaming in the RHC sector. It emphasises raising awareness about gender barriers in the industry and the mandatory implementation of gender-smart training for industry stakeholders. The fifth and final set of recommendations calls for dedicated funding opportunities for women-led projects, gender-just budgeting quotas, and greater female participation in RHC research, aiming to remove financial barriers and boost women's participation in the field.

For more detailed information, you can refer to the W4RES Replication Guide [here](#), and the policy recommendations are included in the Annex as policy briefs, providing a comprehensive framework for fostering a gender inclusive and equitable RHC sector.

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