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Sub-theme: "Power of Diversity for Women Engineers"

TASK BASED EMPOWERMENT: A PATH TO CLOSING THE GENDER ENERGY GAP

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Abstract

Women are principally underrepresented in the global energy transition, with the IRENA 2019 Report on Gender Perspective highlighting 32% representation in the clean energy workforce. World Bank reports nearly 70% of those living on ~ 1$/day being women. Yet, energy is a key enabler for poverty eradication.

In many rural areas, energy provision is primarily the responsibility of women, with a majority derived from biomass fuels. These have had negative impact on biodiversity conservation efforts and resulted in respiratory health illnesses. Two-thirds of the world's food is produced by women in rural areas, where they are responsible for consumption and distribution.

Women have different energy needs from men; therefore, they need to be included in the decision-making process from project conceptualization, design to implementation. Renewable energy enables decentralization, allowing women to have a greater voice from the household, individual and community level.

This paper aims to reveal how women-centred solutions encourage diversity in engineering. The challenges should be addressed both from the access and provision contexts. Through sustainable energy products and policies, women can be trained to operate, maintain, and earn income through sale of these products. This will lead to economic development and improvement of community livelihoods.

Keywords: Diversity, Policies, Women Empowerment, Poverty alleviation, Rural development

1. Introduction

Participation of women in the energy development sector needs to be viewed as both a means and a goal. The energy transition is bringing along far more systemic change than was anticipated, and this provides an opportunity for society to embrace better inclusion and diversity for women in the sector. Through acceleration of human centric engineered solutions, we can solve existing intersectoral challenges. Both the public, private and international stakeholders are called upon to promote women's participation in the renewable energy value chains to enable them to be part of the energy transition and take advantage of the technologies enabling the available numerous possibilities.

The incorporation of gender equality in the global energy transformation, as highlighted by the Renewable Energy: A Gender Perspective 2019, is key to promoting social and economic development outcomes. This is because women offer significant and crucial insights in community projects from ideation to implementation stage.

2. Methodology

The participation of women in the renewable energy sector have been analysed from two contexts aimed towards meeting Sustainable Development Goal 7 which aims to ensure universal access to affordable, modern, reliable, and clean energy by 2030. These are from the modern provision context as well as energy access context. In this case we make an analysis of what percentage of women still use traditional and conventional energy sources and the efforts that are being made towards bridging the energy access gap for women. A major pillar of energy transition should be to guarantee equally accessible opportunities and equitably shared advantages for all.

IRENA estimates that the renewable energy sector's employment figures are estimated to rise to almost 29 million by 2050, from 10.3 million in 2017. The number of women in the renewable energy workforce is estimated at 32% while that of women in the oil and gas industry is at 22%. Furthermore, the share of women in Science Technology Engineering and Mathematics (STEM) in renewables is much lower in comparison to administrative jobs. 28% of women occupy STEM jobs, 35% occupy non-technical STEM jobs and 45% of women take up administrative roles in the sector.

Gender perceptions are viewed as the biggest obstacle to admission into the industry. Existing gender norms prevent women from accessing relevant information to pursue STEM related career paths. These norms have influenced hiring practices and the extent to which women have had access to opportunity entry points such as internships and apprenticeships.

Women also bear additional burden to manage both their career and family. Mobility constraints and challenging job schedules are taxing for women who are responsible for family and domestic responsibilities. Coupled with wage disparities for women and men in similar positions, these continue to discourage women from advancing in their career paths.

Women typically suffer the extra stress of managing career and family, particularly during reproductive years. Mobility constraints and challenging job schedules are taxing on women who are responsible for family and domestic responsibilities. Wage disparities are another concern. Current literature also suggests that other intertwined challenges such as inflexible work hours, friendly work-life balance policies and insufficient mentoring and leadership opportunities hinder women's participation in the sector.

Measures have been put in place to mainstream gender perspectives in the renewable energy space through gender sensitive audits and provision of training to spread awareness on the benefits of women's inclusion in the energy sector value chains. An example of an organization empowering women to increase participation in the global energy transition through networking, advocacy and mentorship is GWNET. GWNET aims to address present gender inequalities in the energy industry and encourage gender-sensitive action in all regions of the world throughout the energy transition.

3. Results

While training resources for renewable energy technologies have been made more available, more needs to be done to ensure this information gets to the people who very much need it. Energy access allows women to save more time and instead focus on income generating activities that otherwise improve their livelihoods. Statistics show that women spend over 100 hours per year collecting firewood. The availability of lighting in the households at night provides more security and flexibility enabling women to work more hours at night and extend their businesses in the night. The power also provides more study hours for their children, improving their education levels.

Renewable energy solutions also encourage easier distribution encouraging more women to participate in the various energy value chains. Considering women's roles as the primary energy users, they are in a better position to ideate and create solutions that are engineered tailored to their specific known needs. Through involvement of women in the creation and delivery of energy solutions, they can take up more active roles in the community and position themselves as leaders in their social circles. This provides greater visibility to the impact of their work, making them earn more respect from their communities, and breaking down the barriers that were preventing their entry into the sector.

The solar photovoltaics (PV) business has had the most rapid growth to date, accounting for over 3.4 million employment positions. There are job opportunities available throughout the value chain, from project planning and equipment manufacturing to construction and installation, facility operations and maintenance, and a wide range of support services such as finance, information technology, human resources, administrative support, marketing, knowledge, legal and business development. These tasks need competence in a wide range of vocations, including both technical and non-technical abilities.

Country	Households	Electricity	Paraffin	Gas (LPG)	Biogas	Firewood	Charcoal	Solar
Kenya	12,043,016	0.9	7.8	23.9	0.5	55.1	11.6	0.2
Rural	7,379,282	0.4	1.6	5.6	0.3	84.1	7.7	0.2
Urban	4,663,734	1.7	17.7	52.9	0.7	9.2	17.7	0.0

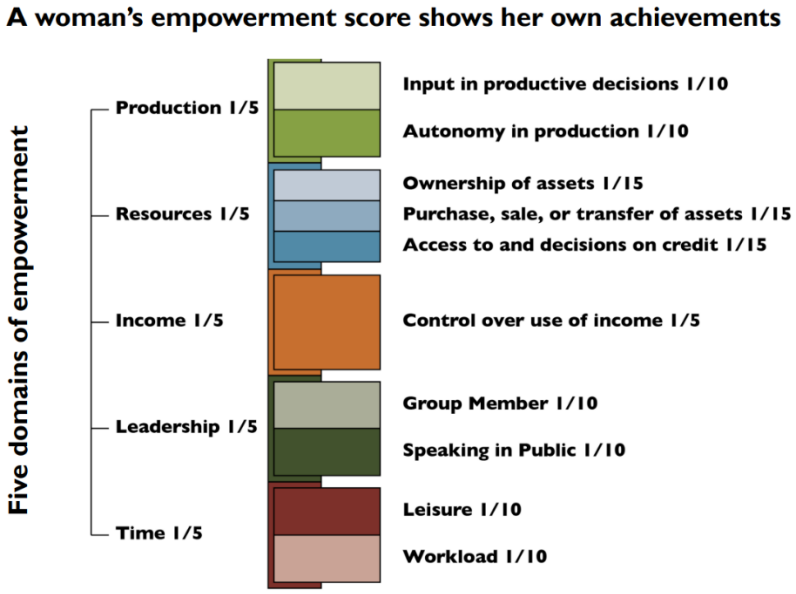
Percentage Distribution of Conventional Households by Main Type of Cooking Fuel and Area of Residence

The above figure shows there is a lot to be done towards ensuring that women locally play a greater role in the clean energy transition.

4. Discussion

Access to new resources may open up the possibilities that women can take advantage of, but their uptake will still be influenced by the intersectional relations that affect their lives from an individual to community perspective. Projects need to be designed in a way where gender sensitive norms are incorporated from the planning stage to ensure that their benefits are realized.

Other economic sectors have proved the value of increasing the percentage of women in their decision-making processes and research has shown the financial effects having multiplied. The documentation and publicizing of the economic benefits that come with including more women need to be encouraged. However, a downside to this is that corporations only publicize for the sake of their image as opposed to the core mission of improving women's inclusion in the sector. The following image shows the stages of empowerment for women programs to achieve desired impact.



Another research discovered that businesses with more women on their boards outperform those with less women by 53% in terms of return on investment, 42% in terms of return on sales, and 66% in terms of return on invested capital (Catalyst, 2008). Women in board leadership positions can create more impact by championing for the participation of those who do not have a voice in the workplace. They can also influence the workplace policies to advocate for more inclusion of women's rights in the company and organizational policies. This will lead to more appreciation of women roles in the renewables sector.

5. Conclusion

As we anticipate greater gender balance in the energy sector, we need to work on the intrinsic cultural and social norms that are limiting women's participation. The active inclusion of women and girls in the renewable energy sector will pave way for productive employment opportunities and decent work for all, including equal pay for work of equal value.

This will provide guidance towards the achievement of related sustainable development goals that ensure no one is left out in the energy transition, rather a situation where all enjoy the benefits provided by the clean energy transformation.

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References

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