Right Based Approach to Women's Access to Clean Energy

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Abstract

In Ethiopia, 57% of households have access to at least one source of electricity and 43% have no access to any electricity source. 88% of people's energy source is from biomass and from this, the household sector accounts for 88.2% of total final energy consumption, the majority of which is collected and used by women. Ethiopian Women are more vulnerable to the lack of energy access as women are primary caregivers and providers of both food and fuel. The use of traditional wood-fired stoves and open fires cause indoor air pollution which can result in serious health problems, primarily for women and children who are primary users. The strenuous task of collecting firewood for cooking is usually carried out by women, which exposes women to the risk of injuries, pregnancy complications and even maternal mortality. In the rural areas of Ethiopia, women and children endure injuries due to kerosene burns. With only 24% of female Ethiopian Electric Utility employees, female participation and representation in the energy sector is very minimal as is women's representation in the energy sector. The lack of female involvement in the energy sector is holding back development.

Women can play a critical role in response to energy poverty by using their local knowledge and skills regarding sustainable resource management at the household and community levels. Incorporating female representation at the institutional and community level is crucial for women to ensure their access to clean energy. It is time for decision makers to find mechanisms to fully support women as important stakeholders in the energy sector and as citizens with the basic right to energy. Additionally, engaging more women as decision

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makers plays an important role in reaching female customers, creating employment opportunities and ensuring the sustainable utilization of technology.

Keywords - Clean energy, Women, Poverty, Representation, Rights

Introduction

Today, more than 70% of the world live in the 20 most populous countries, of which Ethiopia is ranked 12th with a population of 115,485,981 (Country meter, 2020).[3] In Ethiopia, 21.3% of the population lives in urban areas and 78.7% reside in rural areas where women carry out the majority of the household and agricultural labor. The work includes washing, cleaning, preparing of meals, child rearing and taking care of the family's needs. In rural communities, apart from their various household responsibilities, women are involved in tending to livestock for the purpose of land cultivation, harvesting, food storage, and construction of houses. On top of that, in many rural communities, girls are trained from a young age to assist with household responsibilities (Slmeida & Alphina, 1994)[4]. Women are producers, procreators and active participants in the community's social and cultural activities.

The development of a country is correlated to its consumption of electric power. A developed country consumes higher volumes of energy and underdeveloped countries have lower consumption rates. The quality of life also depends on the electric power infrastructure (Getie E. M., 2020).[5] Ethiopia has abundant electric power resource potential with nonrenewable and renewable energy resources. However, 55% of the population use wood for food preparation and have no electrical infrastructure (IEA, 2019). [6]

All around the world, women's contribution goes largely unrecognized. They face restrictions on access to resources, participation in decision making roles, and engaging in income generating activities. Many women in developing countries like Ethiopia have direct contact with the natural environment as they collect essential items for their daily needs. In lower and middle class households and across rural Ethiopia, women use traditional open fires fueled by fire wood and charcoal.

[3] Country meter, 2020
[4] Slmeida & Alphina, 1994
[5] Getie E. M., 2020
[6] (IEA, 2019)

Women have numerous responsibilities that are undeniably essential at the household, community and national levels yet they are denied the right to access energy. Women are vulnerable to lack of energy access due to their role as primary caregivers and providers of food and fuel. The indoor air pollution caused by the use of traditional wood-fired stoves and open fires expose women and children to serious health problems.

Access to Energy

Energy is crucial for socio-economic growth, the alleviation of poverty and the improvement of living standards. At the household level, energy is critical for basic functions, such as lighting, cooking, heating and the operation of appliances. Energy is needed to support livelihoods, education and overall wellbeing. There is no universally adopted definition of what 'access to energy' means, however, most definitions are aligned with the delivery of energy or electricity to safe cooking facilities and a minimum level of consumption (Ritchie & Roser, 2019).[7] The International Energy Agency (IEA) definition entails more than just the delivery of energy to households, it specifies the minimum level of electricity that households need. The minimum level of electricity, although increasing overtime, is determined based on whether the household is in a rural or urban area . For rural households, the minimum threshold is 250 Kilowatt (Kw) per year and for urban households it is 500 Kw per year (International Energy Agency, 2019).[8]

Access to energy is increasingly being recognized as a key enabler of economic growth, sustainable development and poverty reduction. So much so that it is a stated goal in the UN Sustainable Development Goals (UN SDGs). However, despite significant progress in recent years, the world is falling behind in meeting the global energy targets set in the UN SDGs for 2030 (World Bank, 2019).[9] According to a new report produced by a cohort of international energy experts, ensuring affordable, reliable, sustainable and modern energy for all by the year 2030 is still possible. However, it will require more sustained efforts to reach some of the world's poorest populations and to improve energy sustainability. The report stating this was produced by the International Energy Agency (IEA), the International Renewable Energy

[7] Ritchie & Roser, 2019
[8] International Energy Agency, 2019
[9] World Bank, 2019

Agency (IRENA), the United Nations Statistics Division (UNSD), the World Bank and the World Health Organization (United Nations , 2019). [10]

Energy poverty is pervasive. One in five people in Africa and South Asia do not have access to electricity. Close to 3 billion people (40% of the global population) burn solid fuels like wood, charcoal, animal waste or crop residue in open fires or sub-par stoves for their daily cooking and heating needs (United Nations Development Programme, 2017).[11] The electrification rate in Africa increased by 12.9% (to 43%) in the 20 years from 1990 to 2010 going from 186 million to 444 million people with access to electricity with the increase of 12.8 million people gaining access per year. However, the total population during the 20 year period increased annually by 20.65 million, outpacing electrification efforts (UNECA, 2018).[12] Between 2010 and 2012, the electrification rate in Africa increased to 45.1% with 25 million people gaining access to electricity per year while the total population grew by 27.5 million per year (IEA, 2019).[13] From 2012 to 2014, the electrification rate in Africa continued to grow, reaching 46.9%, while the global average was 85.6% (ECA, 2017).[14]

Sub-Saharan Africa (SSA) has the lowest energy access in the world. Electricity reaches only about half of its people, with one third of the population cooking with clean energy and roughly 600 million people cooking with traditional fuels (International Energy Access , 2018).[15] A World Bank Sustainable Energy for All 2020 report shows that in 25 sub-Saharan countries including Ethiopia, less than 50% of the country has access to energy; in 5 countries, it is below 25%.

Ethiopia has a final energy consumption of around 40,000 GWh, whereby 92% is consumed by domestic appliances, 4% by the transport sector and 3% by industrial sector. Most of the energy supply is bioenergy, which in the case of domestic use, usually comes from unsustainable sources (Energypedia, 2020).[16] Ethiopian households that have access to at least one source of electricity account for 57% of the population. 88% of people's energy source comes from biomass and from this the household sector accounts for 88.2% of total

[10] United Nations, 2019
[11] United Nations Development Programme, 2017
[12] UNECA, 2018
[13] IEA, 2019
[14] ECA, 2017
[15] International Energy Access , 2018
[16] Energypedia, 2020

final energy consumption, the majority of which is collected and used by women (Hossain, Elizabeth, Claudia, Mekonnen, & Rosegrant, 2018).[17] Ethiopia is now focused on utilizing hydropower as the main source of energy. Nevertheless, political issues with neighboring countries that have been dependent on the Nile river, with 85% of its water source coming from Ethiopia, have made the Ethiopia's plans precarious and unpredictable (Mukum, 2020).[18]

Access to Clean Energy

Clean energy is energy that will not pollute the environment. Also refered to as renewable energy, it is energy that does not incur environmental debt by using up resources that cannot be replaced or severely damaging the environment so that the future generation must solve problems created today (Christensen, 2020).[19] The basic forms of clean energy are energy sources that are generated from water, wind or solar. Clean energy works to combat climate change by creating little to no emissions that pollute the environment.

Access to clean energy is essential to the modernization of energy and public health services. Additionally, access to clean energy is necessary to reducing gender inequality and mitigating environmental impacts for poorer populations (The Research and Data Section of UN Women, 2014).[20] The use of traditional biomass (wood, charcoal, and dung) in open fires or sub-par stoves for cooking and heating compromises the indoor air quality. Indoor smoke contains a variety of pollutants that, when inhaled, can lead to adverse health effects, especially for women whose lungs consume it most.

Ethiopia is facing the dual challenge of limited access to modern energy and a heavy reliance on traditional biomass energy. Access to clean cooking solutions is still very limited throughout the country (Ministry of Water, Irrigation and Energy , 2020).[21] Despite the country having a rich endowment of renewable energy sources and having acheived almost total access to electricity in urban areas, access in rural areas is still limited to zero.

[17] Hossain, Elizabeth, Claudia, Mekonnen, & Rosegrant, 2018
[18] Mukum, 2020
[19] Christensen, 2020
[20] The Research and Data Section of UN Women, 2014
[21] Ministry of Water, Irrigation and Energy, 2020

With the goal of becoming a middle-income country by 2025, Ethiopia is making major strides to promote clean and sustainability energy. As part of its Growth and Transformation Plan (GTP), the Ethiopian government is working on a variety of clean energy projects and initiatives to build clean energy production. Currently, Ethiopia's main source of clean energy is hydropower; however, the government is expanding its thermal, solar and wind energy. (Bykov, 2019).[22]

Lack of Access to Energy

Energy is arguably one of the major challenges the world faces today that touching all aspects of our lives. For those living in extreme poverty, the lack of access to modern energy services dramatically affects their health, limits the number of opportunities to create jobs and generate income, limits sustainable development and widens the gap between the haves and have nots (WHO, 2009).[23] The immediate obstacle to access to energy for many poor households and governments in developing countries is the lack of financial resources. Where access to energy is lacking, the needs of other urgent human and societal needs are often not met, meaning that energy needs must compete with other priorities (Ahuja & Tatsutani, 2009).[24]

Ethiopia has tremendous advantages. The country has the second highest installed and available capacity for electricity generation in Sub-Saharan Africa, at 4.5 Giga Watt (IRENA, 2012).[25] It has a well developed transmission and distribution network, with nearly 80% of the population living within proximity of medium-voltage transmission lines (IRENA, 2012)[26]. It has abundant sources of renewable energy just waiting to be tapped. The wind, solar and geothermal energy possibilities are enough to easily supply the entire country's power needs. It is one of the few countries in the world where the electric grid is nearly 100% supplied by renewable sources.

These advantages, however, stand in contrast to the realities on the ground. About 70% of the population lives without electricity. The lack of power also impacts basic services with

[22] Bykov, 2019
[23] WHO, 2009
[24] Ahuja & Tatsutani, 2009
[25] IRENA, 2012
[26] ibid

only 24% of primary schools and 30% of health clinics having access to electricity. This discrepancy between abundant resources and unmet needs points to the need for a radical new approach (The World bank , 2018).[27]

The lack of access to modern energy poses significant economic, environmental, and social challenges. Affordable and clean energy services are critical in supporting the provision of basic needs such as food, light, utilities, water, sanitation, essential health care, education, communication and transportation. These services also have impacts on income generation and productive activities such as agriculture and industry; this means that a lack of access to energy leads to increased poverty and inequality.

Impacts of the Lack of Energy Access on Women

Energy poverty has a female face. Men and women use energy differently and therefore have different levels of access to it. While men are the beneficiaries of energy, women are the primary energy users and the most vulnerable to the lack of energy access. With limited or no energy access, they are the one responsible for finding alternative energy sources do meet their daily needs; they work in the home where they prepare food, wash clothes and carry out other household activities. They depend on small-scale agriculture and locally available resources to support their daily needs. Even where infrastructure is physically available, women are often hindered in gaining access to the available energy sources due to the lack of finances, appliances, information, training and education (International Network on Gender and sustainable energy, 2020).[28] The lack of access to clean energy also has a huge impact on climate change and air pollution.

Every day, women around the world face the consequences of not having access to modern energy. The use of electricity has a gendered impact on labor supply and labor demand, leading to different income generation outcomes for men and women. Because women are the primary energy users, it is their time that is spent finding alternative energy sources such as collecting and hauling firewood, charcoal, and animal dung. Energy access can affect the opportunities that the labor markets have to offer women when it comes to income generation

[27] The World bank, 2018
[28] International Network on Gender and sustainable energy, 2020

(Winther, Matinga, Ulsrud, & Standal, 2017).[29] When health facilities do not have energy, they cannot pump water for patients which cost of the lives of pregnant women during delivery. The lack of energy for water pumping forces women to travel long distances to fetch water which lessens their productivity by causing them to spend a significant amount of their energy on getting water alone. Traveling far distances to fetch water also makes them vulnerable to violence and abduction, especially if there is a scarcity in water sources in their area.

Women in rural areas usually spend hours each day searching for fuel wood or resort to collecting and using various forms of biomass, dead wood, grass shrubs, saw dust, wood chips, trimmings, twigs, animal dung, crop residue and other plant materials (Olugboji, 2016).[30] Urban women, however, rely on firewood merchants. In addition to the daily struggles that women face in finding sufficient firewood for their energy needs, the smoke and residue from open fire stoves pose grave dangers to their health (Olanike, 2020).[31] Women and children, particularly in rural areas, face the risk of injuries and kerosene burns.

Access to modern energy services play a key role in facilitating access to basic necessities such as clean water, sanitation, health, cooking, mechanical power, transport and telecommunication services (Habtezion, 2013).[32] Access to clean energy directly benefits women's health and wellbeing.

Women's Participation in the Energy Sector

Women represent the majority of the Ethiopian population at 50.2% of the population (United Nation , 2017).[33] However, Ethiopia has one of the lowest gender equality performance indicators. The 2010 Global Gender Gap report ranks Ethiopia at 121 out of 134 countries in terms of the magnitude and scope of gender disparities. Contrary to Ethiopia's progress in achieving many of the Millennium Development Goals (MDGs), improvement in women's empowerment (MDG-3) is minimal (UN Women, 2018).[34] Women are strongly disadvantaged compared to men in several areas. They are restricted from making decisions

[29] Winther, Matinga, Ulsrud, & Standal, 2017
[30] Olugboji, 2016
[31] Olanike, 2020
[32] Habtezion, 2013
[33] United Nation, 2017
[34] UN Women, 2018

on matters that pertain to their interests and are disproportionately excluded from social, economic and political spheres (UN Women, 2018).[35] In 2016 a report revealed that only 48% of married women between the ages of 15–49 were employed in the 12 months leading up to the survey while 99% of married men in the same age group were either employed or had been employed in the last 12 months. In terms of earnings, 58% of women earn less than their husbands while 16% of women earn more than their husbands (CSA and ICF , 2016).[36] Marriage also plays a huge role in hindering women from gaining an education. Women have a high drop-out rate from school after marriage; 25% of women were attending school when they got married and 75% of these women stopped going to school after they married (CSA and ICF , 2016).[37]

Efforts to address gender in energy at the household and community level is often focused on women's access to energy sources and clean cookstoves, enhancing women's economic situation, or building women's entrepreneurship skills in the energy market (Elwell, Mershon, & Aguilar, 2014).[38] However, gender issues are not addressed enough in policy making or at the higher levels of the energy industry.

Women's participation and representation in the energy sector is very minimal. Globally, the National Association of Regulatory Utility Commissioners (NARUC) has observed disproportionately low levels of female participation in energy regulation and also noted the need for a resource that can inform and provide guidance to energy regulators on gender equality. In the local setting, a recent World Bank study indicated that only 24% of Ethiopian Electric Utility employees are female. In Ethiopia, a web of contributing factors such as harmful cultural practices and gender norms prevent women from joining the formal workforce, particularly from joining the male dominated energy sector. This industry is one of Ethiopia's key growth areas and the exclusion of women from opportunities in this market deepens Ethiopia's gaps in gender equality (USAID , 2020).[39] When women are employed in energy enterprises, social norms may confine them to more transient, lesser paid positions. Gender biases also limit the participation of women in technology design, making systems less attuned to the needs of the primary energy users, women (Baruah 2015). These biases

[35] ibid
[36] CSA and ICF , 2016
[37] Ibid
[38] Elwell, Mershon, & Aguilar, 2014)
[39] USAID , 2020

can also hinder the information women receive on new or updated forms of energy or energy technology (ESMAP, 2013).[40] Discriminatory social norms and practices can limit opportunities for different demographics and socio-economic classes (Nelson & T.Kuriakose, 2017).[41] The lack of female involvement in the energy sector is holding back the development of the energy sector.

There are grave consequences of policies and investments that do not take into account of the needs of women in regards to energy access. Since women often make decisions at the household level about energy use and are the primary users of energy, energy policies can tap into the social implications by better understanding the needs of women. When women serve as policymakers, executives, employees, and entrepreneurs, evidence shows that energy policies are more effective, energy related products have higher sales, and utilities have higher returns on equity and investment (USAID, 2020).[42] Gender equity in energy enables economic prosperity for all citizens. In addition to empowering and supporting women as employees and policymakers, the inclusion of women can reduce the negative impacts that regulatory policies have on energy users as well as the negative impacts of infrastructure projects by helping redirect those projects to improve the livelihoods of vulnerable populations (USAID, 2020).[43]

Conclusion

Access to clean energy is a woman's right. Energy allows women to engage in and have access to knowledge, finance, socio-economic development, economic independence and growth. Women and men face different challenges in the use of energy and in their access to energy. Women are energy producers and consumers which means that the lack of access to energy impacts women's health, productivity, development and growth.

When women have access to energy it contributes to poverty reduction. Energy access saves women a great deal of time, substitutes the need for arduous manual labor and eliminates the drudgery of fetching fuel wood and water. Access to energy frees up women's time for

[40] ESMAP, 2013
[41] Nelson & T.Kuriakose, 2017
[42] USAID, 2020
[43] Ibid

income generating activities. When energy forms such as wood fuel and kerosene stoves that generate pollution are replaced by improved clean energy access, it reduces indoor air pollution levels and therefore improves the health of women and children. Women can play a critical role in responding to energy poverty by using their local knowledge and sustainable resource management skills at the household and community level.

Recommendations

The following recommendations are based on the findings of this study and provided to ensure women's right to energy access.

- Women should be encouraged and given the space to participate in making of policy regulations in the energy sector. The inclusion of women in energy access activities is critical in understanding the barriers and special use cases for women in relation to energy access.
- Gender balance should be ensured in each phase of energy projects. This can be done by intentionally including the perspectives of women as both beneficiaries as well as active participants in the design and implementation of the projects.
- Women should gain access to economic independence and work in energy sector related business opportunities in their communities.
- The government should encourage and invest in renewable energy technology and encourage women to use the generated energy to generate income through businesses such as barber shops, recreation centers, poultry, sewing, etc.

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