

Annex 10: Gender Analysis and Gender Action Plan

1. Introduction

This gender analysis report aims at providing baseline information about the overall context of gender relations, different needs, roles, benefits, access to/control over resources among women and men in Sudan. By generating such information, it is intended to inform the Africa Mini-grid child project in Sudan to be gender responsive in its effort to increase access to renewable energy by reducing the cost and increasing commercial viability of renewable energy mini-grids. Beyond describing the general gender related context, this report presents gaps and opportunities identified specific to AMP components along with measures to be taken to ensure the project contributes to both gender equality and environmental goals. More so, beyond electrification, there is a need to empower women, make household roles efficient, make gains in education and health and business start-ups overall ensuring benefits of access to electricity equitably shared among different segments of the communities. The gender action plan proposes a framework to achieve.....

The gender analysis was framed based on GEF/UNDP guidance¹ on gender equality and women's empowerment, which references GEF-7 programming directions and focuses on identifying gender related gaps and opportunities in five areas relevant to project intervention. In the case of AMP, the gender analysis is tailored to bring the gender dimensions of energy particularly access to electricity through mini grid. Accordingly, the information generated through the gender analysis is presented under the overall socio-demographic and cultural context, policy and legal frameworks in relation to gender and energy ; patterns of gender division of labor and decision making; access and control over energy resources and the capacity of men and women to access various opportunities.

Based on the findings of the gender analysis, strategic entry points for gender transformative activities were identified across the following AMP components:

1. Policy and regulations around mini-grid development
2. Innovative business model and private sector engagement
3. Innovative financing
4. Knowledge management (KM) and monitoring and evaluation(M&E)

The methodology applied to collect secondary data and relevant information included:

- Extensive desk review of available documents such as policies, strategies, program documents, evaluations and studies conducted by UN and Government agencies and others
- Inputs from two rounds of Energy stakeholder consultations
- Inputs from inception workshop held with relevant stakeholders
- Inputs from four bilateral meetings held with government and non-government stakeholders in the energy sector in Sudan including organizations working on gender and energy sector

This gender analysis is by no means representative of the overall context of each of the location in Sudan and even the specific site where the project is going to be implemented as the gender dynamics, institutional readiness, status of implementation of policy and legal frameworks substantially differ from place to place. Most of all, the study heavily relied on secondary sources due to COVID-19 related travel restrictions collecting primary data was totally impossible.

2. Socio-demographic and socio-cultural context

The Federal Republic of Sudan located in the North Eastern part of Africa bordering with seven countries Ethiopia, Eritria, Djibouti, South Sudan, Central African Republic, Chad, Libya and The Red Sea. The country is strategically located between the Arab and African countries and the third largest country in Africa next to Algeria and Democratic Republic of Congo. Khartoum the capital city is also where the White Nile and The Blue Nile rivers meet crossing over

¹ Guidance to Advance Gender Equality in GEF Projects and Program 2017

800km. Administratively, the country is divided into 18 states and the Abyei area with special administrative status². The country has low population density 25 persons per km² characterized as low density.

In 2019, an estimated 41.8 million people lived in the country, with an annual growth rate of 2.4%³. About 20% of the total population are pastoralist and semi-pastoralist and as of January 2020, the UNHCR estimated the number of refugees and asylum seekers residing in the country reached 1.1 million. 35% of the Sudanese population lives in urban areas while the majority 65.3% in rural areas. Depending on the agro ecological zone's and tribal traditions animal husbandry, agriculture, fishing, trade and gathering wild food, with various combinations of these elements making household livelihoods. But agriculture and livestock raising are the main livelihoods for majority of the population.

The average household size in Sudan is six persons. A typical Sudanese family consists of three generations: (1) the eldest couple, (2) their sons, sons' wives and any unmarried daughters, and (3) their grand children. The sex ratio of the total population was 1.020 (1,020 males per 1 000 females) which is higher than global sex ratio⁴. Data is emerging on the growing number of female-headed households (about 25 to 35% depending upon region), due to male migration to large-scale mechanized agricultural schemes and the emerging urban industrial sector, suffer labour shortages and greater poverty.

Sudan has a young population—41% of its total population under the age of 15. In 2019, 20% of Sudanese people are 15 to 24 years old, 31% are between 25 and 54 and just under 4% are 55 to 64 years old. The population over 65 years of age is only 3.3%. Sudan has a very low median age of 18.9 years.⁵ The average life expectancy at birth for females' is 67 years and for males 63 years old in 2020.

Around 34% of girls are married before they reach 18 years old and 12% are married before they are 15 years. There is regional variations in child marriage rates most prevalent in South and East Darfur (where [56%](#) of women aged 20-49 were married before the age of 18), Central Darfur [55%](#), the Blue Nile [50%](#) and Gadarif [49%](#).⁶ According to The Personal Status of Muslims 1991, legal age for marriage in Sudan for both girls is 10 years and for boys 15 years old. About 25% of Sudanese households are headed by women⁷.

The fertility rate for women of reproductive age (15-49) in Sudan is 4.4 children⁸. About 40% of marriages in Sudan are polygamous executed under the Sheria law and tradition a man can marry up to four wives on condition that all wives are treated equally, both emotionally and materially⁹.

Although recent data is unavailable for births that are attended by skilled professionals, in 2014, only 27.7% of all pregnant women gave birth in the health facility and around 50.7% pregnant women attended four antenatal visits during their pregnancy by any provider¹⁰. The maternal mortality ratio of the country in 2017 was 295/100,000¹¹. Furthermore, 87% of women and girls have undergone female genital mutilation/cutting. The cutting traditionally happens among young girls and used to be one of the severe types of FGM but a decline in the practice and shifting to the less severe form is observed recently¹². Just in 2019, the country's government criminalized FGM making it punishable by 3 years of imprisonment.

²Geography of Sudan www.britanica.com

³ World Bank 2019 PI include full source

⁴ Demographics of Sudan 2019. Countrymeters.info Sudan

⁵ Ibid

⁶ Multiple Indicator Cluster Survey Sudan 2014

⁷ SUDAN MENA Gender Equality Profile Status of Girls and Women in the Middle East and North Africa. UNICEF

⁸ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=SD>

⁹ <https://culturalatlas.sbs.com.au/north-sudanese-culture/north-sudanese-culture-family> accessed on

¹⁰ Ibid

¹¹ <https://knoema.com/atlas/Sudan/Maternal-mortality-ratio#> accessed on Jan 2021

¹² Bedri N., Sherfi H., Rudwan G., Elhadi S., Kabiru C. and Amin W. Shifts in FGM practice in Sudan: Communities Perspectives and Drivers. BMC 2019

Culturally, the country is composed of diverse linguistic, ethnic, and social groups and each group lives in historical locations and has different forms expressing their culture. Almost 97% of the population follows the religion of Islam and influenced by Arab culture. Traditional values and norms play very strong role among members of the community depending on the social group one belongs. The family and kinship patterns are well structured and in most social groups follows patrilineal lines, but rights and privileges may differ from one group to another. Three types of marriages are practiced polygyny (a man marrying more than one woman), cousin marriage, sororate (marrying the sister of deceased wife). The place of women inheritance is traced paternally, and women and girls receive lesser share compared to men and boys¹³.

The most recent poverty estimate in Sudan shows 36.1 % of Sudanese live below national poverty line¹⁴. The country's poverty situation has been aggravated by prolonged years of conflict, a volatile security situation in the Darfur states, a political transition with the secession of South Sudan, an unsustainable national debt burden, international economic sanctions, and most recently, the overthrow of a political regime through peaceful protests in 2019.

The following table presents the status of Sudan by international human and gender related development measures:

Table 1. International metrics on human and gender related development, Sudan

Measurements	Dimensions of measurement	Score	Rank 2020
Human Development Index	Life expectancy, expected years of schooling, mean years of schooling and Gross National Income	0.510	170/189
Gender Inequality Index	Reproductive health, empowerment, and empowerment	0.545	138/164
Multi-dimensional poverty index	Education, health and living standard	13 million people, live under conditions of severe multidimensional poverty	
Social institutions and gender index	Discrimination in the family, restricted physical integrity, restricted access to productive and financial resources, and restricted civil liberties.	0.67 Sudan showing the highest level of inequality among Sub Saharan countries	

Source: Human Development Report 2020; OECD The Social Institution and Gender Index (SIGI) 2019

As the above table shows Sudan's socio-cultural and economic conditions from gender perspective indicates a lot of remaining gaps in all aspects. The country is identified to be the 2nd most gender unequal state in Africa. Recent developments are promising, and success has been achieved mainly in outlawing FGM, increasing women in political leadership and inclusion of gender dimensions in the revision of policies and strategies by the interim national government. However key informants echoed huge gap remains in Sudan to achieve gender equality in the socio-cultural and economic terms.

Economy

Sudan economy used to highly depend on oil revenue but with the cessation of South Sudan the economy at macro level is facing difficulties with the loss of 75% oil resources and associated revenue since 2011 along with export sanctions, limited foreign direct investment and access to international financing, high inflation etc.¹⁵

¹³ ibid

¹⁴ Poverty and Equity Brief Sub-Saharan Africa, Sudan. World Bank Group. April 2020

¹⁵ World Bank 2019

For about two third of the population, the livelihood is based on agriculture and livestock rearing. The agricultural practices are based on different means which include rainfed, irrigation and mechanized based, and some of the major crops produced include sorghum millet, wheat and maize, and are produced for both household consumption and export. Cash crops such as sesame, groundnuts and cotton are also produced in irrigated and semi-mechanized farms and are the leading export items. Different varieties of pulses and horticulture crops are grown depending on the agroecological zones. Agriculture also employs 43% of the labor force and accounts about 30 percent of its GDP.¹⁶

Livestock is raised in almost all parts of the country by both agrarian and pastoralist families and the majority about 40% of animals are owned primarily by nomadic tribes. Pastoralists in the Sudan efficiently use natural resources, moving herds around the country in response to weather conditions and availability of forage.¹⁷

Despite women's contribution in the production process the control over income and decision making over major household resources are controlled by men. Women and girls are central to sustain the family by fully shouldering the routine burden of unpaid care work which refers to all household chores cooking, cleaning, child and elderly care, voluntary community work –all done without remuneration and not accounted for in the national economy.

Data from 2018 shows 51%(31%) of Sudan's population living in multidimensional poverty and some 13% of the population targeted for humanitarian assistance the majority represented by women and children. The poverty situation gets worse in areas where conflicts are recurring.

3. Policy, legal frameworks, and institutional arrangements to address gender gaps

Historically gender issues were neglected until post-independence period between 1956-1970. Women's issues were given very limited attention in research and any development endeavors made during the period. The real breakthrough started in 1975 when the declaration of the United Nations Decade for Women. From that time onwards, women focused research started with funds from international agencies to set up targeted projects. The projects started as micro-credit projects mainly for business purposes based on women local experience in managing "Sandugs"¹⁸. In 1983, Women Union and Housewives Organization were established, they all worked in facilitating and accessing some goods with reasonable prices for housewives.¹⁹

After the 2019 revolution, Sudan is undergoing fundamental changes in revisiting and redesigning its constitution and subsequent policies and legal frameworks to introduce new changes regarding women's rights. Some of the major policy and legal frameworks that were under operation in the country and under the process of review and probable changes are the following;

- Interim National Constitution of the Republic of Sudan (INC) adopted on 6 July 2005, under Article 32 recognize that 'women and men have equal entitlement to all civil, political, economic, social and cultural rights. Based on this article, the State must guarantee the right for equal pay, equal work and professional benefits to men and women.
- In Sudan both formal law which is derived from British common law and Islamic law Sharia are operational. The Sharia law does not grantee equal rights to women and men in the areas of inheritance, marriage, and divorce. However, the law strongly prohibits harmful beating and violations of women's rights.

¹⁶Special Report 2019 FAO Crop and Food Supply Assessment Mission (CFSAM) To The Sudan 2019

¹⁷ Ibid

¹⁸ Sandugs are small number of people coming together to form saving and lending groups they trust each other for credit worthiness.

¹⁹ Case study: Using a Rural Financing mechanism -Sandug- to scale-up climate adaptation in Sudan. UNDP 2017

- Even the context of the formal laws such as, the Public Order Act of 1996 and the Penal Code and Personal Matters Act (both 1991), regulate the behavior and dress of women and girls (setting out harsh punishments for violations).²⁰
- Sudan is one of the countries that did not ratify one of the global standard framework on the rights of women- Convention on the elimination of all forms of discrimination against women (CEDAW) as it is not in harmony with existing laws in the country.
- Sudan ratified the Convention on the Rights of the Child (CRC) in 1990 without reservations. Sudan acceded to the Optional Protocol on the involvement of children in armed conflict in 2005 and the Optional Protocol on the sale of children, child prostitution and child pornography in 2004.
- The Sudanese Social Services Strategy's goal is to provide advanced services in education, health, shelter, water supply, electricity, transportation and communication to all citizens.
- Women's political participation has increased as a result of provisions within the Interim National Constitution and the Elections Act of 2008, which mandate 25% representation of women in parliament. This has resulted in a marked increase of women parliamentarians now exceeding the quota at 28%, but short of the international threshold of 33% women's representation in parliament.
- The labor code 1997 prohibits the employment of women in occupations that are hazardous or harmful to their health (Article 19). It is forbidden to employ women between 10 pm and 6 am.
- The National Women Empowerment Policy, endorsed by the President in 2007, focused on six pillars for empowering women: education, health (including environment and hygiene), political participation, peace and conflict resolution, economic empowerment, and human rights.
- In terms of realizing Government's commitment to gender equality in all sectors, The Ministry of Social Welfare, Women, and Child Affairs is responsible for women's is a responsible institution to follow up other sectors.

Although there are some favorable laws, policies and institutional mechanisms that support gender equality evidences show that there exists a huge implementation gap and discriminatory interpretation of existing law. Furthermore, the socio-cultural diversity and deep-rooted traditions are also contributing factors limiting the realization of women's right in all aspects of life. Key informants expressed that gaps also exist in institutional capacities to identify and address context specific gender issues across the sectors and accountability is also limited. Though attempts were made for example in the education sector by establishing Girls' Education Directorate with exclusive responsibility about girls' and women's education affairs at primary, secondary schools and vocational training, the directorate was downgraded currently under the umbrella of the General Directorate of Planning in the Ministry of Education.

In the energy sector, Ministry of Energy and Petroleum and National Energy Research Center are the two Government institutions leading the energy sector. So, all laws and legal frameworks that support equality of men and women in their institutions and programs apply in these institutions. In both institutions', women are employed as per their qualification no application of affirmative action in hiring, promotion and accessing educational opportunities. The Draft Electricity Act 2019 did not stipulate specific actions to bring women to decision making in the governing board, language is not gender responsive "chairman" "He" used when referencing the person across the document. The document in general perceive the only energy actors as men.

the National Energy Research center in collaboration with Appropriate Technology department there is special consideration for women in technology designing to be appropriate for women use especially at community level for example improved stoves, solar cookers and solar dryers. However, there is no policy or specific mandate or strategic action plan to integrate gender in programmes or project preparation, implementation or monitoring and evaluation.

²⁰Rachel G., Mashair S. and Sara A. Women at the forefront of Sudan's political transformation. Working Paper ODI 2019

Recently, Sudanese women actively participated in political environment particularly in the movement that overthrow the Albeshir regime they represent up to 70% of the street movement force. The current Transitional Constitution Declaration included improved articles on the rights of women but there is a general observation the reform sidelined gender equality issue despite their contribution²¹.

4. Patterns of division of labor and decision making

Depending on the region North (Muslim) or South (Christian) and livelihood types (agriculture or pastoralist), residence in urban and/or rural gender division of labor shows similarities and differences. In almost all contexts women and girls are responsible for routine household chores such as cooking, collecting firewood, fetching water, washing clothes and childcare. They are particularly expected to have expertise in cooking so that they are highly regarded as real women in the community. Studies show that women spend up to 12 hours performing these drudgeries which are given less value in terms of contributing to the formal economy²².

In agricultural areas, there are two types of crop cultivation practices one is market-oriented which is mechanized, large scale and irrigated. The major crops cultivated in these areas are cotton, sesame, peanut, gum arabic and sugarcane. Both men and women participate in land clearance and in the preparation, harvesting, transporting and marketing of crops, while women carry out most of the planting, weeding and food processing. Men are mostly responsible for technical and managerial aspect of these types of farms. According to FAO 2016, women are engaged either hired as wage laborers or unpaid family laborer. Their labor contribution in this context estimated to be about 49 percent.

The other crop cultivation practice is rainfed, traditional and small-scale type mainly producing sorghum, maize, wheat and vegetables for subsistence. Both men and women take different roles and responsibilities in the farming field while women take support roles such as weeding, watering plants and they are not allowed to manage plots. Men on the other hand plough land, select seeds, harvest, and exclusively manage plots making decisions which area to plough, which crop variety to grow, how much excess to sell etc. In this context the labor contribution of women is estimated up to 85 percent.²³

In the livestock sector, men have the primary responsibility for cattle and sheep raising, while women participate in milking and processing milk products. Both men and women are involved in raising goats and poultry. In the agro-forestry sector, women participate in all aspects of the work and have the major responsibility for seedling preparation and weeding. Men and women are sometimes responsible for different types of trees²⁴.

In agro-pastoral areas mostly in Darfur and Kordofan regions women exceptionally travel three to six kilometers every day to fetch water and collect firewood. They are responsible for farming activities cultivating crops as men and boys travel away from home for long period of time in search of pasture and water for their animals.²⁵ More so, women raise small animals such as goats for consumption and to generate small income. The area is prone to conflicts over natural resources as a result women and girls are disproportionately suffer from the consequences at times women are forced to take the role of men as a bread winner.

Data is scarce on the participation of women and men in formal labor market in urban areas. However anecdotal evidences suggest that more men are employed in the than women. Those few women in the formal sector play triple role shouldering routine household chores and formal tasks in the workplace. A key informant told that although under the labor act 1991 they are entitled 8 weeks of maternity leave, not to engage in arduous work. The full exercising of such types of rights are sometimes compromised due to deep rooted gender bias and stereotypes.

²¹ ibid

²² UN Women 2016

²³ Ibid

²⁴ Factsheet Sudan Women in Agriculture and Rural Development FAO

²⁵ Empowering Sudan's Women and promoting peace through equitable use of natural resource UN Environment Program 2019

In general, Sudanese women play a crucial role in both formal and informal ways contributing to both the GDP and to household food security and to the overall economic development process, but their contribution continues to be undervalued²⁶. They carry out a major portion of agricultural activities and bear almost the entire burden of household work, including water and fuelwood collection and food processing and preparation with very limited access to technologies that ease such burden.

Access to and control over basic services

In Sudan, access to education, health, economic opportunities, and communication services are limited to all population and access vary by region, sex and socio-economic status. There is a marked difference in gender dynamics in Western and Eastern part of Sudan particularly in access to education, basic services, business opportunities.

Education wise Sudan has the highest rate of out-of-school children in the Middle East and North Africa region. Over 3 million children aged 5 to 13 years are out-of-school – more than half of them are girls²⁷. Although the country has progressed well in improving access to primary education and closing gender gaps in primary school enrollment however disparities continue to persist in secondary and tertiary education. The main reason for the persistent gender gap identified in rural areas to be socio-cultural norms that give less value to women's education, girls provide support to household chores as a result they have less time to study than boys. The school environment itself is reported to be unfriendly to them without separate sanitation facility, experience of harassment and they are also highly likely to dropout²⁸.

Data on vocational training and higher education is scarce but generally key informants told fewer number of girls are enrolled than boys. There is also segregation of fields where girls join trainings on tailoring, cooking, secretarial fields and boys join fields of auto mechanics, masonry and other engineering fields.

Access to formal financial services is limited to women due to unavailability of government finance, lack of collateral and women's distrust of formal financial institutions²⁹. Women rather resort to join informal saving and loan groups called "Sandugs"³⁰ which are composed of small groups of people who trust each other and are thus accountable for each other's creditworthiness. This was an early form of Micro-credit for women who needed money for an unexpected expense or for business purposes. The sandugs in Sudan differ in the number of members, the amount of the contribution, the form of the contribution, and the duration of the loans³¹.

Access to essential health care services particularly maternal health services in rural areas is very limited due to unavailability of infrastructure (including electricity) and trained health workforce. 50.1 % of women have fewer than four antenatal care visits (by any provider). 5.2% of women have been tested for HIV/AIDS as a result the country has the highest maternal and child mortality³². Part of accessibility of services is linked with lack of electricity in most rural health facilities to assist laboring mother during nighttime and conduct life-saving obstetric surgeries.

²⁶ FAO 2016

²⁷ UNICEF New Horizon for Education in Sudan 2018

²⁸ *ibid*

²⁹ The role of microfinance institutions in supporting women microenterprises

³⁰ "Sandugs" means a box for holding money

³¹ Using Rural Financing Mechanism "Sandug" to scale-up climate change and adaptation in Sudan. Canada-UNDP 2018

³² UNICEF 2017

Compared to men, women have very limited access and control over key productive resources such as land studies show that female land ownership is just 4 percent. limited access to land, inputs, extension advice, and technologies; low levels of participation in leadership positions; and limited income generation opportunities, such as access to credit and jobs.³³Land inheritance is also traced paternally and Sudanese women and girls inherit half of their brothers.

Access to communication services mainly internet and telephone depends on which region and urban or rural one resides including economic status, educational level, and ownership of communication gadgets. In 2017, 31% of the Sudanese population was using internet³⁴. Gaps observed in men's and women's regular internet use, a recent study showed a 10%-point difference between men (58%) and women (48%) regular use of internet.³⁵Furthermore a study from South Kordofan region indicated that women showed a high readiness to engage in mobile financial services. More than four out of five women (83 percent) said they are currently using mobile phones to send or receive funds, including remittances. Many said they feel safer using mobile money transfer than a formal bank account or line of credit. Although difficult to generalize, such studies hint that Sudanese women are equally ready to access communication platforms as their male counterparts given friendly gadgets with the right education are made available.

Access to clean energy

In this era, access to energy is both basic need and a human right issue. Despite this only 38.5% of the total population in Sudan has access to electricity. The situation gets worse in rural areas where 78% of the rural population is without access to electricity. As a result, rural households are heavily dependent on traditional biomass fuel for cooking, lighting and heating³⁶. Almost all electricity is generated and distributed by Government owned on-grid and off-grid facilities.

The demand for energy has distinct gender dimension because of traditionally assigned roles and responsibilities women and girls are responsible for meeting household energy demands related to cooking. Data shows 41% of Sudanese women have access to clean cooking fuels and technologies which include electricity, liquid petroleum gas [LPG], natural gas, biogas, solar, and alcohol fuels³⁷. However supply is inconsistent and price is subjected to sudden increase .Such access is enjoyed by women in urban areas, while in rural, semi-urban and refugee contexts majority of women and girls are the one who travel long distances in the ever shrinking forests to collect firewood, fetch water, manage agricultural residues and animal wastes to prepare dung cakes to meet the routine cooking related energy needs. On average, they spend 2-3 hours per day compared to men and boys incurring heavy opportunity cost of time that would have spent for more productive and educational purposes.

Besides women and children are exposed to high concentration of harmful smoke from the burning of solid fuels, increasing their susceptibility to respiratory tract infections, respiratory tract cancers, chronic lung diseases and cataract ³⁸.In addition, the fact that women and girls carry heavy loads of bundles of firewood to satisfy energy demands in the household increasing their vulnerability to musculoskeletal related disability.

³³ FAO 2015, AfDB 2014

³⁴ International Telecommunication Union(ITU)World Telecommunication and ICT indicators

³⁵ Afrobarometer Regular Internet Usage by Gender| 34 countries| 2016/18 regular use as measured by everyday use.

³⁶ Empowering Sudan: Renewable Energy Addressing Poverty and Development. UNDP 2020

³⁷ World Bank, Sustainable Energy For All (SE4ALL) from WHO Global Household Energy data base 2016

³⁸ Stephen B., Nigel G., Johnatan G. et al Respiratory risks from household air pollution in low- and middle-income countries. Lancet Respir Med. 2014 Oct; 2(10): 823–860.

According to key informants, with the limited availability of electricity- powered grinding mills to prepare sorghum and wheat flour which are the staple foods in Sudan, rural women either grind the flour themselves using very traditional and laborious techniques or travel long distance carrying heavy loads to access grinding mills. Overall, one can observe that the energy poverty is heavily shouldered mainly by women and from all regions in Sudan women in North Darfur region are the most vulnerable ones.

With all these dimensions of challenges related access to electricity it is important to note that those with access not only benefits in terms of reduced household drudgeries and lighting but also enjoyed the productive use of electricity to start-up small business such as hair salon, bakery, kiosks to sell cold drinks, mobile charging services and tailor shops. This and all the above discussed conditions entail access to electricity has potential to fundamentally transform gender dynamics in Sudan given the investment is targeted meeting household energy demand and accompanied by effective social norm changes and empowerment of women.

In general, in the context where the country is expanding access to renewable energy the focus comes also with promising opportunities for majority of women in rural areas. Key informants identified successful interventions in production and distribution of fuel-efficient cook stoves, engagement of rural women in solar business and access to micro credits to purchase household and business oriented electrical appliances are areas that can be tapped further in the future.

5. Existing energy access programs and gender focus

A review and key informant interviews were made on the existing energy access programs in Sudan whether gender dimensions has been integrated and specific activities to empower women has been considered. The following are the key findings:

- **The Sudanese Electricity Distribution Company (SEDC)** is undertaking “The Rural Area Electrification by Solar Energy Project”, which aims to serve over one million households by 2031 with solar home systems (SHS).³⁹This entails that rural areas are targeted to increase access to electricity where the most disadvantaged groups reside.
- **“Solar sister” Program**- Supports and capacitates Sudanese women on technical, managerial, and economic aspects of solar hybrid mini-grid. Solar Sister recruit, train and mentor more and more African women as clean tech entrepreneurs to sell a basket of clean energy products - including portable solar lights and mobile phone chargers, larger solar solutions for homes, businesses and institutions, and clean cook stoves.⁴⁰ This intervention is no more in Sudan but seen successful in other countries such as Uganda and Rwanda.
- **Practical Action Gender and energy program**– An international development organization having one of its focus on improving access to energy that transforms the lives of communities with a unique focus on tackling gender gaps introduced minimum standards that ensures equitable participation, increased voice of women and benefit from its energy programs. In collaboration with Kassala Women Associations Network and Women development Association in North Darfur Practical Action had developed two solar projects in North Darfur the main actors are women i) Integrated solar power based on smart village development ii)Solar water pumping. Also, there is low smoke stove project replacing wood and charcoal by LPG this project was implemented in Kassala and North Darfur regions. Success have been documented in this project which AMP can quickly draw on and leverage.

³⁹Sudanese Electricity Distribution Company (n.d.), ‘The Rural Area Electrification by Solar Energy Project’, Available from: <http://www.sedc.com.sd/en/-4> – accessed 6 October 2019.

⁴⁰Beyond the grid Solar Sisters Solar Sisters Power Africa. USAID 2016

- **Sudanese Knowledge Society (SKS) and Barefoot College:** Recruited and trained rural illiterate women from South Kordofan in Barefoot college in India in PV system to sell and repair solar products. This was the first experience in Sudan and lessons were drawn that few women became successful in establishing solar retailing and repairing shop.
- **National Center for Energy research in collaboration with clean cooking alliance-** has been working in renewable energy research and in promoting the use of renewable energy technologies studies were conducted in improved stoves designing and adoption, capacity building training in stove relate business and testing of biofuels and briquette. Beyond conducting researches, the staff profile in the institution between women constitute 30- 50 %.
- **Haggar Foundation:** Focusing on supporting sustainable development across Africa by accelerating access to conventional and renewable energy through innovative and affordable solutions. According to key informant the organization plan to support investments in gender and energy projects.

Summary of Gender Analysis Findings according to AMP components and recommended actions

Project components	Gender analysis findings
<p>Component 1</p> <p>Policy and regulations</p> <p>Appropriate policies and regulations are in place that address policy, institutional, regulatory and technical barriers to facilitate investment in low-carbon mini-grids</p>	<p><u>Policy and legal context supporting gender equality</u></p> <p>-Sudan’s current policy and legal context is favorable to engage women in the energy related policy dialogues ensure their meaningful participation. But the tradition and cultural norms along with the limited number of professional women in the energy sector pause a greater risk in terms of ensuring their meaningful participation</p> <p>-Interim National Constitution of the Republic of Sudan (INC) adopted on 6 July 2005, under Article 32 recognize that ‘women and men have equal entitlement to all civil, political, economic, social and cultural rights. Based on this article, the State must guarantee the right for equal pay, equal work and professional benefits to men and women. This also applies for the energy sector.</p> <p>- Ministry of Energy and Petroleum and National Energy Research Center are the two Government institutions having direct role in AMP implementation. So,all laws and legal frameworks that support equality of men and women in their institutions and programs applies. In both institutions’ women are employed as per their qualification (No application of affirmative action).</p> <p>- The Draft Electricity Act 2019 did not stipulate specific actions to bring women to decision making in the governing board, language is not gender responsive “chairman” “He” used when referencing the person across the document. The document perceived energy actors are men.</p> <p>- There are gender focal points in sector ministries who liaises with other federal ministries and organizations on gender topics. This could include, but not limited to, participation in meetings, workshops, development of national strategies, and evaluation of action plans. Ministry of Energy did not assign gender focal person unlike other Ministries such a health, Ministry of Irrigation and Water Resources. Key informants told that the Ministry has made no specific effort made to engage women in the policy making.</p> <p>- Key Policy question is that the expansion of energy infrastructures target - meeting household energy demands Vs meeting the industry energy demands requires a careful decision from</p>

	<p>gender dimension meeting household energy matters the most as women and girls are in dire need of clean energy for cooking and lighting,</p> <p>Possible actions AMP can support</p> <ul style="list-style-type: none"> -From lessons drawn from Practical Action's Gender & Energy Minimum Standards: support the Ministry of Energy and Petroleum to develop gender minimum standards for its energy related programs particularly on mini-grid to engage women in policy making. - There is a need to intentionally engage women during project development process women staff in the Ministry should be empowered to contribute to the formulation of action plan for AMP and participate fully in site selection and help in community engagement through partners in the selected locations.
<p>Component 2</p> <p>Business Model Innovation with Private Sector Engagement</p> <p>Outcome</p> <p>Innovative business models based on cost reduction operationalized to support and strengthen private participation in low carbon mini-grid development</p>	<ul style="list-style-type: none"> -There is a marked difference in gender dynamics in Western and Eastern part of Sudan particularly in access to education, basic services, business opportunities so which region is going to be targeted for AMP pilots' targeting changing existing diesel mini- grids to solar -There are micro credit associations among women groups whose potential can be tapped for Solar business. In terms of selecting pilot sites considerations must be given if for household lighting - for use in home duties like lighting, using electrical devices for different food processing devices, creating agri- business opportunities or access to irrigation pumps - There are existing practices and successful stories in gender and energy interventions such as Practical Action through women development CBOs and networks (rural/urban) as key actors in developing and managing the influence and demonstration in our energy programs. Such experiences can be leveraged and scaled-up <p>Possible actions AMP can consider</p> <ul style="list-style-type: none"> - Partner with organizations like Practical Action to scale-up lessons from integrating gender in energy access intervention - Mapping of women groups in the pilot sites for AMP to create empowerment opportunities through participation in dialogues, identification of private sector business to engage with in the hybridization of existing mini-grids, linking with existing women's business with agro business opportunities
<p>Component 3</p> <p>Innovative financing</p> <p>An innovative financing mechanism and accompanying financial instruments in place to incentivize investments in the development of low-carbon mini-grids</p>	<ul style="list-style-type: none"> -Access to formal credit options are limited for women owned business as they tend to be small, not lucrative as such and targeted support for women run business is limited -There are community based informal saving and lending groups called "Sandugs" - There are emerging practices with minimum support women becoming energy sectors entrepreneurs such as the Barefoot college experience where rural women being trained in solar appliance installation and maintenance - There are existing funding prospects targeting women owned business in clean energy sector for eg from Haggard Foundations <p>Possible actions AMP can consider</p> <ul style="list-style-type: none"> -Conducting mapping of women owned business, saving and lending groups to assess and their potential engagement in mini-grid sector (This could be integral dimensions of other intended studies under this components)

	- Include women owned business in any capacity building opportunities with potentials to engage in the clean energy interventions to open access to finance from available options
Component 4 Knowledge management and M&E	<p>-The National Energy Research Center focus on research and designing appropriate technologies for women especially at community level for example improved stoves, solar cookers and solar dryers.</p> <p>- Latest sex-disaggregated data is hardly available in the areas of education, energy sectors, workforce in the electricity production and distribution</p> <p>Possible actions AMP can support</p> <p>-Work with the National energy center to identify research topics in relation to appliances that works at off-grid level and women friendly</p> <p>- Support the Ministry of Energy and Petroleum on the generation of sex disaggregated data on energy sector workforce</p>

6. Gender Action Plan Sudan AMP

Key considerations taken in to account in proposing the following activities include –Legal and policy environment, existing institutional structures, alignment with project’s components, recommendations from stakeholders consultations and linkages with SDG, UNDP/GEF Gender equality and women empowerment standards (Ensuring projects do not exacerbate gender inequality and be responsive of women and men development needs and priorities).

It should be also noted that gender dynamics and institutional readiness vary in different contexts and responsive mechanisms should be context specific while capitalizing on existing opportunities and resource. For this reason, conducting specific gender analysis and participatory action planning using the mini-grid gender analysis framework is strongly recommended particularly in the pilot sites. The unique opportunity for Sudan AMP to integrate gender dimension in the overall project focus is that an NGO called Practical Action Sudan is selected to be one of the implementing partners bringing ample experience in gender and clean energy interventions. Therefore, this action plan will serve as an input to the overall gender integration efforts to be technically led by Practical Action.

Project Outputs	Proposed Activities	Indicator	Responsible body
Component 1 Policy and Regulations			
Professional women engaged in mini-grid policy dialogues and policy formulation such as Delivery Model working group, consultations on regulatory frameworks, the national sustainable energy network	1. Identify professional women in the energy sector to engage them in mini-grid related policy making and consultations	# Women engaged in mini-grid policy making process and consultations	Ministry of energy and petroleum/ Practical Action Sudan/UNDP Sudan
Women and youth voices and concerns integrated in ongoing delivery model conversations at different levels and studies to be conducted to inform mini grid	2. Invite women and youth representatives from institutions and at community level to engage them in mini-grid focused consultations	# women participated in consultations # youth (18-24) age participated in mini-grid related consultation	Ministry of energy and petroleum/Practical Action/ AMP project staff/UNDP Sudan
Component 2. Business Model innovation with private sector engagement			

Sudanese women accessed vocational training opportunities to be trained in technical, managerial and economic aspects of mini grids	3.Recruit and enroll potential women candidates in emerging field of mini grid at vocational schools	#women successfully completed vocational training on mini-grid related knowledge and skills	Ministry of energy and petroleum/Practical Action/AMP project staff/ UNDP Sudan
Pilots based on the potential of agricultural activity and agro-processing opportunities equally benefited men and women	4.Conduct gender analysis action plan on the position of women in agricultural and agro-processing contexts in the areas where pilots will be deployed	Yes/No	Practical Action/UNDP Sudan
Component 3 Innovative financing model			
Gender dimensions integrated in the mapping/study of financial services for renewable energy market	5.Integrate gender dimensions from the design to analysis of planned studies such as willingness and ability to pay, energy demand assessments	Yes/No	Ministry of energy and petroleum/Practical Action/UNDP Sudan
Women owned business are targeted and benefited from emerging mini grid financial services	6.Provide targeted finance/incentivize women owned enterprises, purchase of electrical appliances to start-up or improve business	#women owned enterprises benefited from financial services	Ministry of energy and petroleum/Practical Action/UNDP Sudan
Component 4 Knowledge Management (KM) and Monitoring and Evaluation (M&E)			
Gender and clean energy issues become integral part of knowledge agenda in the community of practice to be established by this project	7. Set gender as an agenda to be explored, discussed and new evidences to be shared as it relates with Community of Practice	# COP meetings where gender and energy issues discussed	Ministry of energy and petroleum/Practical Action/UNDP Sudan
Lessons from pilots, findings from specific studies that integrate gender dimensions compiled and shared to stakeholders	8.Develop success stories and technical briefs on gender and mini grid topics	# Success stories/ technical brief produced on topics of gender and mini grids	Ministry of energy and petroleum/Practical Action/UNDP Sudan
All data to be generated through AMP project disaggregated by sex and used to inform decisions and future programing	9. Track project beneficiaries by sex and age	# women benefited from AMP interventions at various levels	Ministry of energy and petroleum/Practical Action/UNDP Sudan

