
ANNEX J GENDER ANALYSIS AND ACTION PLAN

J1. Gender mainstreaming analysis

Zambia's latest (2018) Gender Inequality Index (GII) value of 0.540 (close to the SADC regional average of .573) reflects inequalities between men and women in parliament, health, and education, as well as labour markets.¹ Though the country has made notable strides in improving gender equality recently, notably in the domains of education and health, challenges still exist.

Norms and Legal Regime

The constitution establishes the principle of gender equality. When amended in 2016, additional articles related to gender equality were included. The legal system, a blend of English common law and customary law, is not fully protective of women's rights, however, and some gender discrimination persists. In practice, women may experience a range of traditional socio-cultural practices alongside certain statutory protections, with the latter generally weaker in rural areas compared to urban ones.²

There are over 70 ethnic groups and three rough classifications of inheritance systems (matrilineal, patrilineal, and bilateral) in Zambia, though all three systems are patriarchal (male-dominated) in nature. Traditional leaders have significant influence and governance roles in their communities, especially regarding the allocation of land and land deeds.³ Certain customary practices, left to the discretion of local leaders, derive women's access to land through their male relatives, leaving women vulnerable to having that access revoked if their family situation changes. Even in some cases where women are the recognized *owners* of land, it is widely accepted that male relatives will control the *use* of the land. While land ownership rates are low among both sexes, women constitute almost three-quarters (74 percent) of those who don't own any land.⁴

Both civil and customary marriages are recognized, providing one example of the contradictions embedded in the dual legal system. Thus, though the statutory legal age for marriage is 21, a child can be entered into a customary marriage upon reaching puberty. The payment of a traditional *lobola*, or bride price, especially as the practice has evolved in recent times, can have the effect of cementing women's subordinate position in marriages according to focus groups of women and men in Lusaka, resulting in *"limiting women's rights to children, women being viewed as husbands' property, limiting women's decision making power, limiting women's control on sexual matters, compelling women to do more housework... among others."*⁵ In effect, it strengthens patriarchal norms and encourages the treatment of married women as property. In 2018, 47 percent of women, and 32 percent of men, aged 15-49 considered wife-beating justified in specific cases.⁶

Other social beliefs that remain strongly held among significant portions of the population include that having children with disabilities is a divine punishment, that menstruating women and girls are unclean and must stay isolated, and that a girl's place is in the kitchen.⁷

Health

¹ UNdata, "Gender Inequality Index."

² OECD Development Centre, "Social Institutions and Gender Index: Zambia."

³ Oyama, "Renewed Patronage and Strengthened Authority of Chiefs Under the Scarcity of Customary Land in Zambia."

⁴ Republic of Zambia, Ministry of Gender, "Gender Status Report 2017 - 2019."

⁵ Moono et al., "Bride Price (Lobola) and Gender-Based Violence among Married Women in Lusaka."

⁶ Zambia Statistics Agency, Ministry of Health, and ICF, "Zambia Demographic and Health Survey 2018."

⁷ Republic of Zambia, Ministry of Gender, "Gender Status Report 2017 - 2019."

Females in Zambia face an overall lower mortality risk than males. Life expectancy at birth in Zambia is 64 years, 67 for women and 61 for men and the infant mortality rate per 1,000 live births is 42, 38 for girls and 45 for boys (2020).⁸ Thirty-five percent of children under 5 exhibit stunting (38% of boys and 31% of girls), with the greatest prevalence in the Northern and Luaua Provinces.⁹ Factors inversely correlated with stunting include the availability of improved drinking water, age and education of the mother, and household wealth.¹⁰ The lifetime risk of maternal death has been decreasing steadily for the last two decades from roughly 3% in 2000 to 1% in 2017.¹¹

HIV/AIDS remains the leading cause of death, with women more affected than men; accidents and injuries are the second leading cause of death for men while tuberculosis is the second most prevalent cause of death for women.¹² The FAO (2018) reports, “*The fact that HIV prevalence is consistently higher in women than in men demonstrates the existence of the underlying causes of transmission which include among others, Gender-Based Violence (GBV), low income, harmful gender norms including those that reinforce the submissive role of women, low status and unequal power relations within heterosexual relations, cross-generational sex, and concurrent partnerships which leads to increased vulnerability of women to HIV infection.*”¹³

Family Formation

In 2018, 56 percent of women and 50 percent of men reported being married, and more women than men reported being divorced/separated (10 percent v. 4 percent) and widowed (3 percent v. less than 1 percent).¹⁴ The majority (72 percent) of small and medium farm households are headed by men while 28 percent are headed by women. Western province has the highest percentage of households headed by women (35 percent), followed by Southern province (31 percent).¹⁵

Among individuals ages 25-49, the median age of first marriage is 19 years for women and 24 years for men; 9% of women were first married and 6% had started childbearing by age 15.¹⁶ Eleven percent of married women aged 15-49 reported having co-wives, with the phenomenon being more prevalent in rural areas, especially in the Southern Province, and in instances when women report having no education.¹⁷ Early childbearing is extremely dangerous for both young mothers and their offspring. Early marriage and polygyny can be indicative of women having reduced autonomy and bargaining power within their households.

The figure in [Box 62](#) shows that married women overall are more involved in daily spending decisions, but major purchases are more likely to be decided jointly or by their spouses. From the project’s perspective, this has implications for demand estimation, marketing, and financing of electric appliances and productive use equipment for mini-grid customers.

The fertility rate in Zambia remains significantly higher in rural areas (5.8 births per woman) compared to urban ones (3.4 births), the overall desired fertility rate (5.0 across rural areas and 2.9 in urban ones) is lower than the actual one, and men on average desire more children.¹⁸ The dependency ratio, the number of dependent young (<15) and old (>64) individuals per working-age individual, has been falling since 2010 and as of 2020 stands at 0.86.¹⁹ Female

⁸ World Bank, “World Development Indicators | Data.”

⁹ Zambia Statistics Agency, Ministry of Health, and ICF, “Zambia Demographic and Health Survey 2018.”

¹⁰ Mzumara et al., “Factors Associated with Stunting among Children below Five Years of Age in Zambia.”

¹¹ World Bank, “World Development Indicators | Data.”

¹² Chisumpa, Odimegwu, and Saikia, “Adult Mortality in Sub-Saharan Africa.”

¹³ FAO, “National Gender Profile of Agriculture and Rural Livelihoods - Zambia.”

¹⁴ Zambia Statistics Agency, Ministry of Health, and ICF, “Zambia Demographic and Health Survey 2018.”

¹⁵ Indaba Agricultural Policy Research Institute, “Rural Agricultural Livelihoods Survey: 2019 Report.”

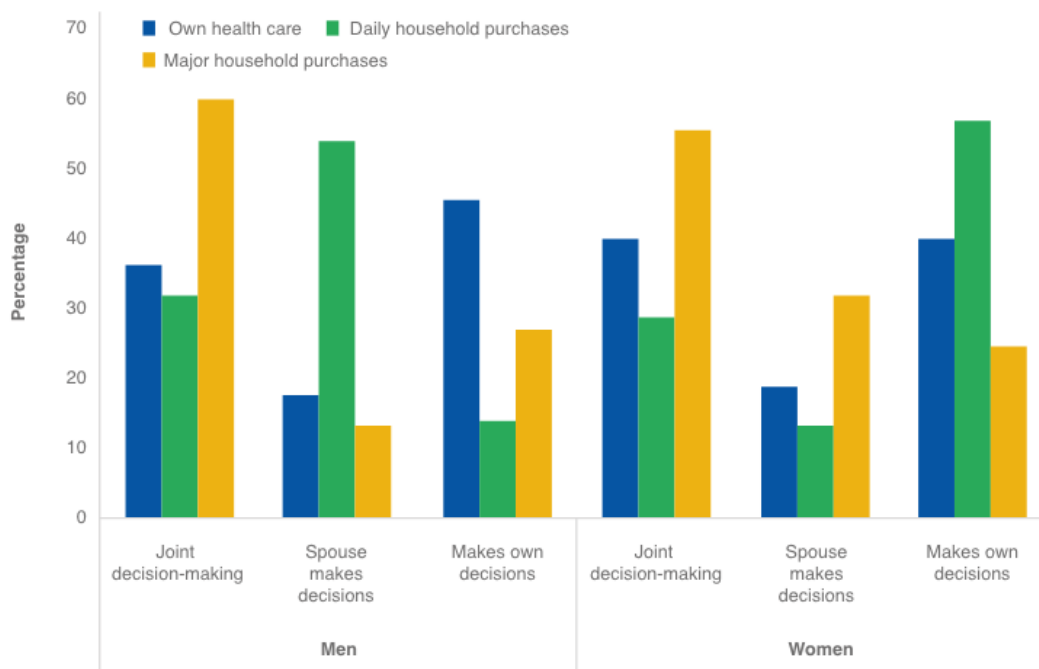
¹⁶ Zambia Statistics Agency, Ministry of Health, and ICF, “Zambia Demographic and Health Survey 2018.”

¹⁷ Zambia Statistics Agency, Ministry of Health, and ICF.

¹⁸ Zambia Statistics Agency, Ministry of Health, and ICF.

¹⁹ World Bank, “World Development Indicators | Data.”

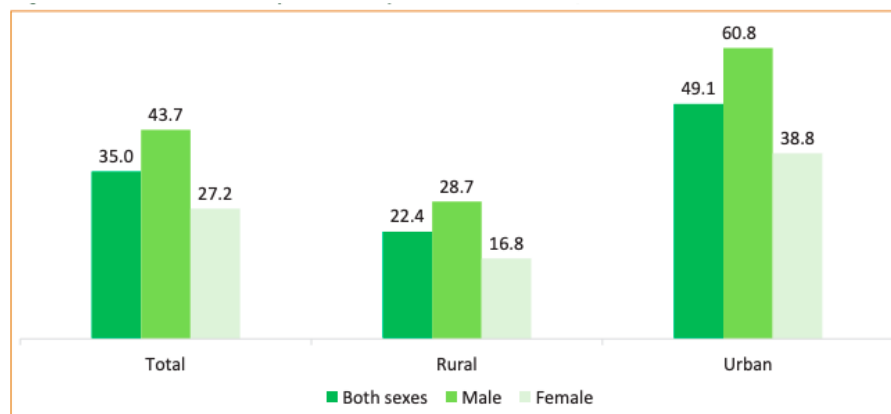
Box 1 Married women ages 15-49 who participate in decision-making at the household level



Source: Zambia Demographic and Health Survey 2018, in Ministry of Gender, "Gender Status Report 2017 – 2019."

potential beneficiaries may have difficulty managing care responsibilities and project activities at the same time unless thoughtful accommodations are made; or, they may need to take periodic breaks to give birth or care for other family members and then resume project activities later on.

Box 2 Labour force participation rate (percent) by rural/urban and sex (2020)



Source: 2020 Labour Force Survey, Zambia

Forty-seven percent of ever-married women report having experienced physical, sexual, or emotional violence by their current or most recent husband or partner.²⁰ For this reason, it's important that project interventions include consultations with all household and community members and be sensitive to the possibility that project activities (e.g., additional time commitments) or outcomes (e.g., additional income) could trigger intimate partner violence.

Economic Considerations

²⁰ Zambia Statistics Agency, Ministry of Health, and ICF, "Zambia Demographic and Health Survey 2018."

Fifty-nine percent of the population was below the poverty line (\$1.90, 2011 PPP) in 2015,²¹ but in rural areas, the poverty rate is higher. Rural poverty is closely tied to agricultural yields in any given year, which is closely tied to climatic conditions. Women have much more difficulty escaping from rural poverty than men because the most promising avenues of escape—namely non-farm income-generating activities and accumulation of land (and the ability to irrigate it)—are areas in which they struggle to reach parity with men.²² Thus, these are issues a minigrid program can try to address (e.g., by working with local leaders to guarantee access to land, freeing up women’s time to diversify their livelihood strategies, and providing complementary inputs needed to succeed in non-farm businesses).

Box 3 Gender balance of select occupational categories in rural Zambia, 2020

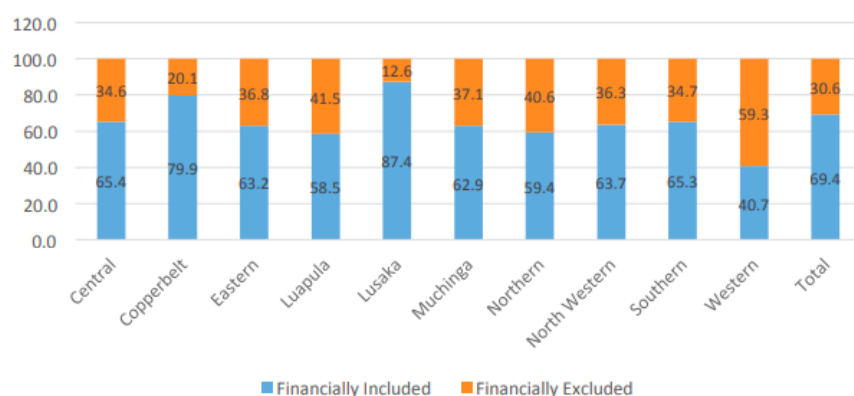
Female-dominated			Male-dominated (selected)		
Sector	Female	Male	Sector	Male	Female
Wholesale and retail trade; repair of motor vehicles and motorcycles	58%	42%	Mining and quarrying	91%	9%
Accommodation and Food service activities	76%	24%	Construction	100%	0%
			Transport and storage	93%	7%
			Real estate	88%	12%
			Activities of extraterritorial organisations and bodies	100%	0%
			Manufacturing	59%	41%

Source: 2020 Labour Force Survey

In rural areas, 61 percent of the labor force is male and 39 percent female.²³ The segment of the economy with the greatest number of workers in rural areas is “Agriculture, forestry, and Fishing” (approximately half a million employed persons, or 48% of the labor force) and this sector is 65% male, 35% female. There is significant gender segregation in a number of rural occupations (see Box 64).

As for financial inclusion—which can influence an individual’s ability to connect to a mini-grid, purchase electrical appliances and equipment, and start or grow an electricity-enabled enterprise—Zambia exhibits both urban-rural

Box 4 Gender balance of select occupational categories in rural Zambia, 2020



Source: FinScope 2020
Topline Findings

²¹ World Bank, “World Development Indicators | Data.”

²² Diwakar et al., “Rural Poverty Dynamics in Zambia: 2012-2019.”

²³ Ministry of Labour and Social Security and Zambia Statistics Agency, “2020 Labour Force Survey Report.”

and gender gaps, though financial inclusion is trending upwards across all demographics.²⁴ In 2020, the urban-rural gap (84 percent v. 56 percent) was significantly larger than the gender one (68 percent of women and 71 percent of men), with the Western Province notably trailing the rest of the country (see [Box 64](#)).

Rural female heads of households accessed agricultural loans at only slightly lower rates than male heads (15 percent v. 17 percent), but those individuals with larger parcels got larger and more formal loans;²⁵ men on average control larger parcels than women. The Rural Agricultural Livelihoods Survey does not track agricultural credit access by women living in male-headed households, who anecdotally struggle to finance improved inputs for their plots.

Despite being formally counted among the financially included (i.e., having a bank account or access to micro-loans), many female entrepreneurs according to the Zambia Federation of Associations of Women in Business (ZFAWIB) report that it is more difficult for them than their male counterparts to access affordable, sufficiently sized SME loans from financial institutions. In 2018, the Bank of Zambia launched a gender unit to examine gendered patterns in access to finance.

Zambia has very high levels of female entrepreneurship. Though recent data is scarce, in 2013, Zambia's total early-stage entrepreneurial activity ratio (the percent of individuals 18-64 with a new business venture) was 40 percent, and women outnumbered men (104:100), though women were slightly less likely than men to be driven by opportunity (93:100), as opposed to necessity.²⁶

Energy

Ensuring the mini-grid program achieves gender diversity and balance in the value chain is possible but will require deliberate outreach to actively recruit women and men with the required passion and aptitude. According to the 2020 Labour Force Survey, the "Electricity, gas, steam and air conditioning" industry only counts 686 workers in rural areas but is closer to being gender-balanced (60 percent male, 40 percent female) than even the agricultural sector

Box 5 Select examples of women leaders in renewable energy

- Likonge Makai Mulenga, an electrical engineer with extensive experience in the mining sector, prestigious Fellow of the Engineering Institution of Zambia, and PhD candidate, founded a non-profit, LiChi's Community Solution (LSC) that designed, built and managed solar village kiosks. Created using a fee-for-service model, these projects electrified a community school and established an information and technology center, provided pumped water, offered battery-charging for phone and kits, and more. Eng. Likonge is focused on the gender-, holistic community development, and productive use aspects of energy systems as well, for example working on "the first solar reticulation and bio-digester drier fish hatchery in Chingola district with 125 rural women trained and women out grower scheme using bio-slurry as manure to improve crop yield."
- Mukabanji Mutanuka was responsible for the technical and financial design of off-grid innovations for the Power Africa Off-Grid Energy Challenge before leading business and commercial development for PowerCorner, a mini-grid developer with operations in Zambia. She is deeply involved in developing innovations around supplying mini-grid customers with ultra-efficient, appropriate appliances, either through cash purchase or lease-to-own arrangements, and supplying electricity-enabled services, such as water, wi-fi, and more. She views customers as key partners of PowerCorner; when they are able to improve their livelihoods it makes PowerCorner's operating model more financially sustainable. For this reason, she prioritizes investing in education and training of both household and commercial customers. Households learn about energy efficiency and electrical safety, for instance, and business clients receive training on equipment usage and maintenance, how to make electricity use profitable, and even how to improve their overall marketing and accounting capabilities.

Source: Kamwi, "Woman Engineer Lights Up Zambia's Rural Community" and Africa Secretariat LEDS GP, Webinar.

²⁴ Bank of Zambia, "FinScope 2020 Survey Report."

²⁵ Indaba Agricultural Policy Research Institute, "Rural Agricultural Livelihoods Survey: 2019 Report."

²⁶ GEM Global Entrepreneurship Monitor, "Entrepreneurship in Zambia."

(65 percent male to 35 percent female).²⁷ Even with notable recent progress towards gender balance in the energy sector additional effort is needed to reach 50-50 targets,²⁸ and to ensure women work in high value-add energy sub-sectors, technical roles, and leadership positions at rates similar to their male colleagues. There are numerous

Box 6 Gender analysis of Zambia's first solar PV mini grid

A 2019 study examined the gender implications of modern energy transition in the context of the Mpanta solar mini-grid, a 60 kW installation sponsored in 2013 by REA with support from UNIDO and GEF, in a fishing village in the northeastern part of the country. Local governance and operational support were provided by Kafita Multi-Purpose Cooperative.

The study found that women's lived energy experience changed relatively little post-intervention as their primary energy tasks, related to cooking, remained unchanged and they by and large were unable to take advantage of new opportunities created by electrification.

The authors write:

"...the transition to more modern energy services is far from gender neutral: despite providing broad benefits within the community, the benefits derived from a new technology and service were not evenly distributed between men and women due to broader socio-cultural practices and norms." For example:

- Where there was electric appliance uptake, these were predominantly used by men, though some women would listen to the radio while cooking.
- Gendered spaces remained gendered, both at home and in public, and electrification patterns and priorities reflected the "value" accorded by a patriarchal society to those spaces.
 - At home, women and girls still spent more time in the kitchen (which would have an electric light if covered by a roof and close to the main house) and men spent more time in the lighted living room where the TV and/or radio would also be located if the house had one.
 - Men also retained their privileged access to formal businesses premises, while women's economic activities would take place in informal, ad hoc settings. As such, it was mostly male shopkeepers who took advantage of electrification opportunities. Even though there was a local women's farming collective and savings and loans group, it did not finance business upgrades and electrification opportunities for its members.

Men and women in the community both desired a larger capacity mini-grid, but they expressed different preferences for future energy services.

- Men wanted electricity for use with equipment like hammer mills, welders, and refrigerators, that could reduce their physical strain, increase their business productivity, or allow diversification into new products and services.
- Women overall wanted technology that could reduce the physical strain and time required for harvesting firewood and cooking.

Source: Kamwi, "Woman Engineer Lights Up Zambia's Rural Community" and Africa Secretariat LEDS GP, Webinar.

examples of female leaders and role models in the solar energy and mini-grid space for the project to draw on (see [Box 66](#)).

Nationally, 8 percent of the population is estimated to have access to clean and affordable fuels for cooking, but only 1.5 percent of the rural population has such access,²⁹ meaning over 98 percent of the population there relies on biomass or charcoal. Women undertake the majority of fuelwood collection and cooking tasks, sometimes with assistance from men and children. An estimated 8,227 deaths were attributable to Household Air Pollution (HAP) in 2016 in Zambia, and these were roughly split between males and females.³⁰

REA has already begun conducting research, awareness-raising, and user-acceptance exploration for high-efficiency electric pressure cookers. They have identified locally available technology (in Lusaka) that they consider promising

²⁷ Ministry of Labour and Social Security and Zambia Statistics Agency, "2020 Labour Force Survey Report."

²⁸ Republic of Zambia, Ministry of Gender, "Gender Status Report 2017 - 2019."

²⁹ Zambia Statistics Agency, Ministry of Health, and ICF, "Zambia Demographic and Health Survey 2018."

³⁰ WHO, "Household Air Pollution Attributable Deaths."

vis-à-vis performance, robustness in the field, and price-point,³¹ and are eager to continue their user acceptance testing. Among peer nations, Zambia has higher than average rates of cooking with electricity (16 percent of households nationally, 34 percent across urban areas, and 41 percent in Lusaka³²). The upshot of this is that there is significant awareness already of e-cooking as an aspirational fuel and the market for e-cooking appliances is relatively well-developed. On the other hand, the government is wary of e-cooking uptake because of issues related to demand management.

A recent (2021) study of three sites in Western and Northern Provinces correlates the beginning of the cooking fuel transition there (i.e., from collected fuelwood to purchased charcoal) with the phenomenon of rural out-migration, suggesting that the household labor constraint (i.e., fewer members available for chores), and to a lesser extent increased income through remittances, contribute to the switching, which is a gradual process involving fuel stacking.³³ If clean e-cooking pilots are pursued under the program, it may be advisable to initially target either small households (i.e. that are labor-constrained), households receiving remittances or who have higher-than-average income within the community, or households where women already have established economic activities (i.e., there is a clear opportunity cost for their time) as the most promising route to sustained adoption.

Agriculture

An estimated 90 percent of rural agricultural households grow maize; 56 percent grow groundnuts; and 35 percent grow cassava.³⁴ Compared to other some other countries, there does not appear to be strong gendering of crop production or differences in yields between male- and female-headed households, though this may disguise discrepancies at the plot level, particularly when women struggle to compel and/or direct male labour on their own plots.

Institutional and Policy Framework

Chiefs in Zambia can greatly influence the lives of citizens, especially those in rural areas, making them key stakeholders in advancing gender equality.³⁵ In other countries in southern Africa, it is perceived that female chiefs have made significant contributions to gender equality, especially in the areas of reducing child marriage and promoting education.³⁶ In Zambia, however, despite the existence of matrilineal traditions, there are very few female chiefs, especially at the upper echelons, and power structures remain mostly patriarchal (see [Box 68](#)).

³¹ <https://m.radianonline.co.zm/midea-6l-electric-pressure-cooker-my-cs6004w.html>

³² Scott and Archer, "Basic Use of Electricity for Cooking (Zambia)."

³³ Wu et al., "Migration and Fuel Use in Rural Zambia."

³⁴ Indaba Agricultural Policy Research Institute, "Rural Agricultural Livelihoods Survey: 2019 Report."

³⁵ Republic of Zambia, Ministry of Gender, "Gender Status Report 2017 - 2019."

³⁶ E.g., see McNeish, "Malawi's Fearsome Chief, Terminator of Child Marriages."

Zambia established a Ministry of Gender in 2012. However, it faced “financial, institutional, and technical capacity challenges, such as inadequate funding and human resource capacity to effectively implement its programme,”³⁷ and was dissolved in 2021.³⁸ At present, the portfolio is handled by a cabinet office, the Gender Division, that works with line ministries on gender equality priorities.

The National Gender Policy (2014) states that there has been a historic focus on energy for industrial development at the expense of domestic use.³⁹ Despite mentioning there are connections between gender, energy access, and energy development, it does not offer specific, detailed actions to advance gender equality in the energy sector.⁴⁰

The National Energy Policy includes a specific objective on gender mainstreaming and specific measures related to affirmative action, gender analysis of programs, and promotion of gender and energy research.⁴¹ The latest revision of the National Energy Policy in 2019 reaffirms the linkages between energy, poverty, and inequality, and the disproportionate impacts sustained by women; it also contains provisions related to local content and the promotion of citizen-owned entities active in the power sector.⁴²

Box 7 Gender of chiefs by year in Zambia

	2017					2018					2019				
	Women		Men		Total	Women		Men		Total	Women		Men		Total
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
Paramount Chief	0.0	0.0	4.0	100.0	4	0.0	0.0	4.0	100.0	4	0.0	0.0	4.0	100.0	4
Senior Chief	3.0	6.7	42.0	93.3	45	3.0	6.7	42.0	93.3	45	3.0	6.7	42.0	93.3	45
Chiefs	24.0	10.1	214	89.9	238	24.0	10.1	214.0	94.5	238	24	10.1	214	95.1	238
Vacant Thrones	0.0	0.0	1.0	100.0	1	0.0	0.0	1.0	100.0	1	0.0	0.0	1.0	100.0	1
	27.0	9.4	260.0	90.6	288	27.0	9.4	260.0	90.6	288	27.0	9.4	260	90.6	288

Source: Ministry of Chiefs and Traditional Affairs, 2019 (in Ministry of Gender, 2020)

³⁷ Republic of Zambia, Ministry of Gender, “Gender Status Report 2017 - 2019.”

³⁸ Malunga, “Parley Approves Turning Gender Ministry into Office of the President Dept, among Other Changes.”

³⁹ AECOM International Development Europe SL, “Enhancement of the Policy, Legal and Regulatory Environment and Capacity Building for Renewable Energy and Energy Efficiency: Gender Assessment of the Energy Sector in Zambia (Version 2).”

⁴⁰ GCF, “Gender Assessment and Action Plan: Zambia Renewable Energy Financing Framework.”

⁴¹ AECOM International Development Europe SL, “Enhancement of the Policy, Legal and Regulatory Environment and Capacity Building for Renewable Energy and Energy Efficiency: Gender Assessment of the Energy Sector in Zambia (Version2).”

⁴² Mate, “The Need to Foster Local Participation in the Zambian Power Sector Part 2.”

The Gender Equity and Equality Act (2015) calls for mainstreaming gender in all strategies, policies, programs and budgets; it also requires public and private bodies to set targets for women’s representation and develop gender action plans to improve the inclusivity and safety of work environments.⁴³

REA is one of the few institutions in Zambia that has a dedicated gender policy. It conducted, with partners, a comprehensive gender assessment for its IAEREP program.⁴⁴ The top findings from that report are presented in **Box 69**.

Regarding recommendations #1 and #8, these are being partly addressed at present. The Zambia Gender and Energy Network (ZGEN) was established in 2004 within the Ministry of Energy and Water Development, and with external support from ENERGIA. In 2011, ZGEN spearheaded the development of a national Gender and Energy Mainstreaming Strategy. At some point, ZGEN fell apart due to a change of funding priorities of ENERGIA’s donors, but it was recently relaunched by USAID as part of the Alternatives to Charcoal (A2C) project focused on clean cooking.⁴⁵

The Non-Governmental Gender Organisations Coordinating Council (NGOCC), founded in 1985, exists as an umbrella

Box 8 Main messages from IAEREP gender assessment report

Key Findings	Key Recommendations
1. Men and women have different energy needs 2. Energy for cooking is overlooked 3. There is a lack of institutional capacity in gender mainstreaming 4. Gender-blind legislation and policies 5. Stakeholder-led energy and gender platform not active any more 6. Sex-disaggregated data and gender-sensitive indicators are lacking 7. There is increased gender balance on Energy Boards but few measures in place to address women’s low representation in the workforce 8. Sexual harassment policies are missing 9. No measures are in place to promote gender equality in procurement 10. Pro-poor approaches are increasingly being used by energy service companies	1. Prioritize energy for cooking 2. Increase use of complementary services to maximize impact 3. Increase women’s representation in workforce 4. Offer training in gender mainstreaming 5. Support M&E units for gender-sensitive data collection 6. Make procurement gender-sensitive 7. Use gender certification procedures for programs and projects 8. Revive the Zambia Gender and Energy Network

network of over 100 nongovernmental, faith-based, and community-based organizations. It has a presence in 62 districts across all 10 provinces. NGOCC and REA have executed an MOU focused on increasing the uptake of household electricity and productive use.

J 2. Gender action plan (GAP)

Efforts will be made to make every part of the Zambia Mini-grid Program gender-aware, inclusive, and equitable, recognizing that doing so is not just the ethical course of action but also the one most likelihood to ensure that program outcomes are achieved. Gender mainstreaming in this program falls along two main axes: 1) making sure

⁴³ AECOM International Development Europe SL, “Enhancement of the Policy, Legal and Regulatory Environment and Capacity Building for Renewable Energy and Energy Efficiency: Gender Assessment of the Energy Sector in Zambia (Version 2).”

⁴⁴ AECOM International Development Europe SL.

⁴⁵ Kayombo, “Gender Mainstreaming through Clean Cooking.”

that men and women are included at all phases of consultation, design, and implementation, and 2) promoting equitable benefit incidence between men and women.

1. To ensure widespread participation and inclusion, the program should:

- Invite women and women's groups' representatives to all project-related discussions, meetings and events, whether at the national or community level; if women are unable to attend (e.g., for financial, transportation, time, childcare reasons), find out why and collaboratively address the barrier
- Encourage women to elevate and amplify each other's voices within meetings by providing speaking opportunities and targeting at least 60-40% gender balance
- Use the program as a platform to promote female role models, connect women and key professional networks in the sector, and foster mentoring opportunities for students and young professionals
- Analyze both women's and men's issues (separately and how they intersect) when undertaking any kind of study (DREI, site/feasibility analysis, outcome harvesting or other program monitoring)
- Engage with male stakeholders, particularly chiefs and family members, to explain the program's gender approach, listen to their concerns and ideas, and ultimately build consensus around women's inclusion and empowerment

2. To promote equitable benefit incidence:

- Foreground gender differences when thinking about what individuals need (e.g., financial literacy, credit, decision-making power within their family, established business track record, professional networks) in order to be able to derive benefits from the pilot programs, tendering, and financing opportunities offered by the program; accommodate those differences during design and implementation
- Leverage program investments in electrification to address women's (and households') single greatest energy need – cooking energy.

An e-cooking pilot will seek to create a field-based learning laboratory to answer fundamental questions about the uptake of e-cooking technology in a mini-grid setting in Zambia. High-efficiency e-pressure cookers are already popular in the country, especially in urban areas, and have the potential to solve major environmental and public health challenges while relieving households of significant drudgery. Initial modelling performed during this project design phase suggests that the adoption of e-cooking can act as a cost-reduction lever for mini-grid development in Zambia (by increasing utilization and driving down tariffs). Thus, the pilot will explore the following research questions:

1. What are the factors that promote or impede rural uptake of e-cooking practices?
2. To what extent can mini-grid technical design specifications be matched to this new type of demand, the dynamics of which may be poorly understood (i.e., how many users will acquire appliances, to what extent will they continue to fuel stack, when will they cook with the appliances, etc.)

MECS (Modern Energy Cooking Solutions) has already done significant research on e-cooking in Zambia that can serve as a starting point and they should be considered as a key ally, if not potential partner, going forward.

Because the use of e-cooking with mini-grids is nascent, it is recommended that the program evaluation remain somewhat open-ended (e.g., using outcome harvesting) to explore the effects of the pilot on mini-grid technical and financial performance, end-user satisfaction and quality of life, and environmental sustainability. Digital data loggers that track usage and time of use for a sample of appliances may be a useful tool to employ.

Due to the risk of outstripping electricity supply, in the case the demand for e-cooking is stronger than expected, it is recommended to attempt the first pilot within an existing community where there are pre-existing mini-grid assets with excess/unutilized capacity.

Initial activities can focus on establishing the community's familiarity with the technology. These might include, among others: short- and long-term user acceptance testing panels, a series of village cooking demonstrations, cooking contests with prizes, and grant-based use of appliances in homes of community leaders or in social

institutions (churches, schools). The extent to which users are willing to shift cooking times based on time-of-use tariffs can also be explored, as can so-called “collaborative consumption” practices.

Willingness to pay surveys can be used to establish baseline expenditures on cooking energy, both monetary and time expenditures. A catalogue of costs and benefits anticipated from e-cooking can also be developed with respondents, for example: additional time available for farming, lower probability of girls missing school, decreased risk of children being burned, etc. Household cash flows (daily, weekly, seasonal) can also be examined so that willingness to pay is also characterized by its temporal aspect.

If there is consumer interest and willingness to pay, the next step is to explore the combinations of subsidy (if any: CapEx, usage tariff, interest rate, etc.) and end-user financing packages that could support market-based distribution of the appliances. This can be done in close consultation with local microfinance providers, savings groups, or agricultural cooperatives. Program timeline permitting, the program can begin to facilitate these transactions, for example, by engaging with finance providers to educate them about the demand for the product and the results of the willingness to pay study, or possibly even backstopping the transactions by providing portfolio guarantees or product guarantees (product breakage being a significant cause of defaults).

Finally, the program can engage with local mini-grid developers, national policymakers, financial institutions, product manufacturers, product distributors, and the regional AMP to share what has been learned from the e-cooking pilot, including user preferences, drivers of uptake, characterization of demand, level of complementary supports required, and assistance in incorporating e-cooking, if warranted, into mini-grid system modelling, demand management, and marketing.

Outcome 1		Gender Mainstreaming Objective		
Stakeholder ownership in a national minigrid delivery model is advanced, and appropriate policies and regulations are adopted to facilitate investment in low-carbon minigrids		Gender diversity and balance in national dialogue, with women's and men's concerns addressed in equal measure, leading to gender-aware policies and regulations (i.e., not gender-blind or gender-neutral)		
Outputs	Gender Actions	Suggested Indicators	Suggested Targets	Budget
1.1 An inclusive national dialogue to identify minigrid delivery models is facilitated, clarifying priority interventions for an integrated approach to off-grid electrification	Participation by NGOCC and ZGEN and their memberships in Task Force events, working groups, steering committees, etc. Mainstreaming of gender into each subject matter discussion	M/F membership M/F representation on committees, boards, etc. M/F event attendance M/F presentations, speaking roles % of presentations, discussions, reports etc. that include a discussion of gender aspects	40% M/F balance 100% of topics, discussions, reports acknowledge gender aspects	USD 10,000
1.2 Minigrid DREI techno-economic analyses carried out to propose most cost-effective basket of policy and financial derisking instruments	Assess level of perceived risk associated with female minigrid developers Assess whether minigrids serving large(r) numbers of women's enterprises, or women's domestic energy needs, require alternative financing and subsidy structures	None	None	USD 10,000
Component 2		Gender Mainstreaming Objective		
Innovative business models based on cost reduction are operationalized, with strengthened private sector participation in low-carbon minigrid development.		A) Business models developed with participatory input succeed in addressing the energy needs of both women and men achieve an equitable benefit distribution B) Women and men equally implicated in electricity supply via mini-grid (and related) businesses		
Outputs	Gender Actions	Suggested Indicators	Suggested Targets	Budget
Pilots developed, including on productive use/innovative appliances and modular hardware/system design, leading to cost-reduction in minigrids (INV)	Ensure mini-grid pilot plan is consistent with REA Gender Policy and objectives; letter of no objection obtained from NGOCC and ZGEN Gender review of digital tendering platform (functioning and applicant requirements) Deliberate outreach and support to female potential mini-grid sponsors	Y/N objection letter Y/N gender review of platform performed M/F sponsored applications to tendering platform M/F successful application to tendering platform % Proposals received that are gender-responsive and include credible action & management plans	No objection Gender review performed At least 40% F applicants At least 40% F awardees 80% of proposals received are gender responsive with credible action & management plans	USD 20,000 (as part of pilot with e-cooking, see Error! Reference source not found.)

	Requirement that submitted proposals be gender-responsive and include gender action and management plans Inclusion of e-cooking activities as part of at least one pilot	% Proposals accepted that are responsive with credible plans No. e-cooking devices used on trial basis, sold (cash and finance), and still in use after one year Usage/performance data collected on e-cookers and effect on mini-grid (for digital platform & learning)	100% of accepted proposals are responsive with plans 50 trial-use e-cookers 50 sold e-cookers 80% of sold e-cookers still in use after 1 year	
Pre-feasibility conducted for selected minigrid sites and replication plan for minigrid development	Mainstream gender and intra-household dynamics into demand estimation, willingness to pay, load profiles, etc. What would these estimates be in the absence of gender inequality? To what extent would initiatives to dismantle gender inequality improve the feasibility of minigrids?	% Feasibility studies mainstreaming gender	100% of feasibility studies	No additional budget, covered under main activity
Component 3		Gender Mainstreaming Objective		
Financial sector actors are ready to invest in a pipeline of low-carbon minigrids and concessional financial mechanisms are in place to incentivize scaled-up investment.		Financing channels tailored for women and men resulting in equitable access to financing products and services		
Outputs	Gender Actions	Suggested Indicators	Suggested Targets	Budget
Innovative financing solutions for minigrid development are identified and designed with supporting human and institutional strengthening	Differentiated analysis of barriers faced by male and female minigrid developers, enterprise customers, and domestic end users Gender-inclusive design of national financing window (appropriate products, tailored processes, reasonable criteria, strategic partnerships with existing financial inclusion initiatives, heavy marketing to underserved borrowers/investees/grantees)	Y/N Gender-differentiated analysis Y/N Gender-inclusive window design	Gender-differentiated analysis Gender-inclusive design	USD 5,000
Domestic financial sector capacity-building on business and financing models for minigrids	Capacity building of financial institutions and initiatives with female-majority client-bases Education of domestic financial sector on specific issues/barriers faced by female-led SMEs and how to address them	# of institutions supported with female majority client bases # of institutions supported to work with female borrowers	TBD TBD	USD 5,000

National report on opportunities to boost economic activities through electricity access and productive use and financial support mechanisms	Gender mainstreaming in report, for example including analysis of intra-household labor allocation, role of land tenure, shadow prices, latent demand, etc.	Y/N	Gender mainstreamed in report	No additional budget, covered under main activity
Component 4		Gender Mainstreaming Objective		
Digitalization and data are mainstreamed, across stakeholders, into local minigrid market development. Increased knowledge, awareness and network opportunities in the minigrid market and among stakeholders, including benefitting from linkages to international good practice		Ensure digital capabilities don't unintentionally discriminate, violate user privacy, or serve as tools of coercive control		
Outputs	Gender Actions	Suggested Indicators	Suggested Targets	Budget
A project digital strategy is developed and implemented, including linkages to and following guidance from the AMP Regional Project	Digital strategy evaluates the risks that smart meters, digital pre-payments, location data, payment data, could disadvantage or endanger women (e.g., who may have lower access to phones, mobile banking, whose family members could remotely disable power, who could be offered less favorable commercial terms, who could be remotely tracked, etc.)	Y/N risks evaluated and accounted for	Risks evaluated and accounted for	No additional budget, covered under main activity
A 'Minigrids Digital and Data Management Platform' implemented to run tenders and manage data from pilots, and to support minigrids scale-up and cost-reduction	Same as above E-tendering module evaluated to ensure that female applicants have equal opportunity, including recourse and advising if stuck in process (website technical issue or substantive question); use of focus groups and beta testing	Y/N platform evaluated; necessary adjustments made	Platform evaluated and necessary adjustments made	USD 10,000
Quality Assurance and Monitoring Framework for measuring, reporting and verification is adopted and operationalized	None at this time	None at this time	None at this time	None at this time
Engage with regional project, via (i) Communities of Practice and (ii) capturing and sharing lessons learnt	Establish a gender community of practice Ensure that events, especially in-person ones, are gender-balanced in their attendance Ensure gender is mainstreamed into the <i>Insight Brief</i>	Y/N gender-themed community of practice M/F attendance at events Y/N gender mainstreamed into <i>Insight Brief</i>	Gender-themed community of practice At least 40% female attendance Gender mainstreamed into <i>Insight Brief</i>	USD 10,000
Component 5		Gender Mainstreaming Objectives		
Monitoring and Evaluation				

Outputs	Gender Actions	Suggested Indicators	Suggested Targets	Budget
Ensuring compliance with all mandatory monitoring and reporting requirements of the GEF	Expand on GEF Core Indicator #11 (number of beneficiaries disaggregated by gender) to include metrics (or alternatively qualitative outcome harvesting) related to the <i>degree</i> of benefit received. For example... For a residential connection: - Do household members use and benefit from electricity in equal measure? - Who decided which appliances to acquire? - Who paid for the connection and appliances? - Who keeps the appliances and connection in case of divorce or widowhood? For commercial connection: - What was the increase in total factor productivity pre- and post-connection? For institutional connection: - What is the gender split of patients/students/clients making use of electricity-enabled services? - Do the various demographics benefit equally?	TBD, but related to <i>extent</i> of benefit	Gender equity	USD 15,000

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