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Stimulating competition, diversification, or re-enforcing entrepreneurial barriers? Exploring small-scale electricity systems and gender-inclusive entrepreneurship

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ABSTRACT

This article provides empirical contributions to our understanding of how small-scale renewable electricity systems (RES) can generate gender-equal opportunities for entrepreneurship in sub-Saharan Africa. This ties with our recent enquiry into the gender-electricity-entrepreneurship nexus (Osunmuyiwa & Ahlborg, 2019). Conceptually, we apply our recently developed *Gender and Socially Inclusive Electricity for Entrepreneurship framework* to explore the degree to which small businesses are growing or changing their production processes through access to RES and the gendered dimensions of these processes. This approach allows us to first; unpack how entrepreneurs in local spaces interact with RES and how this stimulates entrepreneurial opportunities and enables small businesses to develop new product or service offerings. Second, examine how RES reliance on existing socio-political systems and institutions might perpetuate socio-economic and gendered imbalances and affect entrepreneurial outcomes in case communities. We operationalise the analytical approach in a case study of small-scale RES in a rural district of Njombe, Tanzania. Our results reveal a boost in entrepreneurial activities. However, we found gendered differences in the capacity to initiate and sustain new product or service offerings. Similarly, while access to RES affected entrepreneurs' perception about social status by spurring significant changes in views around female business ownership, most women remained in low-growth enterprises due to existing socio-economic and power imbalances. We conclude by providing critical reflections for policy and developmental organisations aiming to deploy RES to promote inclusive electricity use for entrepreneurship in low-income communities.

1. Introduction

The village restaurant owner who travels to town to get grocery supplies sees how other restaurants operate effectively by using refrigerators and ovens. The wish to own these appliances is however compromised by the lack of electricity in the village. With the sudden entry of a non-governmental organisation (NGO) coming to implement an electricity project, the possibility of owning appliances becomes real and the restaurant owner can realise her aspirations of running a better and more profitable business. This is the story of one of the entrepreneurs in our case study of a rural district in Tanzania, and as she reflects: "*I am grateful because if not for electricity, I would not be selling anything. In a day, I sell juice worth twenty thousand or thirty thousand. If it were not for electricity, I would not have made juice. Customers love cold juice. The business would have suffered.*" The above quote echoes the daily realities of Tanzanian entrepreneurs and the transformative role they attach to electricity in their businesses. As we further illustrate in this study (see Section 2), it is why the Government of Tanzania (GoT) through Tanzania's Development Vision (TDV) considers electrification as a critical architecture to catalyse economic development. It also reifies why through several institutional policies, the GoT has actively sought to actualise the United Nations Sustainable Development Goals (SDGs) 7 and 8 on equal access to electricity and economic growth and the UN Sustainable Energy for all (SE4ALL) objectives of affordable, reliable access to modern energy services [2,3]. For Tanzania, the attainment of universal energy access has become explicitly consequential for sustainable growth and industrialisation. However, this industrialisation is largely tied to gender equality (SDG 5) as women not only play a pivotal

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role in the micro, small and medium enterprises (MSMEs) in Tanzania, also 54.3% of MSMEs (1.716 million) belong to women-owned enterprises (WOEs) [4]. As such, the design of gender-sensitive electrification systems will be essential for the actualisation of TDV. Thus, our opening quote not only directs us to explore the links between SDG 5, 7 and 8. It also anchors the goal of this study which is to investigate the conditions affecting entrepreneurship in rural spaces especially in relation to electricity access, and more importantly examine how NGOs formulate project design and delivery models around electrification and its impacts on gendered entrepreneurship in Tanzania.

Small scale renewable electricity systems (from here on labelled "RES")[1] such as mini- and microgrids have become a lever in making SDG 7&8 a reality for the 560 million people [5] without electricity access in SSA. Compared to large-scale centralised grid systems, RES are touted to offer promising potentials for those living without grid electricity access due to their modularity, cost implications and adaptability to local conditions [6]. Beyond the access vector, RES has also become the linchpin for anti-poverty and developmental interventions hoping to promote economic empowerment in rural communities. The relationship between RES and economic empowerment has long been a source of interest in the energy-development and energy-entrepreneurship fields. Much of the research on the type and scale of opportunities presented by RES in this area has been framed within the context of "productive uses", income generation, firm performance and higher financial turn-over [7–10]. For most of these studies, the fixation on labour improvements post electrification and increases gained on households' income have become a proxy for economic development (for an extensive review and critique of this framing see [1,11]).

While the search for growth is laudable, these studies do not address why many women-led or socially marginalised businesses in rural communities struggle to transition from survivalist enterprises to growth-oriented businesses. Responding to the limitations above, the gender and energy field has provided considerable evidence on the barriers gender inequality poses towards the translation and use of electricity for inclusive economic growth [12–17]. This field has yielded valuable insights on gender in relation to economic empowerment, however, these studies have been concerned with poverty alleviation, implicitly characterising entrepreneurship as a male domain by focusing on close to home female businesses; and they have been unable to capture the role of RES as a lever for entrepreneurship [18–22]. As a result, except for our recently developed framework [1] which integrates theoretical insights from the gender-entrepreneurship literature and the gender-energy literature and these few studies [11,23–25], little attention has been paid to the intersection between energy-gender-entrepreneurship and how gender dimensions to entrepreneurial uses of electricity can affect new entrepreneurial opportunities and business ventures at the local level.

To address the above gaps, the objective of this research is to offer empirical insights on how the arrival of electricity changes the entrepreneurial dynamics in rural communities; and, more importantly, to explore how small rural businesses are innovating, growing, or changing their product processes through their utilization of RES and the gendered dimensions of these processes. Specifically, in the low-income context where RES interventions are deployed, there are gender dynamics at play that hamper women's entrepreneurship [1]. RES can accentuate this or be strategically used to level the playing field/counter old barriers. Thus, in this research, we apply our recently developed *Gender and Socially Inclusive Electricity for Entrepreneurship framework* [1] (see Table 1) to unpack the role of RES in creating conducive or re-enforcing inhibitive conditions to the creation of entrepreneurial goods and services at the local level.

[1] RES typically means renewable energy systems, but here we wish to use RES for "small-scale renewable electricity systems.

Table 1
GSIEE framework (based on [our previous paper but also [26]]).

GSIEE-process	Evaluation focus
Objectives & strategy	The prioritisation of a gender-sensitive approach to system objectives i.e., the understanding and inclusion of differential gendered experiences in the formation of system objectives.
System design	The inclusion of men and women as equal participants, co-innovators in the system design. Identifying the gendered process underlying the system design and the degree to which it is tailored to local capabilities, contexts and needs.
Forms of electricity and service delivery	Engendering equal participation in utility's organisation and management. The use of context-sensitive and socially inclusive service delivery models that accounts for contextual barriers to equal opportunities and service access.
Electricity access	The provision of enabling mechanisms that enhances the capacity for men and women to equally mobilise assets, draw on networks, institutions, and discourses to gain electricity (e.g., assistance to access training programs, finance, equipment and facilities). The multi-tier framework [27] may guide the quantitative classification of levels of electricity access at specific points in time.
Electricity use	The analysis of old and new entrepreneurial activities that have emerged due to electrification. Specifically, we assessed electrical usage using metrics such as electricity connections and sustained use from the period connected, appliance acquisition, ownership and use, type of businesses powered (e.g., energy-intensive vs. non-energy intensive), monthly payment of electricity fees. These are metrics that can show how much and often power is consumed. We also examined the cross-sectoral changes that have occurred and how the initiating organisation or project developer has or continues to support men and women's capability to equally utilise electricity services for a range of different purposes.
Electricity outcomes	Monitoring positive and negative outcomes of electrification. In terms of outcomes, as later shown in Section 4.2, we look at tangible measures such as the influence of electrification on people's ability to engage in new businesses. The role of electricity in the acquisition of new appliances, business performance and the quality of products and services offered. Shane's [28] proxy use of firm formation as a measure of entrepreneurial opportunity can also be applied here. Whereas we also examined intangible outcomes like changes in societal norms as well as demand for new electricity services.
Societal impacts	Evaluation of electrification's impact on the repositioning of social and gender norms that prescribe what women and men can and cannot do in communities and marketplaces.

1.1. Introduction to the GSIEE framework

As earlier mentioned, in 2019, we developed the GSIEE [1] framework to make explicit the "linkages between electricity, gender and entrepreneurship to help (re)design socially inclusive electricity systems that tackle gender barriers to entrepreneurship at local and national levels". The GSIEE recognises[2] that starting a new venture or growing an existing one can be remarkably arduous for everyone but most especially women [29,30], who are considerably more likely to be in under-capitalised and in home-turf businesses, embedded in the informal

[2] See [1] for an explanation of the theoretical grounding of the framework. In brief, our intersectional and materialist feminist approach builds on a line of work that explores how gender relations come to matter and are organised and intersect with other power relations at specific places and historical moments [45,73,75–77], with a particular interest in how entrepreneurial practices are constrained and enabled in ways that are also gendered.

economy or survivalist in nature (i.e., class of businesses started to meet the basic needs of the household). This gender imbalance is especially visible with female founders representing a lesser share of ventures able to achieve high-growth outcomes (e.g., high-value acquisitions or equity) [31]. As established in the literature, the introduction of electricity in rural economies is expected to potentially result in new electricity connections and the adoption of complementary equipment and appliances by entrepreneurs to support their businesses. However, our framework recognises that such electricity uptake or the adoption of new appliances may not be evenly distributed across entrepreneurs, who are challenged by liquidity and the ease with which capital flows in and out of their local economy [32,33], who face gendered dynamics and spatial entrapment that compel some to remain in informal low-growth businesses [34] or are enabled/blocked by their interaction with the RES system design [35].

Thus, the framework combines an intersectional and materialist feminist approach with sociotechnical systems thinking and knowledge of entrepreneurship and gender as a crosscutting dimension to explore how entrepreneurs in rural spaces react to their encounters with new electricity systems. The framework highlights the strategies and actions of electricity supply-side actors and the consequences of system design for gendered entrepreneurial possibilities. In this regard, it identifies conditions for (i) enabling electricity access for all by considering individual, contextual and external factors that positively and negatively affect men and women's capability to equally access and (ii) utilise electricity services for a range of different purposes including entrepreneurship. This analysis is achieved by exploring (iii) electricity system objectives; (iv) evaluating how men and women are included as equal co-innovators in the planned system design (v) understanding their participation in technical configuration and service provision and (vi) identifying positive and negative outcomes of electrification projects on new venture creation, business growth, performance and the quality of products and services offered and the impacts of electrification on local economic growth and (vii) assessing electrification's impact on the repositioning of social and gender norms that prescribe what women and men can and cannot do in communities and marketplaces. The application of the GSIEE framework allows us to focus on four empirical areas that are useful for research, policy, and practice.

First, by exploring how entrepreneurs interact with RES, we observe the dynamics of diversification and competition following electrification. Specifically, we see how entrepreneurial aspirations around appliance ownership are translated towards the development of new products and services [36] and how such enactments create inroads for competition, increases in customer base and quality of service that leads to the translation of market demand into profits [37]. When competition leads to the introductions of new products, this can potentially undermine other existing entrepreneurial firms' competitive position. As such, this analysis also allows us to tease out how local competitors respond to changes brought about by new product or service development, observe the type of activities they prioritise and the kinds of capabilities they develop as a response to this competition [38].

Second, we identify gender-related barriers that reinforce stagnation. While electricity access can increase entrepreneurial bricolage (i.e., creation of new businesses by using existing resources within their immediate environment) [24,39,40], this can also dilute women's capacity for growth and increase the feminisation of labour at the household as this leads to more businesses being conducted in tandem with or after domestic chores [41–45]. As argued by Elson, [46] these domestic responsibilities are often detrimental to women in the labour market and serve as a crucial factor in reinforcing women's weak position in terms of entrepreneurial growth or occupational earnings. For feminist economics scholars like Elson [46], labour markets are gendered institutions operating at the intersections between productive and reproductive realms that are often governed by norms, perceptions and practices that are gender ascriptive. Based on these gender ascriptions, labour markets are constructed in a way that the burdens of the reproductive economy are placed on women. Unfortunately, most times inter-personal contributions from the reproductive economy are unacknowledged or even categorised as a liability as they are not reflected in market prices, thus becoming a disadvantage for those who carry out this work. Such gendered disadvantage within the labour market further manifests in ways in which male and female entrepreneurs for instance decide on whether to re-invest money in businesses or prioritise care for their families [47]. As such, an electricity system that was initially empowering may end up re-enforcing stagnation or as Elson describes it "a bearer of gender inequality".

Third, we observe RES induced systemic changes. When entrepreneurs begin to construct new business opportunities, they interact within two environments: the market – that either test the validity of their ideas, and; the wider socio-cultural and institutional environment – that guides the entrepreneurs' subsequent actions and those of others (including suppliers, customers, competitors and institutions) [48,49]. In this regard, entrepreneurs interaction with RES is not limited to profit generation alone as such interactions are also likely to birth new social constructions around gender identity, norms and institutions around entrepreneurship [24]. This feedback is very critical, as both diminishing and positive cyclic impacts of RES on entrepreneurship are often unforeseen.

Finally, the GSIEE allows us to see the degree to which projects are progressive or reproduce unequal opportunities. We critically evaluate electricity design and supply side actors and how they align with or challenge local context and culture. As shown by research in the energy field, most RES designs often rely on existing socio-political systems and institutions [50,51]. This, however, might unintentionally perpetuate socio-economic, power and gendered imbalances that affect entrepreneurial outcomes in case communities. With the GSIEE, we unpack points in the entrepreneurial process where RES might accelerate gender disparities around entrepreneurial capabilities, intentions, and outcomes between male and female entrepreneurs.

We operationalise our analytical approach in a case study of small-scale RES in a rural district of Njombe, Tanzania. We draw on qualitative data collected across five rural wards and eight villages in the Njombe Rural District of Tanzania in 2019. The paper is organised as follows; Section 2 presents a contextual background of RES in Tanzania and the case study areas. Section 3 describes the data collection process and methods applied. Section 4 presents findings on the gendered impacts of the RES on entrepreneurship, focusing on best practices observed and feedback effects. In Section 5, we provide reflections and conclusions.

2. Case context: RES in Tanzania

Tanzania's current population is estimated at 58.1 million people, of which about 65.5% are rural. The electrification rate in Tanzania (in 2020) is pegged at 32.7% with 57% of those with access in urban areas and 18% in rural communities [52]. Grid power generation and supply are overseen by the Tanzania Electric Supply Company Limited (TANESCO). TANESCO is the public utility responsible for electricity supply across the country. Tanzania's grid energy mix is dominated by thermal power (57%) and hydropower (43%) [53,54]. For Tanzania, decentralised electricity provision via renewable energy systems is considered pivotal in addressing the access gap and simultaneously transitioning to low or zero-carbon energy system provision.

The potential of RES to help achieve the national goals are recognised by the Tanzanian government which currently promotes mini and off-grid electrification through the Results-Based Financing (RBF) mechanism and the Rural Energy Agency (REA) [55,56]. The REA coordinates energy access programs, provides a Rural Energy Fund (REF) and serves as a regulatory body to boost private sector development of the electricity sector [57]. Based on the activities of the REA and funds like the REF and RBF, the scale of privately supplied electricity services in Tanzania has significantly increased. As of 2020, 109 mini-grid

systems were operating in Tanzania with an estimated installed capacity of ~158 MW [58].

The GoT recognises gender equality as a precondition for poverty alleviation, mentions the balanced participation of men and women in the energy sector in the National Energy Policy 2015. It established a gender focal point and desk at the Ministry of Energy and has prepared a Gender Strategy and Action Plan, which has gender indicators for monitoring, evaluating, and training staff on gender issues. Nevertheless, the influence and impacts of the gender desk have been questionable and touted as being designed to simply fulfil donor requirements [2,59]. Furthermore, in terms of actual gender-sensitive consideration in systems designs, apart from the 2017 JUMEME (an NGO) and GIZ supported project in Tanzania, 'Unlocking Benefits of Electrification for Women' (UBEW) which aimed to increase JUMEME's consciousness of women as 'productive users of energy' and support of women businesses [60], and our case study, we did not find any other specific organisation that is consciously designing electricity systems using a gender-sensitive approach. As such, while it is clear that electrification and the integration of RES are pivotal towards the actualisation of Tanzania's Development Vision (TDV) [61], it is unknown to what degree new RES are designed and implemented with attention to gender and economic empowerment [62]. We argue that a gender-sensitive design of RES projects may enhance the transformational impacts of electricity services in rural spaces, however, if left unaddressed, gender inequality can hamper attempts to deliver access to electricity services, produce lower returns for service providers, and systematically reinforce gendered economic exclusion in communities of proposed interventions [14,23]. Being aware of the ambivalent role of electricity as de/stabiliser of social hierarchies [26], this research explores how development partners and local organisations in Tanzania address the gendered dimensions of electricity interventions.

Using a case study approach, we analyse a RES project in the Njombe district, evaluating the strengths and weaknesses of this intervention and, using learnings from this case study, we identify best practices for gender-sensitive RES that would accelerate inclusive entrepreneurship.

2.1. The developmental actor and case district

The Ikondo-Matembwe site was chosen as a case study site through discussions with researchers working on electricity provision in Tanzania. Based on these discussions, a local staff of a non-governmental organisation (NGO) - European Committee for Training and Agriculture (CEFA) initiated contact and requested a collaboration to evaluate their project in Matembwe. CEFA is a reputable organisation with three decades of experience in the provision of small-scale electricity systems and support programs for rural communities in Tanzania. The Matembwe hydropower station and power grid was first constructed in 1984 and was handed over to be managed by a newly formed utility in 1991 known as the Matembwe Village Company (MVC Ltd).

MVC was established by CEFA in partnership with other local stakeholders such as the Catholic Dioceses of Njombe; the District of Njombe; the village of Matembwe and MVC employees [63]. MVC is an integrated company; it runs the power company and other agro-processing businesses. In 1999, CEFA began the construction of a second hydropower system in the Ikondo ward, and a separate grid was established in Ikondo. By the late 2000s, electricity demand grew across Ikondo and Matembwe and this led to incessant power cuts. These power cuts prompted CEFA to initiate an upgrade of the Ikondo power station in 2011. The upgrade led to an installation of a second turbine with a generation capacity of 350 kW. It increased the Ikondo power plant output up to 430 kW. A new transmission line integrated the Ikondo grid with the Matembwe grid, connecting villages (see Fig. 1) along the way [55].

The Ikondo II upgrade provided both technical and operational boost for the MVC. The line extensions led to a reduction in service interruptions and dealt with prior capacity constraints. MVC's Ikondo-Matembwe grid now covers five rural wards (Lupembe, Matembwe, Ukalawa, Ikondo and Kidegembye) and 8 villages within the Njombe

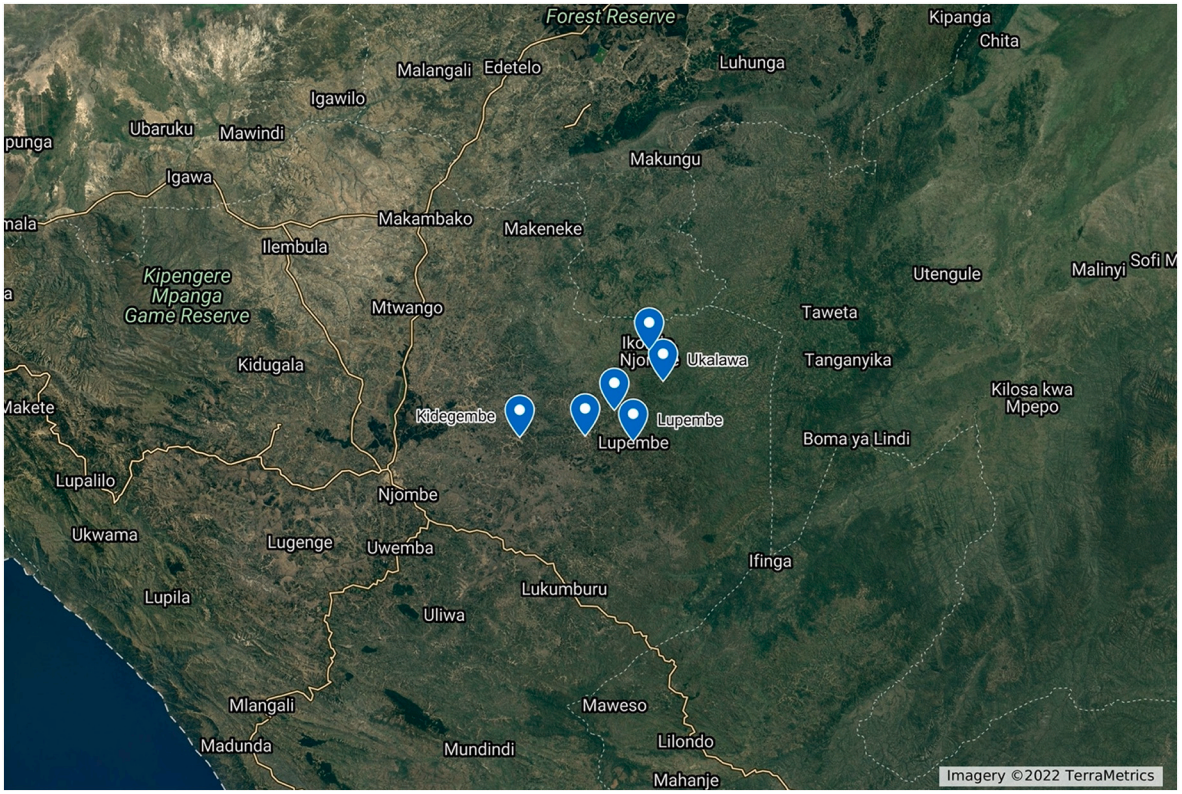

Fig. 1. Satellite view of CEFA's grid coverage in the Ikondo-Matembwe area.

District. The grid serves an estimated population of 21,000 people across the eight largely agrarian villages with timber production and agriculture representing a larger share of the economy. Agricultural products common to the villages are tea, maize, millet, soy, vegetables, wheat, avocado, sunflower, beans, livestock keeping and beekeeping. While these Agri-products account for a high share of household income in the area, production remains seasonal affecting people's ability to earn a stable income.

To stimulate economic activities within the Ikondo-Matembwe area and increase electricity consumption, CEFA began to initiate programs that promoted electricity for productive purposes in the following sectors: farming, agro-processing, forestry and the service industry. To further strengthen the impacts of their programs, CEFA has carried out numerous baseline assessments to identify areas within the agricultural and service sectors that can be transformed through access to electricity services. Matembwe is the largest marketplace and economic hub of the area. Some households and businesses in Matembwe have electricity connections from TANESCO.

3. Methods

Empirical insights on the impact of RES in orchestrating and shaping equal opportunities for male and female- entrepreneurial actions in the case district were generated using qualitative in-depth interviews and focus group discussions. Data collection occurred between July and August 2019, over four weeks in four villages across the Njombe district where CEFA has been active for the past thirty years—Matembwe, Isoliwaya, Ukalawa, and Ikondo. The first three weeks were spent collecting data using semi-structured interviews, informal discussions, and analysing project documentation to understand the electrification process, the utility's service delivery model and map the impacts on entrepreneurial actions. This data is part of a broader study with additional interviews focused on other aspects of the system development (historical) and current functioning. As such, we have a wide database that provides important contextual understanding and knowledge of the electric power system, various user groups and levels of satisfaction among customers in multiple villages.

The first author also spent considerable time along with an interpreter observing the activities at the utility offices in Matembwe and Ikondo. Outside of the utility participants interviewed, most of the interviewees were selected based on the specification provided to the interpreter and the director of the utility who was respected in the community (which allowed us to have access to everyone, poor, rich, women and men). The purpose of the study was discussed with the utility director and the head of CEFA in Matembwe (they shared office), who provided us with a list of businesses connected to the utility's service. To help guide the identification of participants and avert the selection of respondents based on familiarity or likeness, methodological and ethical concerns were discussed with the interpreter before the start of the project.

To capture all aspects of our framework, one interview was conducted with CEFA's head of energy program in Tanzania to generate insights on the objectives behind the system deployment. Seven interviews were conducted with the Ikondo-Matembwe utility staff members to capture electricity design and supply side actors and how they align with or challenge local context and culture by specifically assessing: whether gender was prioritised in the system's objectives; whether men and women were included as change agents in the planned system design; and explore how the utility engendered equal participation in the service provision model. Two interviews were conducted with employees of CEFA supported financial institutions present in Ikondo and Matembwe (SACCOS) and one interview was done with the Matembwe community development officer. To capture and explore the orchestrating nature of RES on entrepreneurial actions across the villages where RES were deployed, 31 semi-structured interviews were conducted with 13 males (one of which was the head of the Ikondo village) and 18 female business owners across the four villages. The interviews were conducted using semi-structured guides as the main form of inquest. Since agricultural businesses and services were the dominant sectors across all villages explored, questions were designed to capture the impacts of electricity on three agricultural value-chains (namely maize, timber and sunflower) and four service sectors (hospitality businesses, shops, tailoring and hairdressing).

Interview questions covered themes such as participants' personal history and entrepreneurial experiences; access to machinery; ease of or challenges experienced when connecting to electricity services; access to support for electricity connection; customer base and competition since electrification; post electricity connection impacts such as business expansions, new opportunities and income; impact on quality of products and services delivered; the identification of external value-chains; changes in the demand for electricity services; changes in the quality of life and/or access to resources; and changes in broader social norms and its influence on gender repertoires and meanings. The interviews were limited to connections that occurred post the Ikondo-II upgrade. The interviews lasted for an average of fifty minutes after which the first author proceeded to informal discussions with participants. Audio recordings were made with the permission of the interviewees, and these were later transcribed, translations were vetted before being coded into themes. Responses from the exercise were coded using the Nvivo QSR International software. Our coding methodology takes both inductive and deductive approaches. An inductive thematic analysis involves an iterative process of coding, where basic themes are first identified and organised (e.g., basic information like gender, location, or business type). This allowed us to identify themes that organically emerged from the data as opposed to forcing preconceived themes based on a predetermined research agenda. This process was followed by a second iterative process where a systematic content analysis process for coding was adopted in which specific statements were identified, categorised, and clustered into themes or patterns that represent the phenomenon of interest [64]. This allowed us to report numerically and graphically some of the information collected in a structured manner (see Table 2). This also served as an iterative coding process where responses were deductively coded to match the GSIEE framework. It is important to note that the processes in the GSIEE framework are not intended nor designed to be applied or used in a specific order, rather these serve as multiple methodological entry points where you can either work your way

Table 2
Entrepreneurs interviewed by gender and value-chain.

Business/ sector	Gender (M)	Gender (f)	Investment type	Entry barrier type	Main business or side business
Farming	1	3	Low	Low	Side
Milling	3	1 owner + 2 assistants	High	High	Main
Restaurant	2	3	Medium	Low/ medium	Main
Guesthouse	2	1	High	high	Main or side
Bar owner	1[a]	1	Medium	Low	Main or side
Carpentry	3	1	High	High/ medium	Main
Hairdressing	0	2	Medium	Low/ medium	Main
Tailoring	1	3	Medium	Low/ medium	Main
Shops/ Mpesa[b]	1	3	Low	Low	Side

[a] Owned by the same guest house owner in Ikondo.
[b] M-Pesa is a mobile phone-based payments, money transfer and microfinancing service.

forward or backwards flexibly. In this case, we started from access and worked our way backwards and forward from there. Pattern analysis was conducted by searching for recurring regularities in the data. Coding was done by the first researcher. Qualitative robustness of findings and claims were discussed within the research team. Also, the information provided by the local NGO and utility staff were cross-checked with existing organisational documents. For a richer analysis, we present our themes as narratives or utterances to identify and amplify "storylines/quotes" that participants use to communicate their electricity-related experiences[65–67]. The objective here is to provide an explanatory picture of our findings (Table 3).

4. Findings

In this section, we present findings showing how interactions between entrepreneurs and RES led to changes in businesses processes and the effectuation of movements from one type of business to the other in the case district. We tease out the contours of impacts and feedback of RES on both gender and entrepreneurial actions in the case district based on the sub-processes identified in our framework (see Fig. 2).

4.1. When RES intersect with entrepreneurial aspirations

In the Ikondo-Matembwe case, six-core factors capture local entrepreneurs' interactions and reactions to the arrival of RES and the gendered dimensions of this in the case district: (i) movement in and outside of existing value-chains (ii) the translation of prior electricity-related aspirations to new product or service offerings (iii) increases in quality and the emergence of competition (iv) entrepreneurial response to competition (v) emergence of entrepreneurial bricolage and (vi) the repositioning of the utility as an entrepreneur. We explore these factors in detail below.

4.1.1. Movement within and across different value-chains and its gendered dimensions

Participants argued that connection to electricity provided a basis for employment within and outside of their previous value-chains. With the completion of Ikondo II and guaranteed access to stable electricity, both men and women within the area began to transition from manualised jobs to electricity-related jobs within and outside of their value chains. Most female entrepreneurs interviewed used to be farmers. However, with stable electricity supplies, they left farming and moved to the service sectors like tailoring, hospitality (guesthouse/bars) and retail. Of this cluster, those who retained ownership of their farms kept these solely for subsistence purposes. Some female entrepreneurs have also transitioned into businesses that were traditionally considered to be within the male space. Several women were found in timber businesses, some have trained as carpenters, while most are looking to move towards milling.

In contrast, many male entrepreneurs have stayed in the agricultural sphere and moved up the Agri value chain from farming to processing. Male millers interviewed had two or three milling shops across the villages and those who owned a single shop had a minimum of two machines. In contrast, only one female miller was found in the four villages assessed. She wanted to expand her business but was unable to re-invest due to household economic burden and a recalcitrant husband who would not perform his "breadwinning" role but pressured her to support him financially. Her refusal to stop diverting her business profits to financially support him (an attitude fostered by cultural expectations of female altruism that are not extended to men) led to the eventual breakdown of the marriage. This example reflects the fact that female entrepreneurs in a low-resource context (characterized by a shortage of financial or material resources) face more socio-cultural challenges (cultural expectations) that limit the extent to which they can adopt new infrastructural resources to address previously identified entrepreneurial opportunities. It also complicates previous claims that women's aversion to risk or lack of faith in their abilities are principal factors affecting their propensity for business expansion [68,69].

Table 3
Institutional respondents interviewed.

Institutional respondents	Gender (M)	Gender (F)
MVC	3	4
CEFA	2	0
Community Development Officer	0	1
Ikondo SACCOS	2	0

4.1.2. The translation of electricity-related aspirations to new product or service offerings

Most entrepreneurs interviewed attributed the actualisation of prior appliance aspirations and ownership to the arrival of RES. This trend was most prevalent in service areas like restaurants, bars, carpentry, tailoring and hairdressing. As described by a female food vendor, access to electricity meant that she could purchase all the appliances she had read about that could boost her profits. "*The first challenge, the biggest was that I didn't have the appliances. It was when I was just starting with very low capital. Then electricity came, I ordered a fridge. When I ordered the milk and put it in the fridge, I found out it wasn't working so I had to pour it all, it was a loss, and it was about 40 litres. Because I bought the milk at one thousand two hundred per litre, and there were forty litres. If we do the math here, it's forty-eight thousand. The person I bought the fridge from replaced it and gave me another one. Now the refrigerator helps with milk. Any milk business without a fridge won't work because the milk and yoghurt need to be chilled. I wouldn't be able to do this milk business without a refrigerator. The microwave helps because my clients get hot food. I may be in the kitchen, just quickly warm up and take to them. They help me do my work faster.*"

A female beer wholesaler expressed the same opinion and argued that her connection to electricity allowed her to own a fridge and start a bar where she could sell cold beer at retail prices. "*Also, electricity is a source to increase my business because… although I sell to those buying beers wholesale. For retail, if there is no electricity, no one will drink the beers at night when it is dark and warm. So, because there is electricity, people can drink at night. Previously, I would sell my wholesale beer until 6 pm, but now that I have a bar, I sell until 9 pm*" For this beer seller, electricity enabled the conversion of existing space (i.e., her shop) to a bar. A space that was previously underused due to the absence of refrigeration and concern for safety. This sentiment was also shared by those in the tailoring industry which credited the integration of electricity with the acquisition of more machines and a higher rate of garment production. Notable is how the acquisition of one appliance propels the acquisition of other appliances and shape the consequent expansion of the business. Most restaurant owners like PC, AG (our first quote in the introduction) referred to their acquisition of one appliance and its impact on their subsequent purchase or willingness to purchase more appliances.

Interestingly, there was a skewed picture regarding the businesses which were able to afford the acquisition of new appliances and machinery. Most men had two or three other electricity-intensive businesses whereas this was not the same for female entrepreneurs as there were fewer women in electricity-intensive businesses. Even when women diversified, it was mostly non-electricity related and this is seen in this quote "*For example, here in Matembwe, if my business does not bring in income as expected, I might decide to rear chicks, so I will rear chicken, take eggs and supply them to people because people here need them. I would even keep pigs so that even when the business here is not working as expected, the other one on the other side boosts me.*" Generally, men were able to diversify more into electricity-related business. For instance, a man in Ikondo owned a water pumping business, bar, guest house and a milling machine. Two factors were found to explain women's non-diversification into more energy-intensive businesses. First, unlike their male counterparts, female entrepreneurs interviewed were responsible for their household's economic survival even though a

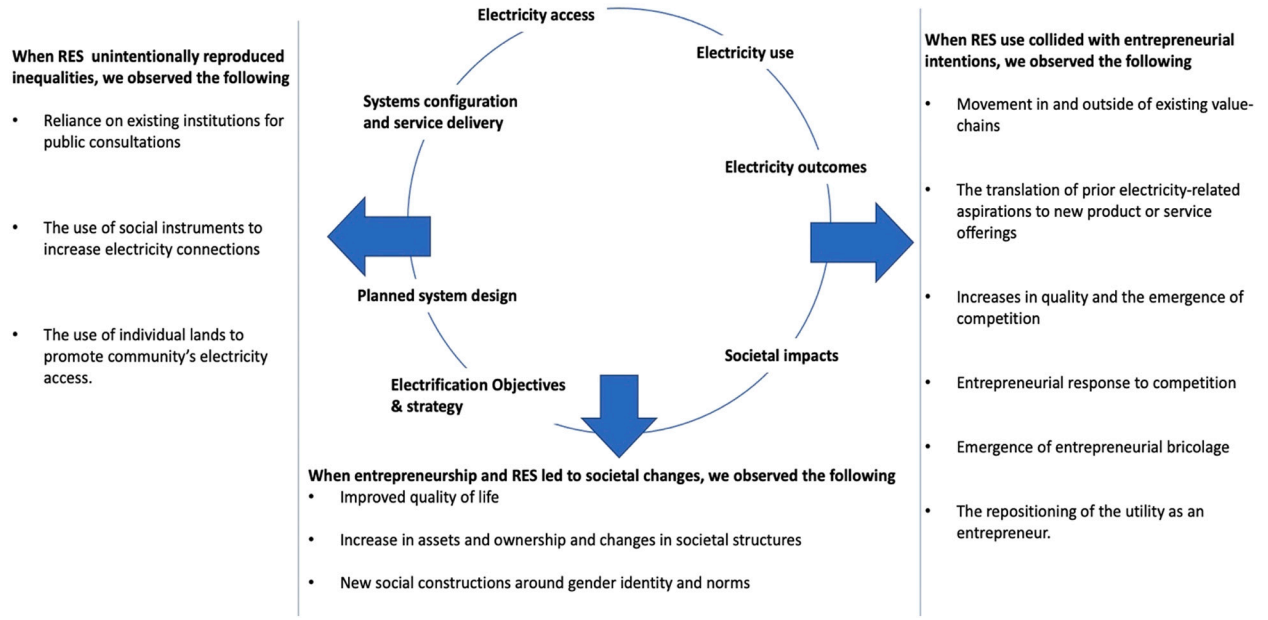

Fig. 2. The application of the GSIEE framework to our case study.

majority belonged to male-headed households. As profits were diverted to household needs, these women became constrained in their aspirations towards appliance/machinery ownership. Furthermore, they explained that their role as the (actual, although not always officially so) financial head of the household made them more disposed to poverty. Second, female entrepreneurs also attributed the lack of appliance acquisition to the fear of becoming economically poorer due to the cost of electricity. Compared to men, a majority of the female entrepreneurs interviewed feared that their bills would excessively increase if heavy machinery or appliances were integrated for business. They also argued that such costs might diminish profits accumulated in the business over time. Probed further, some women reported that they had previously encountered problems getting accurate metering and at some point, paid more than they consumed. This experience created a mentality that an increase in appliance use will likely translate to excessive billing. Also, there was a lack of knowledge on how billing works with participants divided between getting monthly bills from the MVC showing their consumption patterns and the option of prepaid meters perceived to enhance their ability to become efficient with no possibilities of being overcharged based on estimated billing.

4.1.3. The emergence of competition

For businesses assessed, electricity provided a basis for competitive advantage, enabled a new customer base and also increased competition for services. As described above, service providers like restaurant owners attributed higher profit margins to the recent acquisition of appliances like microwaves and freezers. The acquisition of these appliances gave these entrepreneurs first-mover advantages that set them above their contemporaries in terms of profit. However, as fellow entrepreneurs caught up with appliance purchases or the business met with a brick wall such as a breakdown in appliances, this first-mover advantage began to diminish. An example of this is described by a female restaurant owner who discussed how she gained more customers when she bought a juicer and microwave to support her restaurant. However, once the microwave became faulty and she had to rely on charcoal to heat the food, there was a huge customer flight to other competitors who could provide warmer meals. The above experience of competition was shared by tailors as well. As described by an interviewee: "*The challenges are there. I depended so much on my customers, but with time, we have had many tailors who've come up with different costs. Here I charge 10,000 for making normal fabric and at most 15,000 for the latest fashion designs; the cost doesn't get to 20,000. So, you find that some customers prefer the tailors who charge about 6,000 or 7, 000 for the same design or fabric. That's a challenge already because this customer will prefer to go to the cheaper tailor to make their clothes and not come here. And if I reduce my cost/prices of making clothes, I will not make any profit since I use electricity. I won't manage to pay all my expenses*."

For entrepreneurs, in the milling value-chain, competition emerged with the increase in the quantity and quality of services they could offer. Most millers interviewed previously relied on the use of diesel engines. With diesel, they could not mill small quantities of maize per demand as this meant more fuel use per time and more cost for the miller, translating to financial losses for the business. Therefore, most millers waited to accumulate customers daily before switching on their machines. This approach to diesel profit maximation became an industry norm across the villages thus limiting the scale of value differentiation. However, with electric milling, millers were able to distinguish themselves, creating value differentiation for those who could attend to customers per demand. Outside of quantity, the quality of flour milled from diesel-based machinery was a source of concern for both milling machine owners and customers. Flour quality was often affected by the smoke of the diesel, making the flour produced either come out dark or reek of diesel oil. As discussed by one interviewee, "*When we mainly relied on diesel, the flour produced was more, but the quality was poor. These days, there are many milling businesses due to the availability of electricity compared to the time when we used diesel. When we used diesel, there were many people in the businesses, but the quality was low. But it's better now since electricity is more reliable, there are fewer problems and machines using electricity are not as problematic as those that were using diesel*". Probed further on the above statement, the interviewee attributed more production to less competition. With fewer machines, customers had no choice but to patronise the same millers even though the quality of flour produced was bad. However, with electricity came competition, and customers were willing to pay for better quality flour. In this regard, those who had access to electricity potentially undermined their diesel competitors' position.

In the carpentry business, most entrepreneurs who were able to afford heavy machinery retained their first-mover advantage. The acquisition of carpentry machinery was seen as highly capital intensive, and as such, some of the interviewees had to collaborate and merge

resources to buy the required machines. As described by two interviewees "*When we started, we were struggling because we used to operate at other people's places, and we moved from place to place with no permanent place to work from. This was not good hence we put together some funds and got this equipment. If you hire other peoples' machines to work, the income is small as compared to if you have your own. Because if you have your own, you concentrate on paying electricity and maintenance of machines and all the profit is yours. But if you work for someone, every time you use their machine you must pay. So right now, we can retain all the profit*". The capital-intensive nature of the machinery made carpentry a less competition prone business.

4.1.4. Entrepreneurial response to the competition

Entrepreneurs are known to respond to competition by intensifying innovation activities in the form of new product design, service delivery, diversification or by upgrading their capabilities [38]. As shown above, the restaurant, milling, tailoring and hospitality business all experienced some measure of competition due to the low capital required and the low barriers to entry. The increased competition affected the scale of profits as these entrepreneurs began to share the same pool of customers. To address this, entrepreneurs in these sectors had to innovate or prioritise how they responded to competition. Most of the entrepreneurs interviewed in the restaurant business reacted to competition by purchasing appliances that were not available in the community. Some responded by integrating television and subscribing to soccer channels to increase patronage. Others responded by diversifying into other forms of service provision. For instance, a male fish vendor interviewed purchased a chest freezer and began to offer cooling as a service in the community. As described by the vendor: "*[The] freezer has been very helpful regarding the current of life. Without a freezer, you cannot store fresh fish for long. This freezer is for my use, but people come, and I look at it differently. Being humane, I help other people depending on how we agree or how they approach me. They may pay some money, or I store it for free. Yes, like this man with the butchery store or this lady here that makes juice. They both use my freezer and when it comes to settling the electricity bill, they contribute towards it. So, if we have an agreement on the payments, one must pay before storing his or her stuff and when I receive the bill, I settle it personally using my money*".

Reacting to increasing pressure from competitors, other entrepreneurs interviewed diversified into businesses that had low-capital requirements but were embedded into the wider Tanzanian economy. For instance, most shop owners (groceries, communication, hairdressing) diversified into the Mpesa business. Mpesa was prevalent and driven by growth in smartphone ownership, the local cash economy and because it required little financial capital. This was explained by a beautician, who diversified into Mpesa as a response to the competition in the salon business: "*I run a salon, it helped me to increase my capital. Salons have increased due to electricity connections by CEFA. An increase in salons shows that electricity is being used at a bigger percentage. I have also started Mpesa. It's true, electricity has contributed to an increase in competition in businesses. Mpesa shops have also increased after electricity stabilized. There is a big difference now because earlier on, electricity was not stable but now that it has stabilized people are sure there is constant supply, hence increasing Mpesa businesses. I also desire to start another business though I can't do that now because I don't have enough capital to diversify my business*". Finally, in terms of changes in capabilities, this was mostly observed in the garment industry. Most tailors interviewed referred to how their integration of new machinery and appliances changed their production capacities and ability to compete. As described by an interviewee, "*with access to appliances like irons and electric machines, I now produce more garments than when I was reliant on charcoal iron and manual sewing machines.*"

4.1.5. Entrepreneurial bricolage

In resource-poor or penurious contexts, entrepreneurs engage in bricolage i.e., mobilising different resources to tackle resource constraints by reworking and recombining under-valued or discarded resources, such as networks, skills, labour, assets, materials, or practices that are either within reach or can be cheaply acquired [70]. Most female entrepreneurs interviewed engaged in parallel bricolage by adopting the household as an extension of their entrepreneurial space. For these women, after their daily work, electricity is used at night for extra business activities like chicken rearing, baking or tailoring or a combination of two out of three of the listed businesses. The use of the household, rather than a shop, for baking or extra tailoring, enabled these bricoleurs to apply pre-possessed broad sets of skills and craft knowledge to defy the limitations imposed by their limited resources; and to create new products and services (seen also in Kwong et al.'s [39] study of displaced entrepreneurs in war and conflict). It also helped to ensure the constant flow of work and income. Interestingly, female interviewees who engaged in these activities, compared to male interviewees, assumed a higher role in dealing with household poverty. They were often quick to refer to their entrepreneurial role as means to preserve their household's economic survival. This mirrors Elson's [46] argument that women are often expected to take up the bulk of the household and especially children's expenditure from their earnings. Male entrepreneurs interviewed did not refer to their household roles when discussing entrepreneurship, nor did they insist it was their responsibility to address household poverty nor commit to domestic chores. This imbalance between men and women's business/home inputs perhaps explain why men were able to divert their resources to several new businesses. Although for the female interviewees' late-night activities meant "economic empowerment", scholars such as Chant [45] have highlighted how this often leads to an increased work burden which becomes an added layer to the unpaid reproductive work conducted at the household. This underscores why women's unpaid reproductive work should not be discounted when we explore growth trajectories in entrepreneurial activities in rural spaces. Furthermore, while the conducted economic activities might serve as a means for female entrepreneurs to temporarily "get by" due to their penurious environments, this might potentially harm their daily businesses as it spreads their efforts too thin and will likely affect their growth and performance more broadly over time [39,70,71]. As seen from the entrepreneurship literature [70,72], parallel bricolage not only undermines the entrepreneurs capacity to develop organisational routines and practices that might support profitability and growth, it also impedes their capacity to enter richer markets. As such, what was initially empowering may end up re-enforcing stagnation.

4.1.6. The repositioning of the utility as an entrepreneur

The electricity extension project has also presented new business opportunities for the mini-grid utility. With the low connection rates, the utility sought new ways to support long-term technological and appliance ownership that enhances entrepreneurial processes at the community level, while also seeking innovative ways to improve the utility's profitability and revitalise the company's operations. To fulfil this dual vision, CEFA/MVC initiated a series of capacity building training on machinery use while also deploying supportive technologies for agro-processing and carpentry in the Ikondo-Matembwe area. The business training had a gender component and specifically offered women training on how to bake and convert biomass to charcoal. To complement the training, a baking machine was installed at the social centre in Matembwe.

Other non-electrified bakeries based on improved charcoal stoves were also established and at the time of the study, these bakeries employed twelve women across six villages. Furthermore, having identified sunflower as a key agri-product in the area, a sunflower processing machine for hire was provided by CEFA to transform the previously manualised aspect of sunflower oil extraction. Due to the availability of this processing service and its economic potential, there has been a renewed interest in sunflower farming in Ikondo. Outside of the agricultural sector, CEFA also provided machinery to support the carpentry industry by opening workshops run by CEFA staff in Ikondo

and Matembwe where individuals interested in apprenticeship were offered carpentry training. Trainees within the workshops are allowed to bring in their jobs and use the machinery at a fee. Local carpenters interviewed also explained that they use specialised machines at the CEFA workshop which were otherwise unavailable in the village for their businesses.

4.2. When entrepreneurial interactions with RES impacts society and birth new social constructions around gender identity and norms

At the societal level, electricity impacts observed were tilted around an improved quality of life, increase in assets and ownership and changes in societal structures. In terms of life quality and lifestyle changes, women reported that electricity provided the required flexibility to seamlessly shift between household chores and business demands. It allowed women to perform entrepreneurial and business roles during the day while still maintaining socially assigned gendered roles at night or vice versa. Electricity has propelled the emergence of new water infrastructures with more houses investing in electric water pumps that have led to a drastic reduction in the time and labour spent by women navigating hard terrain to get water. Interviewees mostly reflected on the impact of electricity on income and how this enabled the acquisition of more assets. Two guesthouse owners talked about building new houses because of their increased income. A male miller who connected his increased profits to electricity also shared the following "*I have gotten a lot of results like we have been fortunate to buy another house, we bought a new pump, and educated the children.*" Increasingly, people who had previously lived in houses with thatched roofs have also begun to build proper houses to meet the standard requirement for electricity connections.

Most men and a few women reported that the use of electricity in their businesses has earned them respect among peers. Men were more comfortable declaring that they earned respect in the community as they saw this as a form of social capital that can be deployed when loans are needed for business. "*For now, I don't know how they view me, but I… maybe yes, because I am different from others who are just idle. Even while taking loans, it becomes easier because they are familiar with what you do daily, it's different from a person who asks for a loan and has nothing to show as collateral.*" This is similar to Vernet et al.'s. [24] findings that male heads of households' perceptions of their position on the social ladder improved post electrification. Yet, despite these increasing changes in socio-economic conditions, electricity access did not significantly translate to access and control over other resources for women. Rather, as observed with the scale of asset, machinery and appliance ownership (as shown in Section 4.1), men, more than women, had benefited from the intervention. This variation can be attributed to general barriers female entrepreneurs face (credit, resources etc.) and most importantly, women's inability to access electricity support loans like their male counterparts (see Section 4.3 for more). Here we observe complex institutional forces at play, with some advancing and others impeding entrepreneurial activities.

Interestingly, some women's involvement in electricity-related businesses has sparked changes in societal norms around female business ownership. Women were reportedly more motivated to start new businesses having seen other women making profits from newly formed ventures. "*Since I started this restaurant business, other people have also followed suit as they are convinced that restaurant business is profitable and now many have similar businesses around here*". Some women have formed cooperatives to support themselves and provide access to large-scale revolving funds to enable them to actualise their business goals. Also observed was the growth in female apprenticeship in service sectors like tailoring, hairdressing and hospitality. Female business owners in these industries attributed the increase in apprenticeship to mothers wanting their female children to be 'empowered'. This need for empowerment was perhaps responsible for women's transition into businesses that were traditionally considered to be within the male space (see Section 4.1). By assuming roles that deviate from culturally ascribed gendered jobs, women in general, and even some men, have begun to defy and test gendered assumptions around women's roles. A female tailor explains this further in the quote below: "*Some of us women are now making coats, but this kind of job has always been thought of as a man's job. For example, one of my students who is training on stitching coats is doing it well because electricity has made it easier. While women are now training to do other jobs like being a mechanic, that was believed to be a man's job. This is all because of electricity. So right now, anybody can do any job.*"

Despite observable gender barriers, some female entrepreneurs within the area genuinely felt they had a social advantage through their use of electricity. This line of thought was particularly predominant among women-headed households or women with husbands with 'delinquent' behaviour. With access to income from businesses, these women are able to shift the household power dynamics and make both personal and business-based decisions on their own. "*Sometimes back I used to give my husband money because of the vows I made, as an act of being respectful, not knowing he is up to derail my business. When I discovered it, I decided to take a stand. It is not late for me to start over once again. I believe I have all it takes to succeed.*" The downside to this, however, is that female entrepreneurs are assuming greater responsibility or obligation to dealing with household poverty leaving them less room to resist these structurally imposed roles, that become "internalised" or perceived as binding, even when it does not translate to more cooperation in the execution of domestic affairs from their male partners [45]. Having explored the entrepreneurial use and impact of RES, in the next section we examine the electricity design and supply side actors and how their institutional policies align with or challenge local context and culture to influence entrepreneurial opportunities and outcomes.

4.3. When RES design attempts to influence entrepreneurial access but unintentionally plays into the local culture which affects entrepreneurial opportunities for women

It is well established that entrepreneurial opportunities can be affected by the economic situation of an area, by gender barriers in such localities, or how the electricity infrastructure is introduced. In this section, we focus on how the RES system design and modes of supply promote or debar men and women's entrepreneurial access and use of electricity by identifying the direct and indirect gendered consequences of the developmental actor and utility's actions. We focus on the actions of the developer and the entrepreneurs' views of these actions. The developer and utility engaged in three core actions that had a direct and indirect consequence on local entrepreneurship: (i) public consultations and participation in systems design; (ii) the use of social instruments to increase the scale of electricity connections; and (iii) the use of individuals' land to construct electricity systems for the community.

4.3.1. Public consultations and participation in systems design

At the start of the Ikondo II upgrade, CEFA held a series of consultations with village authorities to provide a timeline of the project implementation and discuss the likely impacts of the line extension on existing farmlands. CEFA appointed a community development officer to organise several village meetings across the villages where the line extension would occur as such village-wide involvement was considered pivotal for achieving positive and sustainable outcomes. The community development officer's role was hinged on two objectives: (a) to 'educate' villagers on the purpose of the line extension and increase their knowledge around electricity use for household and business purposes; and (b) to garner the community's support and participation in the line-extension work by providing labour services like digging trenches, making roads and cleaning lines (i.e., making sure the air-borne lines are unhindered by vegetation). CEFA and MVCs engagement with the community was aimed at fostering a democratised and inclusive process. Also, during these community meetings, the foreseen design was proposed, with CEFA making it possible for members to recommend

suggestions and modifications. If such modifications were possible, they were usually taken into consideration before the design is implemented. While CEFA encouraged women to attend these community consultations to foster inclusion, and in some villages more women than men attended, most female entrepreneurs interviewed said they found it difficult to speak in front of men or to be listened to due to the cultural norms in the area. These cultural barriers were observed by the first author during the interviews as women had to be reassured that the information provided to the researcher would not be shared with male members of the community.

4.3.2. The use of social instruments to increase the scale of electricity connections

On the completion of the Ikondo II project, MVC experienced higher energy production as projected, however, electricity connections and use remained marginal. According to data from MVC, of the connections in the smaller villages only one-third were women. Economic poverty as well as the intersection between class and gender played a huge role in this outcome. This is because the plurality of economic activities owned by certain individuals not only underpins the relational aspects of their economic identity but shapes their scale of access to resources [73]. Most of the female entrepreneurs interviewed did not have enough assets to pay for connection fees. To shore up the volume of connections and scale up its developmental impacts, CEFA initiated an instalment payment scheme that enabled businesses and householders to connect to MVC's service. However, after a series of defaults and debts, the instalment system was cancelled and replaced with the creation of the Ikondo financial institution (SACCOS) — designed to provide loan supports for electricity connections. The interest rates charged on the support loans were pegged at 1% to reduce the possibility of default. At the time of the study, the Ikondo SACCOS had provided 300 men and 100 women with electrification support loans, and this increased connections in the Ikondo area.

When asked about the electricity loan support, the entrepreneurs interviewed agreed that the low-cost loan allowed a series of household connections as well as business connections as some entrepreneurs used the loan to purchase equipment. Both the SACCOS employees and entrepreneurs were asked why there was a 3:1 ratio and gender gap among the electricity support loan recipients. Female entrepreneurs interviewed attributed the gender gap to two main factors. First, the asset ownership requirement of the loan process meant most women were unable to access this facility as they didn't have the required collateral. This barrier is unsurprising as women's lack of control over assets has been found to reduce their capacity to invest in appliances or venture into new businesses [16,74].

Second, most female entrepreneurs interviewed were afraid of the penalties attached to defaulting. The absence of clear information on what the terms of repayment or defaults were discouraged women from taking loans. According to the SACCOS rule, loan defaulters are given six months leave, after which the individual can apply for another loan. While, surprisingly, male entrepreneurs were familiar with this rule — essentially giving first-mover access to loans — female entrepreneurs interviewed had little or no information about the ability to reapply for loans even after a default. They were more worried about the seizure of their assets in the event of a default and thus abstained from applying. This fear of penalisation invariably affected the overall female connection rates observed in smaller villages like Isoliwaya, Kanikelele and Ukalawa.

To lower electricity costs and tackle inequity in connection rates, in 2017 CEFA and MVC both co-applied for the Results-Based Financing (RBF) scheme provided by the Government of Tanzania (through the REA). The RBF offers capital grants as incentives for renewable mini/micro-grid companies to provide rural electrification services or expand ongoing electrification activities in off-grid or remote areas across Tanzania. To meaningfully apply the RBF in the Ikondo-Matembwe area, CEFA in collaboration with MVC conducted household surveys to reach an aggregated electricity connection cost for customers. Based on results from these surveys, and through the RBF fund, electricity subsidies were provided reducing the cost of connections from 800,000 Tanzanian shillings to 350,000 shillings (from USD 346 to USD136 based on rates in August 2021). With connection cost reduced, the Ikondo SACCOS expanded its electricity support portfolio and included the provision of electricity materials as a loan product. Cumulatively, these interventions led to over 180 new electricity connections.

Despite the RBF, electricity connection costs remained a major barrier for interviewees from low-income households of which the majority were women. Interviewed business owners without access still found the connection costs high — thus limiting their entrepreneurial and appliance ownership aspirations. Due to these high costs, some female entrepreneurs interviewed spoke about having to choose between accessing credit for business or accessing credit to connect to electricity. This would explain why most female entrepreneurs interviewed were found in less electricity-intensive businesses. Furthermore, the RBF scheme, which sought to level the access field for low-income households, was perceived as unjust by those who had previously connected and paid higher connection costs (800,000 shillings). Issues of equity, in this case, transcended not only gender but also class.

4.3.3. The use of individuals' land to construct electricity systems for the community

In one of the villages, five female participants reported that their land was appropriated for community electricity needs without being consulted. As expressed by the leader of the women: "*I wanted to build another house as a guest house but when MCV were connecting electricity they passed through my land and put a junction box. The lines pass through most of my property. What remains is a small portion that cannot be used for building. No one consulted me before placing it there. I complained to MVC, and they said that all this is for development purposes. Yet, with the cost of CEFA, I cannot connect*". Although land use for electricity expansion within the villages has always been required for free by CEFA without compensation (unlike TANESCO which pays), however, most men interviewed whose lands were used were consulted.

When compared to male counterparts, female entrepreneurs whose lands were used for the line extension lacked the agency to object to this decision. This is because the culture in the district and the institutional laws around land ownership gave male relatives or political figures decision-making powers on lands owned by women. After the expansion, these five women remained unconnected due to the cost of connection that was unaffordable to them. From a gender and entrepreneurial perspective, the utility's land approach created and reenforced myriad layers of exclusion; (i) agentic denial — as a portion of the women's land was used without consent; (ii) material redundancy — as what is left of the land becomes unsuitable for commercial activities that require new building infrastructures (due to lines passing in the ground) and (iii) social exclusion — as others can connect and enjoy the benefits of electrification using the infrastructure on the women's land, while the landowners remain without electricity due to their inability to afford connection costs. In this scenario, the intervention unknowingly reproduced and cemented the exclusion women face over land matters in the case district, inevitably, making these women passive victims of electrification. While this was not the intention of CEFA, however, by allowing a process where women were not asked, the developer played into existing socio-cultural structures to dispossess women. This reifies calls that low carbon technologies can indeed reinforce local inequities if reliant on existing social structures and practices [14].

5. Reflections and conclusion

This paper has examined how the arrival of electricity (RES) changes the entrepreneurial dynamics in rural communities and the gendered dimensions of these processes. Applying our developed framework,

Gender and Socially Inclusive Electricity for Entrepreneurship framework to a rural district in Tanzania, we investigated how entrepreneurs interact with the system, translate prior aspirations to create new product and service processes, stimulate and respond to competition and the feedback effects of RES on broader community changes. Additionally, we assessed how attempts by supply-side actors in the design of RES, implementation and promotion of electricity access might accelerate gender disparities around entrepreneurial intentions and outcomes.

Based on our findings, our research offers two critical reflections for policy and developmental organisations aiming to deploy RES in rural spaces. Here, we discuss our specific case as an illustration of what we believe are more generic patterns in the energy sector of sub-Saharan Africa. However, our single case can only contribute to a wider base of evidence that is necessary for statements around the prevalence of such issues. Still, we believe our reflections can serve a dual role: a cautionary tale against the assumed gender and class neutrality of RES, and a lighthouse on the difference that a gender-sensitive design makes on entrepreneurial and developmental outcomes in rural spaces. These two sides are explored further below.

First, access to credit to support new electricity connections is a point in the entrepreneurial process where RES might accelerate gender disparities around entrepreneurial intentions and outcomes. Access to credit is a major entrepreneurial asset that enables businesses to undertake new product or service offerings. In rural spaces, most entrepreneurs are continually likely to engage in credit-seeking activities to manage resource constraints and foster the creation of wealth. The high costs of electricity connection and/or the financial implications of connecting to RES exerts financial constraints on the entrepreneur as he/she would have to choose between accessing credit to build the business or diverting this to support electricity connections that would potentially spur growth. As the access to credit is traditionally skewed to favour men with assets that can be deployed as collateral [31], this choice-making element might further accelerate gender disparities around entrepreneurial intentions and outcomes in rural spaces. As seen with our case study, men more than women were able to connect and use electricity for electricity-intensive businesses. This is similar to [23] findings in Tanzania which showed that men's economic edge within the local economy, principally their dominance in energy-intensive businesses, made them higher beneficiaries of interventions to promote the productive use of electricity. The women in our case study mostly had access to exiguous credit and capital, thus discouraging attempts at business expansion and jeopardising women's attempts to increase access to material resources. Whereas for men, their access to and ownership of property made the choice between business expansion and electricity connection a less difficult decision to make. Access to assets also allowed men to benefit more from the electricity support fund than women, creating the highly gendered electricity connection disparities observed. While electricity loan requirements feature as a gender barrier to business expansion in our case study, in the case communities explored by [23], some male and female businesses that got electricity support loans struggled to make repayments. From both analyses, it is obvious that the ways in which electricity support loans are designed, targeted and structured must be analysed in order not to reinforce the double burden of poverty that has been highlighted across several literature (see [43,45]). Thus, we argue that conscious efforts to counteract gendered asset differences could make a significant difference.

Second, developmental actors and utilities' reliance on existing social-political institutions and structures to deploy RES can become inimical to developmental and gender equity objectives of interventions. The project's attempt at improving the condition of women through participatory exercises did not pose a deeper challenge to men's position or condition within project set-ups or society. This is illustrative of how men's voices and interests typically take precedence in development projects even when limited attempts are made to enhance women's participation in the decision-making processes around project implementation (see reflections from Johnson 2005, p. 57 around poverty programs). It compromised the project's ability to encourage women's participation in the decision-making processes around project implementation. Women did however explain how their new activities as entrepreneurs gave them larger room to manoeuvre in daily life, and some shifts in gender norms could be observed (for similar findings on how entrepreneurship challenge gender norms and renegotiate gender identities see [73]). This shows that despite the durability of gendered economic structures, the increase in business ownership is a key point in the entrepreneurial space and labour market where women are contesting gender hierarchy and subordination [75]. This situation illustrates the duality of RES in shaping the reproduction of social hierarchies while orchestrating a parallel destabilization of existing structures and norms [35,43].

While we know individual projects such as CEFA's cannot singlehandedly change women's structural barriers, projects always run the risk of unwittingly reproducing inequalities, unless deeper attention is paid to gender and structural dynamics in the local context. Direct effects on entrepreneurship may be easier to spot, whereas indirect consequences (such as access to collateral) are rarely identified beforehand. The problem with relying on existing power structures and hierarchies within the village become especially clear in how the project dealt with land acquisition. The approach made sense from a development practice perspective stipulating electricity as providing collective benefits but became unfavourable to women and detrimental towards the NGO's institutional goal of women empowerment. Land use, like other major economic assets, are often gendered [43] which undermines what appears as a neutral or gender-equal treatment of entrepreneurs. In contexts where the existing culture around property rights and female land ownership disadvantage women, the consequence of not providing compensation and relying on local institutions like the village authorities for land negotiations is likely, we argue, to inadvertently exclude and dispossess women. We welcome further research on this matter. One can insist, follow up on and invest resources that would disrupt existing structural barriers that might hinder women's access and use of electricity. In conclusion, while we observed the influence of RES on new products and/or service processes as well as competition within the case villages, as we have seen throughout our case analysis, electricity can also increase women's entrepreneurial privations by upholding existing structural barriers that affect women's capacity to build sustainable businesses, thus diminishing the prospects of them rising beyond the valley of survivalist entrepreneurs.

Declaration of competing interest

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References

[1] O. Osunmuyiwa, H. Ahlborg, Inclusiveness by design? Reviewing sustainable electricity access and entrepreneurship from a gender perspective, energy resSoc. Sci. 53 (2019) 145–158, https://doi.org/10.1016/j.erss.2019.03.010.
[2] TANZANIA MINISTRY OF ENERGY AND MINERALS, TANZANIA'S SE4ALL ACTION AGENDA, 2015.
[3] TANZANIA MINISTRY OF ENERGY, TANZANIA'S SE4ALL Gender Action Plan, 2018, https://doi.org/10.1007/978-1-349-07782-3_161.
[4] N. Mori, Women's Entrepreneurship Development in Tanzania: Insights and Recommendations, 2014 doi:ISBN 978-92-2-129311-8.
[5] IEA, Access to electricity – SDG7: Data and Projections, Flagsh. Rep 2020, 2020. https://www.iea.org/reports/sdg7-data-and-projections/access-to-electricity. (Accessed 14 January 2022).

[6] J. Ehnberg, H. Ahlborg, E. Hartvigsson, Approach for Flexible and Adaptive Distribution and Transformation Design in Rural Electrification and Its Implications, 2019.
[7] R.A. Cabraal, D.F. Barnes, S.G. Agarwal, Productive uses of energy for rural development, Annu. Rev. Environ. Resour. 30 (2005) 117–144, https://doi.org/10.1146/annurev.energy.30.050504.144228.
[8] J.De Groot, N. Mohlakoana, A. Knox, H. Bressers, Fuelling Women's Empowerment? An Exploration of the Linkages Between Gender, Entrepreneurship and Access to Energy in the Informal Food Sector, 2017, https://doi.org/10.1016/j.erss.2017.04.004.
[9] J. Terrapon-Pfaff, M.-C. Gröne, C. Dienst, W. Ortiz, Productive use of energy-pathway to development? Reviewing the outcomes and impacts of small-scale energy projects in the global south, Renew. Sustain. Energ. Rev. (2018) 198–209, https://doi.org/10.1016/j.rser.2018.07.016.
[10] C. Kirubi, A. Jacobson, D.M. Kammen, A. Mills, Community-based electric micro-grids can contribute to rural development: evidence from Kenya, World Dev. 37 (2009) 1208–1221, https://doi.org/10.1016/j.worlddev.2008.11.005.
[11] A. Pueyo, M. Maestre, Linking energy access, gender and poverty: a review of the literature on productive uses of energy, energy resSoc. Sci. 53 (2019) 170–181, https://doi.org/10.1016/j.erss.2019.02.019.
[12] N. Ojong, The rise of solar home systems in sub-saharan Africa: examining gender, class, and sustainability, Energy Res. Soc. Sci. 75 (2021), 102011, https://doi.org/10.1016/J.ERSS.2021.102011.
[13] S. Pachauri, N.D. Rao, Gender impacts and determinants of energy poverty: are we asking the right questions? This review comes from a themed issue on energy systems, Curr. Opin. Environ. Sustain. 5 (2013) 205–215, https://doi.org/10.1016/j.cosust.2013.04.006.
[14] E. Fingleton-Smith, Blinded by the light: the need to nuance our expectations of how modern energy will increase productivity for the poor in Kenya, Energy Res. Soc. Sci. 70 (2020), https://doi.org/10.1016/j.erss.2020.101731.
[15] R. Mendum, M. Njenga, Integrating wood fuels into agriculture and food security agendas and research in sub-saharan, Africa (2018), https://doi.org/10.1139/facets-2017-0032.
[16] T. Winther, K. Ulsrud, M. Matinga, M. Govindan, B. Gill, A. Saini, D. Brahmachari, D. Palit, R. Murali, In the light of what we cannot see: exploring the interconnections between gender and electricity access, Energy Res. Soc. Sci. 60 (2020), https://doi.org/10.1016/j.erss.2019.101334.
[17] G. Kelkar, D. Nathan, Gender relations and the energy transition in rural, Asia (2005) 1–33.
[18] A.L. Kooijman-van Dijk, J. Clancy, Impacts of electricity access to rural Enterprises in Bolivia, Tanzania and Vietnam, energySustain. Dev. 14 (2010) 14–21, https://doi.org/10.1016/j.esd.2009.12.004.
[19] M. Kanagawa, T. Nakata, Analysis of the energy access improvement and its socio-economic impacts in rural areas of developing countries, Ecol. Econ. 62 (2007) 319–329, https://doi.org/10.1016/j.ecolecon.2006.06.005.
[20] A. Yadoo, H. Cruickshank, The role for low carbon electrification technologies in poverty reduction and climate change strategies: a focus on renewable energy mini-grids with case studies in Nepal, Peru and Kenya, Energy Policy 42 (2012) 591–602, https://doi.org/10.1016/j.enpol.2011.12.029.
[21] A. López-González, B. Domenech, L. Ferrer-Martí, The gendered politics of rural electrification: education, indigenous communities, and impacts for the Venezuelan guajira, Energy Res. Soc. Sci. 70 (2020), https://doi.org/10.1016/j.erss.2020.101776.
[22] S. Kankam, E.K. Boon, Energy delivery and utilization for rural development: lessons from northern Ghana, energySustain. Dev. 13 (2009) 212–218, https://doi.org/10.1016/j.esd.2009.08.002.
[23] A. Pueyo, M. Carreras, G. Ngoo, Exploring the linkages between energy, gender, and enterprise: evidence from Tanzania, World Dev. 128 (2020), https://doi.org/10.1016/j.worlddev.2019.104840.
[24] A. Vernet, J.N.O. Khayesi, V. George, G. George, A.S. Bahaj, How does energy matter?Rural electrification, entrepreneurship, and community development in Kenya, Energy Policy 126 (2019) 88–98, https://doi.org/10.1016/j.enpol.2018.11.012.
[25] C. Niethammer, P. Alstone, Expanding women's role in Africa's modern off-grid lighting market: enhancing profitability and improving lives, Gend. Dev. 20 (2012) 145–157, https://doi.org/10.1080/13552074.2012.663611.
[26] H. Ahlborg, A.J. Nightingale, Theorizing power in political ecology: the where of power in resource governance projects, J. Polit. Ecol. 25 (2018) 350–425, https://doi.org/10.2458/v25i1.22804.
[27] International Energy Agency (IEA), The World Bank., Sustainable Energy for All 2015—Progress Toward Sustainable Energy, Washington, DC, 2015, https://doi.org/10.1596/978-1-4648-0690-2.
[28] S. Shane, in: A General Theory of Entrepreneurship: The Individual-opportunity Nexus - Scott Andrew Shane - Google Libros, New Horiz. Entren., 2003, pp. 1–315. https://books.google.rw/books?hl=en&lr=&id=0FxO_Wsh30kC&oi=fnd&pg=PR9&ots=7dXDwmo9Fg&sig=6Wkc5d2VbB7d0zXA0zrJMmY2T7g&redir_esc=y#v=onepage&q&f=false. (Accessed 15 January 2022).
[29] J. Guzman, A. Kacperczyk, Gender Gap in Entrepreneurship (2018), https://doi.org/10.1017/CBO9781107415324.004.
[30] C.S. Tundui, H. Tundui, Survival, growth strategies and performance of women owned micro and small businesses in Tanzania, Int. J. Bus. Manag. 7 (2012) 143–155, https://doi.org/10.5539/ijbm.v7n8p143.
[31] V. Naegels, N. Mori, B. D'Espallier, An institutional view on access to finance by tanzanian women-owned enterprises, Ventur. Cap. 20 (2018) 191–210, https://doi.org/10.1080/13691066.2017.1358927.
[32] M.P. Blimpo, M. Cosgrove-Davies, Electricity access in sub-saharan Africa uptake, reliability, and complementary factors for economic impact, Africa devWorld Bank (2019), https://doi.org/10.1596/978-1-4648-1361-0.
[33] M. Grimm, L. Lenz, J. Peters, M. Sievert, Demand for off-grid solar electricity – experimental evidence from Rwanda, Ssrn. (2019) 1–36, https://doi.org/10.2139/ssrn.2921081.
[34] T.G. Langevang, V. Katherine, Paul W.K. Yankson, George Owusu, Robert Osei, Bounded entrepreneurial vitality: the mixed embeddedness of female entrepreneurship, Econ. Geogr. 91 (2015) 449–473, https://doi.org/10.1111/ecge.12092.
[35] H. Ahlborg, Towards a conceptualization of power in energy transitions, Environ. Innov. Soc. Trans. (2017) 1–20, https://doi.org/10.1016/j.eist.2017.01.004.
[36] S.A. Alvarez, J.B. Barney, Discovery and creation: alternative theories of entrepreneurial action, Strateg. Entrep. J. 1 (2007) 11–26, https://doi.org/10.1002/sej.4.
[37] S. Ramoglou, E.W.K. Tsang, A realist perspective of entrepreneurship: opportunities as propensities, Acad. Manag. Rev. 41 (2016) 410–434, https://doi.org/10.5465/amr.2014.0281.
[38] S. Moreira, T.M. Klueter, S. Tasselli, Competition, technology licensing-in, and innovation, Organ. Sci. 31 (2020) 1012–1036, https://doi.org/10.1287/orsc.2019.1337.
[39] C.C.Y. Kwong, C.W.M. Cheung, H. Manzoor, M.U. Rashid, Entrepreneurship through bricolage: a study of displaced entrepreneurs at times of war and conflict, Entrep. Reg. Dev. 31 (2019) 435–455, https://doi.org/10.1080/08985626.2018.1541592.
[40] V.Y. Atiase, S. Mahmood, Y. Wang, D. Botchie, Developing entrepreneurship in Africa: investigating critical resource challenges, J. Small Bus. Enterp. Dev. 25 (2018) 644–666, https://doi.org/10.1108/JSBED-03-2017-0084.
[41] K.H. van E. Gudeta, L. Marloes, Work-life boundary management styles of women entrepreneurs in Ethiopia - "choice" or imposition? J. Small Bus. Enterp. Dev. 25 (2018) 368–386, https://doi.org/10.1108/jsbed-02-2017-0073.
[42] R. Grant, Gendered spaces of informal entrepreneurship in soweto, South Africa, Urban Geogr. 34 (2013) 86–108, https://doi.org/10.1080/02723638.2013.778640.
[43] T. Langevang, K.V. Gough, P.W.K. Yankson, G. Owusu, R. Osei, Bounded entrepreneurial vitality: the mixed embeddedness of female entrepreneurship, Econ. Geogr. 91 (2015) 449–473, https://doi.org/10.1111/ecge.12092.
[44] M. Tillmar, Gendering of commercial justice – experience of self-employed women in urban Tanzania, J. Enterprising Communities People Places Glob. Econ. 10 (2016) 101–122, https://doi.org/10.1108/JEC-01-2016-0004.
[45] S. Chant, Exploring the "feminisation of poverty" in relation to women's work and home-based enterprise in slums of the global south, Int. J. Gend. Entrep. 6 (2014) 296–316, https://doi.org/10.1108/IJGE-09-2012-0035.
[46] D. Elson, Labor markets as gendered institutions: equality, efficiency and empowerment issues, World Dev. 27 (1999) 611–627.
[47] S. Friedson-Ridenour, R.S. Pierotti, Competing priorities: women's microenterprises and household relationships, World Dev. (2019), https://doi.org/10.1016/j.worlddev.2019.04.008.
[48] D. Dimov, Grappling with the unbearable elusiveness of entrepreneurial opportunities, Entrep. Theory Pract. (2011), https://doi.org/10.1111/j.1540-6520.2010.00423.x.
[49] K. Weick, The Social Psychology of Organizing, 2nd Editio, Addison-Wesley, Reading, MA, 1979.
[50] C. Muhoza, O.W. Johnson, Exploring household energy transitions in rural Zambia from the user perspective, Energy Policy 121 (2018) 25–34, https://doi.org/10.1016/j.enpol.2018.06.005.
[51] K. Ulsrud, H. Rohracher, T. Winther, C. Muchunku, D. Palit, Pathways to electricity for all: what makes village-scale solar power successful? energy resSoc. Sci. 44 (2018) 32–40, https://doi.org/10.1016/j.erss.2018.04.027.
[52] Power Africa, Power Africa in Tanzania | Power Africa, U.S. Agency for International Development, 2020. https://www.usaid.gov/powerafrica/tanzania. (Accessed 24 August 2021).
[53] H. Ahlborg, Changing energy geographies: the political effects of a small-scale electrification project, Geoforum 97 (2018) 268–280, https://doi.org/10.1016/j.geoforum.2018.09.016.
[54] D. Chaplin, A. Mamun, A. Protik, J. Schurrer, D. Vohra, K. Bos, H. Burak, L. Meyer, A. Dumitrescu, C. Ksoll, T. Cook, Grid Electricity Expansion in Tanzania by MCC : Findings from a Rigorous Impact Evaluation, 2017.
[55] S. Best, B. Garside, Remote but Productive Using Energy Access Investments to Catalyse Enterprises and Income in Tanzania's Rural Communities, 2016.
[56] MEM, Tanzania Energy Sector Overview, 2016. http://www.mem.go.tz.
[57] MEM, Electricity Supply Industry Reform Strategy and Roadmap 2014-2025, 2014.
[58] V. Menghwani, H. Zerriffi, A. Korkovelos, B. Khavari, A. Sahlberg, M. Howells, D. Mentis, Planning with justice: using spatial modelling to incorporate justice in electricity pricing – the case of Tanzania, Appl. Energy (2020), https://doi.org/10.1016/j.apenergy.2020.114749.
[59] TANZANIA MINISTRY OF ENERGY, NATIONAL ENERGY POLICY (2015) 2015.
[60] GIZ, Unlocking Benefits of Electrification for Women, 2018.
[61] L. Odarno, E. Sawe, M. Swai, M.J.J. Katyega, A. Lee, Accelerating Mini- Grid Deployment in Sub-Saharan Africa, 2017.
[62] T. Winther, M.N. Matinga, K. Ulsrud, K. Standal, Women's empowerment through electricity access: scoping study and proposal for a framework of analysis, J. Dev. Eff. (2017), https://doi.org/10.1080/19439342.2017.1343368.
[63] RES4Africa Foundation, Applying The Water-energy-food Nexus Approach to Catalyse Transformational Change in Africa, 2019.

[64] B.K. Sovacool, J. Axsen, S. Sorrell, Promoting novelty, rigor, and style in energy social science: towards codes of practice for appropriate methods and research design, energy res, Soc. Sci. 45 (2018) 12–42, https://doi.org/10.1016/j.erss.2018.07.007.
[65] R. Burnett, Accounts and narratives, in: Stud. Interpers. Interact, 1991, pp. 121–140.
[66] I. Chabay, Narratives for a sustainable future: Vision and motivation for collective action, in: Glob. Sustain. Cult. Perspect. Challenges Transdiscipl. Integr. Res, Springer International Publishing, 2015, pp. 51–61, https://doi.org/10.1007/978-3-319-16477-9_3.
[67] G. Bowman, R.B. MacKay, S. Masrani, P. McKiernan, Storytelling and the scenario process: understanding success and failure, Technol. Forecast. Soc. Change. 80 (2013) 735–748, https://doi.org/10.1016/j.techfore.2012.04.009.
[68] M. Mittal, R.K. Vyas, A study of psychological reasons for gender differences in preferences for risk and investment decision making, IUP J. Behav. Financ. 8 (2011) 45–60. http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=71423465&site=ehost-live.
[69] J. Aspara J.-A. Laukia H. Tikkanen , Strategic Management of Business Model Transformation: Lessons From Nokia, (n.d.). doi:10.1108/00251741111126521.
[70] T. Baker, R.E. Nelson, Creating something from nothing: resource construction through entrepreneurial bricolage, Adm. Sci. Q. 50 (2005) 329–366, https://doi.org/10.2189/asqu.2005.50.3.329.
[71] C. Busch, H. Barkema, From necessity to opportunity: scaling bricolage across resource-constrained environments, Strateg. Manag. J. 42 (2020) 741–773, https://doi.org/10.1002/smj.3237.
[72] B. Johannisson, Towards a practice theory of entrepreneuring, Small Bus. Econ. 36 (2011) 135–150, https://doi.org/10.1007/s11187-009-9212-8.
[73] A.M. Oberhauser, Relocating gender and rural economic strategies, Environ Plan. A. 34 (2002) 1221–1237, https://doi.org/10.1068/A34224.
[74] M. Lindvert, D. Yazdanfar, H. Boter, Perceptions of financial sources among women entrepreneurs in Tanzania, African J. Econ. Manag. Stud. 6 (2015) 197–218, https://doi.org/10.1108/AJEMS-10-2013-0090.
[75] S. Hanson, Changing places through women's entrepreneurship, Econ. Geogr. 85 (2009) 245–267, https://doi.org/10.1111/J.1944-8287.2009.01033.X.
[76] J.W. Scott, Gender and the Politics of History, Revised edition, Columbia University, 1999.
[77] R.W. Connell, Gender and Power: Society, the Person and Sexual Politics, Stanford University Press, 1987.