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Community imaginaries, participation and acceptance of renewable energy projects – substituting the quicksand of development with rocky fundamentals

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Abstract: Community participation could contribute to sustaining energy projects, however some projects underestimate the value of meaningful project host communities' involvement in decision-making. Rural community energy development projects in Lesotho often assume a top-down development-driven approach void of communities' perspectives and desires. This study investigates opportunities Lesotho's renewable energy projects, either led by communities or the government, provide. The authors draw from qualitative research to examine two cases, Semonkong and Motete's participatory approaches. This study determined the magnitude of community participation in the two projects, from their initiation to the level of community participation in decision-making and implementation. The findings posit that community participation in both projects differs from minimal to no participation. They further revealed a blurry picture of community acceptance of the project where participation was relatively lower, thus bringing project sustainability into question. The Lesotho Electric Company deprived the Semonkong community the opportunity to participate in the decisions of the Semonkong mini-grid. In contrast, the Motete project consortium allowed a modicum of community participation hence higher social acceptance prospects. The study revealed that tensions, conflicts, and protests are implications associated with lack of community participation in the project of Semonkong. The sustainability of projects is dependent on the extent of the host communities' involvement, acceptance, and trust. This study recommends community engagement for hammering and forging project acceptability and sustainability.

Subjects: Energy policy and economics; Solar energy; Planning

Keywords: project acceptability; community participation; imaginaries of development; decentralised renewable energy; Lesotho; rural electrification; mini-grids

1. Introduction

The transition to an acceleration of renewable energy solutions mitigates climate change challenges; hence, the acceptability of energy projects is essential for attaining sustainable development. The acceptability of the energy project to the community is critical because it denotes



a transition from energy consumers to prosumers (Mpholo et al., 2021) and to energy citizenship. The paper discusses the country's renewable energy progress in terms of how various players imagine their socio-technical and developmental futures. An imaginary is common to the members of a particular social group and the corresponding society. In this case, the paper explores how communities imagine their power, participation, and future when energy technological developments are introduced in their communities (Cloke et al., 2017). This article builds on Sismondo (2020)'s perception that socio-technical imaginaries are usually future-oriented visions of linked social and technological orders, with more or less determinism constructed into them. Community visions conceive infrastructures as a tool to enhance their livelihoods and not a mere imposition meant to extract profit from them. This paper links energy with community participation, by invoking Jasanoff and Kim (2009, p. 123) who state that sociotechnical imaginaries "are associated with active exercises of state power, such as the selection of development priorities, the allocation of funds, the investment in material infrastructures, and the acceptance or suppression of political dissent". Sociotechnical imaginaries are visions over science, technology, the state, and society and can operate to preserve current energy regimes or present a rupture, note Hudlet-Vazquez et al. (2023).

Modern energy access for many is perceived to be about electricity access. Electricity is a topical issue in communities, reflected in community-based planning or any forum that discusses community development. Zhou (2022a) observed that micro grid-based communities with aggregation in renewable energy supplies and energy demands and peer-to-peer energy sharing might become mainstream shortly. However, communities hardly share views on energy unless they are treated not only as energy consumers but also as prosumers or even better as citizen actors of their energy future. They can only be energy communities when they are part of decision-making around projects in their areas. Therefore, it is expedient to examine the participation level of energy project host communities in Lesotho especially because the country is grappling to ensure adequate access to electricity (Senatla et al., 2018).

According to Mpholo et al. (2021), the country has realised only 10% of grid connections in rural households, compared to about 80% of urban households. Furthermore, the national demand for power is increasing. According to a report by the Lesotho Electricity Water Authority, Lesotho reached peak demand of 161 MW in 2016 (LEWA, 2017), while the national installed generation capacity stood at approximately 74 MW in the same year, thus leaving the country with a considerable supply deficit (LEWA, 2017).

The country explored other options as a means of curbing demand. This includes venturing into the renewable energy sector because clean energy transitions could improve economic growth and environmental sustainability (Khan et al., 2022). The option of the renewable sector also serves as an essential aspect of the country's compliance with its international commitments. Lesotho ratified the Paris Agreement and Sustainable Development Goals (SDGs) as a commitment to reduce greenhouse gas emissions and mitigate climate change impacts (Government of Lesotho, 2021). It planned to cut the use of fossil fuels to transition to renewable energy sources, particularly solar and hydro energy (Mhlanga, 2004). Through a partnership between the Ministry of Energy and the Ministries of Development Planning and Finance, Lesotho set ambitious targets to connect at least 100 percent of Basotho households with electricity by 2030 (Sekonyela, 2022). Concerning renewable energy, the country has set to add renewable energy generation capacity of 200 MW by 2030 and achieve 75% household electrification by 2030, primarily through renewable energy (Parthan, 2013).

The country's priorities for renewable energy are not isolated. The salience of renewable energy is echoed at the regional level, as the Southern African Development Community (SADC) intends to increase the share of renewable energy in the southern African region by 37% in 2027 to achieve the goal of 100% renewable energy by 2050. However, Lesotho's pursuit and transition to renewable energy is relatively new, but historical challenges undermining the sustainability of other

infrastructure projects seem likely to extend to the renewable sector. For instance, Ferguson (1994) contends that Lesotho's projects mostly failed because they were void of public acceptance and ownership in the 1990s. Besides, Cloke et al. (2017) argue that the top-down techno-logic project designs pursuing development in rural communities encounter numerous limitations and obstacles all over the world. Such projects, of which Lesotho does not seem immune from, are void of thorough understanding of host communities' socio-cultural context. Therefore, they fail to appreciate and accommodate how host communities envision their own futures and the way the energy developments are going to sustain their visions (Cloke et al., 2017).

This study assumes that an energy project's sustainability depends on the host community's acceptance; hence, public acceptability and satisfaction with the project determines the extent to which it may survive until the unforeseeable future. This study's scholarly contribution strives to unearth further the factors that influence project acceptability and sustainability to effectively transition from fossil fuels to renewable energy projects. The paper draws lessons from Lesotho as an understudied developing country grappling with access to electricity, transition to renewable energy and community participation in development.

2. Methodology

This study examines how public consultations and community participation influence community confidence and project sustainability. This research poses the following critical questions unearthing the factors leading to the collapse and endurance of projects in Lesotho: What were the imaginaries of communities and developers in the Semonkong and Motete mini-grid projects? What was the nature of community participation conducted by the Semonkong and Motete mini-grid managers? How does community participation in renewable energy projects influence project acceptance? How does project acceptability lead to sustainability of energy projects? Two focus group discussions of ten individuals with equal males and females and three key informant interviews in Semonkong and Motete communities were employed to gather data. Participants gathered at the area's chief following their respective chief announcements. Pseudo-names are used to refer to quoted respondents. The data was complemented by face-to-face interviews with four community committee members from each community.

The data was captured in NVivo and analyzed based on content analysis. The technique helped make sense of the unstructured content of messages, such as text, WhatsApp conversations, images, and audio data. The purpose was to determine the textual meaning (Gheyle & Jacobs, 2012). The primary data from interviews were phone recorded and transcribed by thematic areas relating to the research questions and variables under study, namely, community participation, project acceptability, sustainability, and renewable energy projects/sources. Figure 1 summarizes the approaches and designs informing the researchers' investigation.

The researchers selected Lesotho as a study area as there is a paucity of literature dealing with community participation in renewable energy mini-grids in the country. This qualitative study aims to compliment the literature that mostly assesses the renewable energy mini-grid projects based primarily on their technical efficiency and effectiveness by bringing communities' visions into these

Figure 1. Study methodology.

Source: Authors' own



Figure 2. Conceptual framework of project acceptability.

Source: Hosseini et al. (2018)

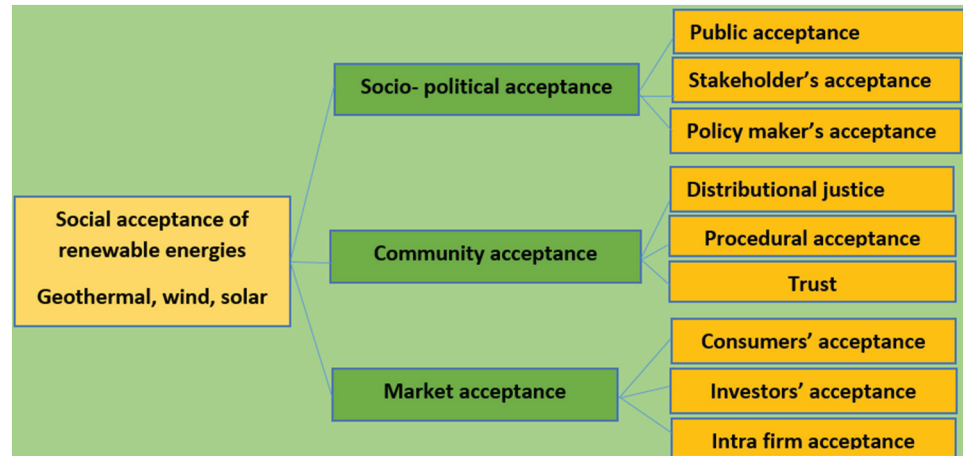


Figure 3. Semonkong hydro-powered mini-Grid.

Source: Fieldwork (2022)

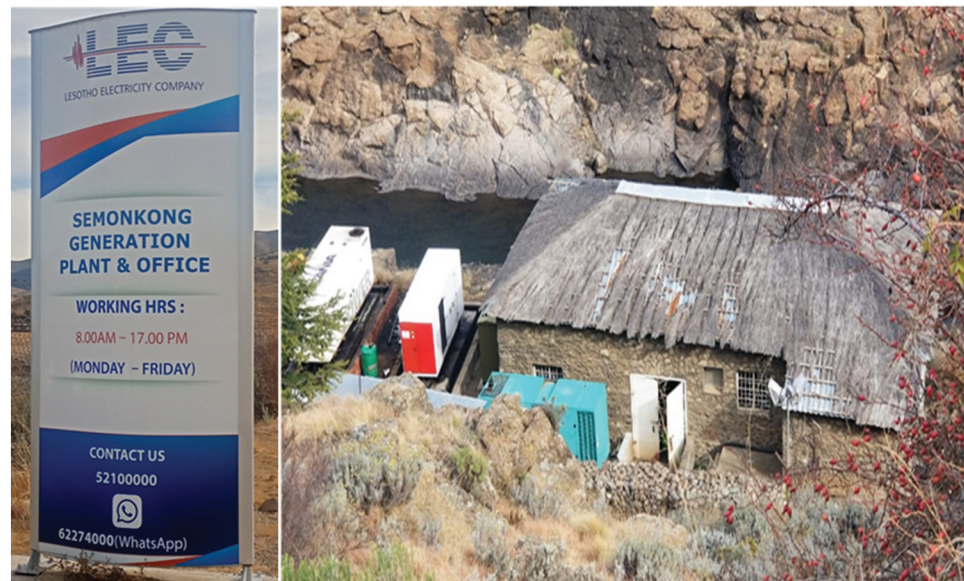


Figure 4. Motete solar powered mini-grid.

Source: Fieldwork (2022)



projects. On the policy front, the paper intends to influence policy stakeholders and service providers to regard energy consumers as energy prosumers and energy citizens.

This paper begins with a conceptual framework of the critical terms: community participation, project acceptability, and project sustainability. It proceeds to a brief review of the literature on the subject of interest. Further, it provides the state of electricity in the country, especially amid a growing need for a transition to renewable energy. The study also provides an overview of the case studies under investigation. It ends with the discussion of the findings, conclusions, and recommendations.

3. Conceptual review

This paper posits a conceptual framework of energy community from establishment to sustainability. It puts forward that mini-grids establishment require community participation as it informs project acceptability, trust, and sustainability.

3.1. Community participation

Participation is a process through which stakeholders influence and share control over development initiatives and the decisions and resources that affect them (Ofuoku, 2011; Paul, 1987). Again, it is considered an approach that promotes the need for local people (beneficiaries) to be among other stakeholders in decision-making when designing development strategies (Tsiga et al., 2016). This approach broadly speaks to the need to unleash the potential of the local people by broadening their capabilities, that is, empowering people and enabling them to participate actively in their development (Monroe, 2000). Public policies can facilitate the recognition of community as stakeholders in development. Ngang et al. (2023) affirmed that *“Theoretically, governance involves partnership between government and the many different constituencies in society, from the rich and powerful to the poor and vulnerable people.”*

Arnstein (1969) developed a typology of eight levels of citizen participation: manipulation, therapy, informing, consultation, placation, partnership, delegated power, and citizen control—most project developers who conceive of a project attempt to buy into community acceptance through consultations. Community participation can be viewed from the perspective of top-down and bottom-up approaches. The top-down approach includes using experts at the top to plan development initiatives and lead the process. In contrast, the bottom-up approach holds that the local community pledges the development initiatives to allow them to select their own goals and means of achieving them (Bishoge et al., 2020). The two cases under investigation largely assumed the top-down approach although one reflected a modicum of bottom-up approach.

According to Bishoge et al. (2020), the benefits accompanying the involvement of the community at all levels of the project are an increase in the legitimacy of the decisions made; hence, community ownership of the project, as well as the minimization of the level of conflicts that are likely to occur during the implementation of the project, thereby leading to community acceptability of the project.

3.2. Project acceptability

Development projects in many countries, and Lesotho in particular, face some resistance and sometimes fail even when there is no resistance at its initial setup (Ferguson, 1994). One of the main challenges is the lack of support from the community. For this study, community acceptance of a project refers to the specific act of transferring at least a modicum of decisions on renewable energy projects to host communities (Wüstenhagen et al., 2007). Community participation is a precondition for community acceptance of a development project and eventual sustainability. To secure acceptance of the project, the local community needs to be fully involved in the planning, implementation, monitoring, and evaluation (Dwivedi & Dwivedi, 2012). Hosseini et al. (2018) posited a conceptual model of community acceptance whose dynamic include socio-political, market, and community acceptance. Figure 2 details the constituents of this model.

Antwi and Ley (2021) affirmed that the interplay between market, political and community acceptance reflects critical stakes in determining the transitory path from one energy use to the next. This interaction can only be fruitful when all stakeholders at all levels possess a certain degree of influence to determine energy project implementation success and acceptance.

In addition, Wüstenhagen et al. (2007) proffered some of the critical questions that project initiators should consider to secure community buy-in and/or eventual project acceptance. These questions include but are not limited to the following: Is the community invited to participate in the project? Does the local community significantly influence this process? Is specific local, tacit knowledge used, or is the community only expected to agree on an already designed project? Further considerations for community support of the renewable energy project include community evaluation of the project's total value of its utility: the project's potential to enhance the community's welfare, budget, and type of project (Gherghina & Tap, 2021).

There are other influential factors, some are time-dependent, which may lead to resistance or lack of support for the project if not a complete failure. They include the national political environment, local perception of economic impacts, social influences such as trust, and institutional factors such as fairness and inclusiveness in the planning and execution of the project (Musall & Kuik, 2011). All these factors are essential for project sustainability.

3.3. Project sustainability

The Brundtland Commission defined sustainability as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations General Assembly, 198, p. 43). Emas (2015) does not define project sustainability but indicates its overall goals among which the following stand out: long-term stability of the economy and environment. The author argues that the project's sustainability is only attainable through the integration and acknowledgement of economic, environmental, and social concerns throughout the decision making process.

From a business point of view, a project is regarded sustainable when it is able to strike a balance between economic, environmental and social aspects while the project management perspective considers project sustainability as the worker's capability to manage a project to meet the current and future needs without compromising outcomes (Association for Project Management, 2023). Association for Project Management, (2023) deems the management of social aspects (community, human rights, equity and equality) and economic aspects (affordability, risk management) as integral to achieving sustainability. The literature highlighted above indicates that a project's sustainability can be viewed from the financial, environmental and social purview but this study's emphasis rest on the social vantage.

This paper emphasises the incorporation of communities' knowledge of the economy and social concerns in the decision making regarding the project. Thus, the paper argues that project sustainability requires the involvement and consideration of communities' perspectives for a project to be accepted, and equally beneficial to the present and future generation.

In this study, the primacy of sustainability as a concept focuses on people as the main target of a development project which should be based on the needs and vision of the people through citizen participation and self-help (Abiona & Bello, 2013). According to Wiyaboon (2019), projects framed under the top-down lenses may not value community participation project's decision-making. This oversight causes a lack of commitment to the programs and, at times, hostile reactions from the communities, as communities are always at the receiving end when they pertain to losses in the exchange. This leads to a lack of sustainability.

For a project to be sustainable, community members should be interested in the project or program that affects their welfare and participate actively in identifying their needs, planning,

execution of such projects, utilization, and evaluations (Abiona & Bello, 2013). According to Abiona (2009), participation yields greater interest in sustainability. The requisite ingredients for project sustainability include a project being people-oriented and accompanied by the need for stability of government and stable policies, transparency, and accountability in all sectors (Abiona, 2009; Carter et al., 1999).

4. Theoretical framework of sociotechnical imaginaries

Sociotechnical imaginaries inform this study. Sociotechnical imaginaries refer to mutually shared stable institutional and desirable futures that are publicly performed visions, invigorated by a socially held understanding of cultural practices and social order supported by technological advancements. Imaginations are helpful in the generation of commonly held systems of meanings that makes the interpretation of social reality possible (Genus et al., 2021; Jasanoff & Kim, 2009). Socio-technical imaginaries comprise the visions of how good the future society would be, and they are traceable to the norms, social practices, and cultural meanings from which the actors construct policy preferences.

Technological and behaviour-change energy imaginaries attempt to establish the best technical solutions or behaviour-change approaches to contribute to carbon emission reduction while generating and using energy. This approach conceives risks based on technical challenges that must be overcome to obtain the social acceptability of an energy project and are pursued through technologies and behaviour change programs (Genus et al., 2021).

The approach appreciates the risk of technological failure and strives to accommodate cultures associated with energy since it assumes that investing in technological development does not suffice to transit from fossil fuel use to renewable energy (Genus et al., 2021). Policies inspired by this approach endeavour to change energy-related practices relating to heating and lighting, among others, through bottom-up governance. Its value lies in understanding that energy consumers play a more critical role in shaping energy systems than other traditional approaches assumed (Goggins et al., 2019).

5. Empirical literature review

Abe (2022) investigated the importance of community participation in decision-making processes to determine its social impact on environmental and economic sustainability. The author argued that the core basis of community participation is consultation, which results in meaningful contributions to the project to ensure it responds to socio-economic rights. Moreover, Abe (2022) maintained that community involvement reduces conflicts, protests, and tensions towards projects. In June 2019, for instance, Kenya's National Environmental Tribunal demonstrated the value of community participation by suspending the Lamu coal power plant project for lack of adequate public participation during the environmental impact assessment (EIA). The tribunal argued that community participation was the "oxygen" giving life to EIA. Another is a case that relates to Nigeria, where the African Commission decided that the Nigerian National Petroleum Company and Shell Petroleum Development Corporation should compensate victims of human rights violations of the Ogoni people who were excluded from participating in the Niger Delta in a case lodged in March 1996.

Ambole et al. (2021) argued that community energy projects must demonstrate economic and environmental benefits to host communities which are distributed in proportion to community participation in a project. The authors established that in Sub-Saharan Africa (SSA), a voluminous literature determined that communities insufficiently participate in micro-level energy projects. Pieces of literature also revealed that most projects are primarily owned by elite companies and governments who fail to transfer power to local communities (Burke, 2017; Burke & Stephens, 2018; Ramirez, 2020).

Ambole et al. (2021) maintained that many scholars assert that community participation and ownership must be attained through voluntary means, participatory governance, and cooperation.

The scholarship established that most SSA government entities in the energy sector are characterised by top-down approaches that superficially consider the public in validation workshops or interviews when project decisions are already concluded. Similarly, for instance in Mexico, Ramirez (2020) established that public consultations were conducted merely to fulfil the legislation requirement rather than to discuss the project or understand community views.

Public policies integrating project host communities are critical to diminishing conflicts in transitioning to a decarbonised economy (Ramirez, 2020, Zhou, 2022a; Zhou, 2022c; Zhou, 2023). Zhou (2022b) argued that the renewable and sustainable transition must recognise multi-stakeholder collaboration from techno-economic-environmental perspectives. The author recognised the need to transition from energy consumers to prosumers. Equally, Tsoeu-Ntokoane et al. (2023) advanced that projects' sustainability anchor on local population's involvement in decision-making and established Lesotho's energy projects fall short of ensuring adequate participation of all stakeholders especially communities in the energy sector.

Lesotho has not been immune from the pressing concern of energy for development. However, the extant literature examining the country's energy transition pays less attention to the promotion of energy democracy and energy citizens. For instance, Taele et al. (2012, 2012) examined the development of small hydropower mini-grids and grid extension possibilities to alleviate the country's energy concerns. Similarly, Senatla et al. (2018) investigated how an integrated electricity expansion plan could help Lesotho by ensuring the security of supply. Mothala et al. (2022) also investigated the factors influencing the selection of household energy sources which also has to do with the nature of a project acceptable to the community.

The need for community participation for the sustainability of development projects and the consequences for the failure of engaging communities in proposed projects has a long-established significance in the energy sector (Casati et al., 2023; Tsoeu-Ntokoane et al., 2022, 2023). While there are two approaches to development projects, top-down and bottom-up, many adopt the former approach. The literature posits that the traditional top-down perspective in energy policy decision-making is often used and does not consider public preferences (Bishoge et al., 2020; Horst, 2007). According to Horst (2007), this often leads to public opposition, causing delays and unpredictable losses, thereby increasing conflict between policymakers, project developers, and the public.

Martinot et al. (2002) argued that the 1970s and 1980s years saw a litany of development assistance agencies promoting small-scale renewable-energy technologies such as biogas, cooking stoves, wind turbines, and solar heaters in developing countries. Much of this aid, especially for rural areas, focused on technical demonstrations or narrowly self-sustaining projects that could not be replicated. However, due to the lack of involvement of relevant stakeholders, particularly community involvement in the early stages of projects, many were considered failures. Another advanced reason that cemented the essence of community participation was poor suitability for user needs and local conditions.

Development and reconstruction projects that lacked community participation components have failed over time. According to Sadiqi et al. (2012), past post-disaster reconstruction projects indicate that projects without a local component or active community involvement are more likely to fall flat and destroy community cohesion. Some of these projects have caused conflicts within communities. For instance, a flood rehabilitation project in Bangladesh revealed that a latrine built adjacent to neighbouring dwellings without prior community consultation caused severe tension among neighbours (Sadiqi et al., 2012).

In Aceh-Indonesia, after the Indian Ocean Tsunami in 2004, several non-governmental organizations tendered out what was initially a purely community-driven effort to large construction companies. According to Smirl (2008), the non-participatory nature of the companies awarded tenders led to affected beneficiaries refusing to live in houses.

The companies were non-participatory and did not pay attention to the needs of the affected beneficiaries. The houses built by these companies were ultimately found to be structurally defective, culturally inappropriate, and failed to meet the required budgetary requirements, thus creating further tension and anger within the affected Acehnese communities. The lack of permitted community involvement has led many families to refuse to live in their houses. (Smirl, 2008, p. 15)

This makes salience the issue of community involvement in projects. As in the above cases, energy projects also share the same conditions for sustainability. For this reason, community involvement is considered a potential solution to the failure of energy projects, especially in Sub-Saharan Africa. Several studies have testified to this effect by considering the importance of involving the local community as stakeholders in energy projects to attain sustainability (Palavicino et al., 2011; Pfaff et al., 2014; Walker, 2008).

These studies further highlight the importance of community involvement, which leads to trust building among all stakeholders involved in the project, resulting in project sustainability. The trust component was cemented in a study by Walker et al. (2010), who demonstrated that trust is an essential element when one aims to achieve changes in the implementation of energy projects. Walker et al. (2010) further pointed out that trust between the implementing entity and beneficiaries can contribute to projects that meet their potential and for the corresponding community to believe and participate fully as stakeholders in the process of project development.

A plethora of literature demonstrates the relationship between public trust and project sustainability (Sütterlin et al., 2017). Studies show that where a community has high trust in projects, there is a likelihood of enduring increases. However, any developmental community project void of public participation is merely constructed on a quagmire of expensive technology. Conversely, the community must accept the project to avoid building projects on the quicksand of technological development. This assertion implies that when a community has lower confidence in a project, it tends to believe that the project is unsustainable, which bears significant implementation when they are the recipients of the project.

This study attempts to reveal clues about the nature of community decisions that influence project sustainability by demonstrating how public participation enhances project acceptance and sustainability. It provides suggestions on how projects can be implemented smoothly and how they can be sustained through public acceptance. This study examined the views and attitudes of two communities where energy projects were implemented by two entities, one centralized in approach and the other more decentralized and supposed to be community-owned. The former is the Lesotho Electricity Company (LEC) mini-grid project based in Semonkong. In contrast, the latter is the Motete mini-grid project implemented by the National University of Lesotho Energy Resource Center (ERC) and its partners, but it is meant to be a community-owned project. The consortium is merely facilitating the project handover which is supposed to happen within two years of completion.

6. Lesotho's electricity sector overview

Lesotho is a constitutional monarchy surrounded by the Republic of South Africa. The electricity sector in Lesotho is small. The main contributor to the installed capacity of the electricity sector is the 'Muela hydro plant (72 MW), complemented by two small hydro plants, isolated diesel grids, and imports from South Africa and Mozambique through the Southern African Power Pool. Most of the locally generated electricity is hydropower-based, mainly from the 72 MW 'Muela plant, which is owned and operated by the Lesotho Highland Development Authority (LHDA) as part of the water transfer system to South Africa. The Lesotho Highlands Water Project presents opportunities for the development of hydropower. There are five small-scale hydropower plants in the country: Katse (540 kW), Mantsonyane (2 MW), Semonkong (180 kW), Tlokoeng (670 kW), and Tsoelike (400 kW); only the Katse and Semonkong plants are currently operational as some developments have

been made to connect other plants to the national grid (Klunne, 2013; Tsoeu-Ntokoane et al., 2022).

6.1. Projects overview

The Semonkong installation was built with Norwegian development assistance and commissioned in 1989 (Klunne, 2013). Figure 3 depicts Semonkong plant which is found in the rural areas of the Maseru district. It is a place close to major natural features, including Maletsunyane Falls. The Semonkong mini-grid serves a small community through an isolated mini-grid. This project has an installed capacity of 180-kW hydropower, supplemented by a 120-kW diesel generator (Liu et al., 2013). The plant contains space for two 190-kW hydropower generation units: one stand-by peak load 120 kW diesel unit, a control room, a switch gear room, and an office/shop/storage room. The scheme comprises the intake structure, headrace and penstock piping, powerhouse, and power-generating equipment. This intake structure consists of a 100-meter-long concrete weir, a headrace inlet with a trash rack, and a simple pipe with a light steel gate for flushing the sediment in front of the intake (Liu et al., 2013).

This hybrid hydro/diesel system was included in the World Bank-funded electricity sector restructuring project to evaluate private sector operations as a prelude to possible privatization. However, after this project, the system returned to operation and maintenance by Lesotho's national utility, the Lesotho Electricity Company (Klunne, 2013), which still manages it.

In contrast, Motete is a rural constituency located north of Maseru's capital in the Botha-Buthe district. The project is being carried out by the Smart Village Research Group's sister company, STI4D, in collaboration with the local off-grid energy company MOSCET, the National University of Lesotho, and technical lead Gram Oorja, based in India. This project aims to introduce mini-grid technology into Lesotho and demonstrate that it can be a sustainable solution for remote or rural energy success. This model combines a mini-grid with tailored productivity-enhancing technologies and services, such as water pumping, grain milling, and entrepreneurship.

The project is a community-owned mini-grid. Once fully established, the plan is to hand it over to the community after two years. The project is yet to be completed as some households are yet to be connected. Unlike in Semonkong, its population is relatively low, and the project is situated in a very inaccessible hinterland of the country. The management is partly shared in that they collect their own connection fees, which the established committee manages. The consortium assists with developing the mini-grid, connections, purchases, and overall technicalities. Figure 4 depicts Motete Plant.

7. Findings and discussions

This study investigated the level of community participation in Semonkong and Motete mini-grids to determine their sustainability prospects. The inquiry was undergirded by the idea that every energy development project—no matter what resource is involved—has a life cycle consisting of four stages: initiate, construct, operate, and close. In both mini-grids that the study examined the researchers tracked public participation across these levels of project life cycle.

7.1. Communities and developers' imaginaries

The Motete communities indicated that over half a century ago, they appealed to the government to facilitate their access to electricity. They envisaged lighting the homes and streets once they had access to electricity. They planned to cook and heat their homes once connected. They pictured a life where businesses grow and communities are safer as lighting will be in the streets. However, they found electricity bills high once connected, allowing them to use most of the envisaged electrical appliances such as refrigerators. They began to consider reducing electricity consumption instead of diversifying its usage. Equally, the Semonkong community envisaged business growth once connected to electricity. Hence, most business-oriented community members constructed rental rooms. However, the tenants preferred to stay in the unconnected houses,

which were relatively cheaper, relative to connected rental rooms with the inconsistent power supply provided by the LEC. Other community members' indicated that their visions comprised a safe community with lighting at night; hence, they connected electricity in their households and around their compounds. However, LEC cut the power supply at 10 p.m. when they needed to light their residences, thus shutting their vision.

On the part of OnePower, the company imagined that the community would adequately consume the electricity and boost its technology to ensure a consistent and adequate supply. However, the communities' consumption was below the supply. On the other hand, the LEC had envisaged to meet the Semonkong community's electricity demand sufficiently with its hydro-power. However, the sand and drought foiled its plan, and it had to use generators, which increased the supply cost.

7.2. Community participation during project initiation

In addressing the question of project initiation, participants from both Semonkong and Motete claimed they did not have much of the opportunity to participate. Both projects took a top-down approach in terms of planning. For Semonkong, the participants revealed that they did not have much historical background of the project, as it commenced long ago. One of the respondents, Matau, stated:

... From my knowledge, lately, it is difficult for any of us to say that there was participation at the project initiation or during its inception. We cannot remember when the project began. Most of us were at an early age, and we did not bother much about this development.

According to Klunne (2013), the current operational Semonkong electrification project can be traced back to 1989. According to the respondents, the Semonkong project, although it took a top-down approach, it is a welcome initiative in Semonkong. Most respondents stated that they desire the surrounding communities to benefit from the project and imagine a future where they all have access to reliable electricity. However, this project faces serious challenges that bring sustainability into question. LEC struggles with ensuring an uninterrupted power supply to Semonkong and many households are not yet connected to the grid. It is difficult to imagine how communities spread kilometers apart will eventually have access to electricity.

On the other hand, Motete participants revealed that they did not have much to do with project initiation except being sensitized about the already planned initiative. According to one of the respondents, Palo:

... We have since time immemorial only expressed a need for electricity in our community to the government of Lesotho ... it was only amid our greatest desire for electricity that we received visitors from the National University of Lesotho who came bearing news of electricity powered by solar

At the time of the author's interviews, the Motete project was a welcome development. Nonetheless, it was premature to rule that the project had gained community acceptance, thus positing potential sustainability. The researchers observed that the community still had questions regarding the project as the provided information was insufficient. One Lephallo and 'Musi echoed each other's sentiments expressed in question form:

... We do not really know of the financial implications of this electricity project on us. How much is it going to cost us? Will it be less or more expensive than the normal electricity provided by LEC? Is it even reliable? What happens when there is no sunlight?

In line with project acceptability and sustainability, these questions are essential to the community, as their answers are likely to suggest whether the community will fully accept, accept with

reservations, or reject the project based on their imagined futures (Jasanoff & Kim, 2009). The involvement of stakeholders at the beginning of any project is essential to commence project activities as it increases project acceptability (Matu et al., 2020). This submission further aligns with the literature on what accounts for project acceptance. While the Semonkong case is somewhat peculiar in so far as there was, allegedly, no participation at the commencement of the project, the Motete project bears minor hallmarks of community engagement at the start of the project. However, communities were not involved in the conception of renewable energy in the form that it was set to proceed.

7.3. Level of participation in implementation and daily management

In addressing the question of the extent of their participation in the projects, the respondents for both projects had differing responses. The extent of community participation is twofold: participation in design and implementation. Participation in design is closely related to participation in project initiation; in this section, we will examine participation in the site area of the project, the extent of community participation in the running or implementation of the project, and whether the community had a say on the proposed project by developers in terms of whether it was needed.

The Semonkong hydro plant location does not seem to have been the subject of intense debate or opposition for the site area. The plant is on the foothills of a flowing river called the Maletsunyane. According to one Maphaki, *“To my knowledge, there has not been any feud regarding the project site. While this project makes use of water from the flowing stream of Maletsunyane, we still have enough water for livestock and washing.”*

Concerning this question, there was no record of any concerns regarding the project location from the respondents. Maphaki’s response above posits that the project carefully considered water sharing for its use and community use despite its top-down approach. Hence, despite taking a top-down approach in determining a convenient project site, respondents had no record of any feud regarding the project site.

The project site was not a cause for concern for the Motete community during the interviews. The general sentiment on this by respondents is that *“there have not been many deliberations on the project site ...”* There were no concerns or opposition registered by the respondents regarding the location of the utility poles and the solar plant.

Regarding the implementation of the hydro powered mini-grid project, all the respondents from Semonkong did not participate; however, they had one common concern regarding how the project has been implemented. According to all the respondents interviewed, the concern is that *“... the electricity is cut at around 22:00hrs every day.”* This is a cause for concern, as they have not been briefed on what accounts for this. They argued that it has been their concern that they registered with the employees of the Lesotho Electric Company in Semonkong but that this has not yielded desirable results. While responding to whether the project considered their views, one of the respondents argued:

... As far as I can remember, we have been complaining about how the project is being implemented. They cut electricity at 22:00 hrs and sometimes even before then. Sometimes, electricity disappears for a long time without prior notification or explanation. This inconvenience is unbearable, and the LEC seems unbothered. We want reliable electricity, like that in Maseru and other areas that LEC serves.

For Motete, it is still premature to say whether they have participated in the project’s decision-making process regarding how it will be implemented and to what extent. As indicated earlier, the solar powered mini-grid project is still in its early stage. Like Semonkong, the project site regarding the village to host the plant has already been determined. The people did not have much to say

about it except that they seemed excited that they would have electricity after their request. Mahlomola added the following:

... we are excited that we will finally have electricity after a long time. Successive governments have since been promising electricity generation but in vain. Look, we have a diamond mine nearby, but we still do not have electricity despite electricity at the mine.

Regarding actual participation in the siting of utility poles, one Mapalo said such decisions were guided by the expertise of project developers, and the community had little to no say in that regard. She added,

We are so excited to have electricity that no one is concerned about the location of utility poles. They do not take much of the space, and no one has even been asked to relocate due to this installation.

Motete community's participation aligns with Arnstein (1969) informing and consultation approaches although its model of ownership required partnership as the project is meant to be community owned. While consultations provide a platform for communities to be heard, it does not guarantee that opinions, views, and the community's position will be taken heed of, and form part of the decisions undertaken following the process.

For Semonkong, the respondents stated that LEC does not allow community participation in implementing the project. The all argued "*We do not recall the last time we had a public gathering convened by LEC to talk about anything that is electricity related.*" The respondents further provided that the only channel of complaints is calling LEC Semonkong, usually when there are problems with electricity, not anything that concerns project management. The lack of community participation in project management was further cemented by a LEC official, Thalaboliba, who explained the following:

I am not sure whether we consulted the Semonkong community to explain how our system works. Notwithstanding, we explained to the traders when they complained, and they understood.

In the case of Motete, the respondents provided that project developers "*consulted us about the project they wanted to have in our community ... they used a combination of public gatherings and door-to-door visits to community members to brief about the solar project.*" The community established an 11-member liaison committee between the project developers and the community. Notwithstanding the committee, all the respondents said:

... everyone was still allowed to participate in the project meetings ... however, aside from an attempt to involve us by telling us of their proposed project, they (project developers) have not updated us of any changes related to delay in implementation. This is worrying, considering they raised our hopes for electricity so high...

Regarding whether the projects under investigation are needed at the respective places where they are being hosted, the researchers observed with caution, especially when it comes to Motete, that they are needed. Electricity is gradually becoming a necessity rather than a desire for communities. Both Semonkong and Motete respondents have hailed electricity connections, but Semonkong insists on an enhanced approach by the LEC that considers their needs and imagined futures. For Motete, as mentioned earlier, the community seemed excited about electricity but still had questions they required answers to. The two project cases, therefore, still enjoy public acceptance although at different degrees.

A respondent from the LEC argued that "*... LEC is running a loss to operate this mini-grid project that costs it M2 million per month to operate...*" However, as demonstrated earlier, the community

is unaware of these serious challenges. Moreover, the mini-grid developers fall short of establishing programs that stimulate changes in community practices and culture (Genus et al., 2021). The community was not part of the project initiation as respondents attested.

7.4. Project sustainability prospects

Both Semonkong and Motete are dependent on the community's acceptance of sustainability. Although Semonkong has withstood the test of time despite its flaws in terms of community participation, the project is a cause for concern for the government. As mentioned, the government spends approximately M2 million (107 000USD) monthly and is losing. According to the LEC official:

... The cost of running this plant is not commensurate to the returns the government gets. Had this project not enjoyed government support, it might have collapsed a long time ago ... Semonkong is far from the national power grid ... its main challenge is that the hydropower is inadequate to meet the community demand. Hence, we are compelled to complement it with diesel-powered generators.

The researchers observed that the project is sustained by the government despite the loss because it is a political mileage. For this reason, the project has managed to withstand the test of time. However, the tensions and disgruntlements with the Semonkong hydro powered mini-grid are worrisome and may threaten the project's sustainability prospects. Similarly, the consortium managing Motete solar powered mini-grid needs to change the community participation approach to render it meaningful.

8. Contribution of the paper to field of community participation and areas for future research

This paper contributed to the literature on energy democracy by exploring the dynamics of community participation and their implication on community and developer's imaginaries and sustainability. The paper amplified the findings of a plethora of scholarship (Abe, 2022; Ambole et al., 2021; Ramirez, 2020; and Sütterlin et al., 2017) underscoring the importance of community participation and bottom-up approach in attaining project sustainability. The paper has shown that poor community participation leads to a disconnection between imaginaries and reality and this foils project acceptability and hampers sustainability. Therefore, the findings direct policies to adopt inclusive and participatory approaches in development. However, the study could not determine the proportion of energy projects void of community participation in the country to allow for the generalization of results; hence future scholarship needs to incorporate quantitative approaches to evaluate the extent to which energy projects undervalue citizen participation in development.

9. Conclusion and recommendations

This study has established that community participation is essential for a project's acceptance as the latter informs project sustainability. However, the Semonkong hydro powered mini-grid shows lack of participation while the Motete solar powered mini-grid demonstrate some limited meaningful participation which was in the form of consultations and informing. Generally, there was little community participation in the two projects under investigation. However, no severely antagonistic attitudes were observed from the communities regarding the two projects at the time of the field visit except the quality of service at Semonkong. The existence of these projects seems to resonate well with communities' needs although they find it a mismatch between their visions and the reality. Therefore, the sustainability of the projects still leaves much to be desired. In light of this shortfall, this study makes several recommendations.

Concerning the Semonkong project, the Lesotho Electricity Company should devise strategies to engage communities in rectifying the project operations. This can be achieved through quarterly public gatherings, where communities can voice their opinions and views, informing the Lesotho

Electricity Company policy in project implementation. Again, the Lesotho Electricity Company should provide a readily available platform in Semonkong for communities to report problems associated with electricity at any time during the day.

Regarding the Motete project, the National University of Lesotho Energy Resource Center and other collaborating project developers must consistently engage communities in all the details of the renewable energy project. This is key, as it is something new to the communities, and failure to engage the communities frequently will compromise project acceptability and sustainability in the area.

In addition, project developers must develop a community engagement strategy for themselves and their communities in consultation with relevant stakeholders to minimize mistrust and potential conflicts. While a community liaison committee exists, it is recommended that project developers prioritize community gatherings to communicate project issues. This will facilitate a similar understanding of the project since it is new. The success of these projects relies on the general understanding of the community straight from the project developers than from a liaison committee.

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