



# Renewable energy project implementation in Africa: Ensuring sustainability through community acceptability

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## ARTICLE INFO

### Article history:

Received 3 October 2019

Revised 22 November 2020

Accepted 8 December 2020

### Keywords:

Community acceptability

Renewable energy

Energy access

Sustainability

Africa

## ABSTRACT

Renewable energy is imperative for Africa's development; however, given that sustainable energy projects in Africa seldomly succeed, it is imperative to ascertain how community acceptance also influences energy projects. This paper examines the interplay between politics, market and community acceptance and how elements like cultural variations, gender activity roles, leadership roles and perceptions amongst communities can play a central role in renewable energy initiation and sustainability in Africa. We discuss implications for policymakers and present exegetical recommendations that can advance not only community participation but also private sector involvement and cultural reverence to ensure sustainable energy project implementation. This paper adds to the increasing stream of research on how Africa can unlock its renewable energy potential and ensure sustainable energy services for all.

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## 1. Introduction

The World Bank reckons that energy poverty affects over 840 million people globally [1]. Estimation further indicates that over 2.7 billion people worldwide do lack access to clean cooking energy alone with the majority of these people residing in developing countries [2,3]. In Africa, over 573 million people presently live without access to electricity which constitutes approximately 80% of the entire continent's population [1]. The inadequate supply and access to clean and sustainable energy have not only stifled the continent's economic growth or intensify health risks but also resulted in the over-reliance on the forest for fuelwood. The latter contributes to other environmental challenges as the majority of the populace relies on biomass to meet energy needs [4].

Notwithstanding, one of the distinctive approaches amongst the numerous alternatives and strategies considered to electrify the continent of Africa is the greater use of renewable energies due to their multiple benefits and availability on the continent [5,6]. Renewable energy adaptation as enshrined in the Sustainable Development Goal (SDG) 7, has the propensity to help achieve several other SDG's. This includes quality education, poverty alleviation, good health, sustainable cities and communities, water security, responsible consumption and production, and decent job creation. The impact of renewable

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energy on climate change adaptation, gender mainstreaming and sustainable growth and development are also innumerable [7,8]. Case studies from developing countries like Pakistan, Nepal, India and Kenya, shows that renewable energy sources are already helping small villages, homes and businesses to access electricity for income-generating activities, culminating into improved socio-economic living standards of the users [9,10]. It will, however, require an annual investment of about \$45billion to \$49billion to reach universal access by 2030 in sub-Saharan Africa alone [11]. Although this investment is likely to change considering the impact of the COVID-19 pandemic on the global economic outlook [5,12,13], within the framework of the African Union Agenda 2063, there is a sheer commitment through various programmes and projects to provide efficient, modern and reliable cost-effective renewable energy sources for domestic and commercial use. The African Development Bank's New Deal on Energy for Africa (NDEA), and Sustainable Energy Fund for Africa (SEFA), amongst others, for example, all seek to help African countries achieve universal energy access to energy through the latest off-grid and technological solutions [5,14,15]. Notwithstanding these flagship initiatives and policies, energy access and penetration remain woefully inadequate on the continent. In Niger, for instance, energy access rate stands at 12.93% despite many governmental and non-governmental policies and interventions to bridge the wide energy access gap in the country. Inadequate access to finance, standards and quality assurance, technical and technological barriers and limited policy interventions are amongst numerous concerns raised by stakeholders in Niger and across many parts of Africa as impeding energy access [5,9,16–20]. Studies also indicate that approaches in initiating energy projects and technology transfer, especially in rural areas of Africa, are fraught with improper engagement and holistic stakeholder consultations [9,10]. There is also the perception that the diffusion of technologies from developed countries to developing countries, for example, is done with limited evaluation on its impact on the host country or community [21,22]. Bel and Joseph [23] and Pueyo et al. [22] allude to the fact that there is a usual lack of social, cultural and institutional consideration in innovation and technology transfer of which the energy sector is not immune. Notably, most state-led, finance-driven models of technology deployment which prescribe cost and support for alternative energies have proven to carry a high tendency for failure due to inadequate local-based involvement, participation and acceptance in the project life cycle process [24–26]. For many, a renewable energy project in Africa is about finding an empty land and fixing solar panels to provide light for the people because they lack electricity [27]. In order to avert the above scenario and mindset which considerably impact efforts by stakeholders in bridging Africa's energy gap, a sheer urgency for interventions that will encompass not just energy access and poverty, climate adaptation and mitigation, gender mainstreaming and sustainable development but more critically on issues of acceptability at local levels is paramount [25,28–30]. It is from this background that this paper focuses on renewable energy (RE) projects in Africa and the role of community acceptance in project success and sustainability. Broadly, we aim to provide an understanding of the roles of communities and underlying factors that impacts access to renewable projects while enhancing sustainable development and social acceptance. We do this by focusing on the conceptual framework of social acceptance with a spotlight on pieces of evidence on solar energy and clean cooking initiatives. Key areas concealed in this paper include challenges to renewable energy acceptability at local community levels in Africa. The entire paper is based on the hypothesis that community acceptability is a suitable approach to the design and implementation of renewable energy project at the local level towards achieving the triple benefit of energy access, project sustainability and sustainable development in Africa. In Section 2, we set forth the conceptual underpinning to community acceptability. In Section 3, we characterize acceptability of renewable energy at different levels and in Section 4, we present the dynamics of community acceptability. Our discussion and conclusion are presented in the final section of the paper.

## 2. Conceptual underpinning of community acceptability

The concept of community acceptability, be it public acceptability [31], social acceptability [32], or local acceptance [33], have had varying definitions over time [34,35]. Scholarly remarks from Batel & Devine-Wright [36] and Ricci, Bellaby, & Flynn [37] points to the fact that previous attempts at defining social acceptability limited the dimensions of how people relate to new technologies, and as well ignored all other types of responses and factors such as resistance, apathy and uncertainty towards social acceptance. Despite these reactions towards social acceptance, it enjoys across the board acknowledgement and analytical incentive for which there is directly no satisfactory option [35]. A tolerable definition from Upham, Oltra, & Boso [38] therefore explains acceptability as a “favourable or positive response (including attitude, intention, behaviour and -where appropriate -use) relating to proposed or in situ technology or social-technical system by members of a given social unit (country or region, community or town and household, organisation)”. The concept of social acceptability is considered significant to renewable energy as a prerequisite in meeting the energy needs of people; however, some studies overlook acceptability- a worrying trend that has resulted in pieces of literature with challenging findings [39]. Also, a series of recent studies have indicated the consistent resistance at national and local levels towards the implementation of renewable energy projects due to recommendations from previous studies that ignored the concept of acceptability. Subsequently, how acceptability thwarts or propels the development of renewable energy have been discussed in considerable body of literatures (see, e.g. [24,35–37]). Wüstenhagen et al. [32] postulate that the limited attention paid to acceptability is because renewable energy technologies received tremendous support in the early eighties. The support and responses gave wrong signals to policymakers and actors in the energy sector, thereby swerving them from detecting the impact that acceptability could have on renewable energy projects in future. It further accounted for the few successes amidst many failures with renewable energy dissemination in Africa [42]. Batel & Devine-Wright [36] contend that most studies on acceptance have been for the smaller scale dimension of individuals' affinity with renewable energy infrastructures and not as much on the

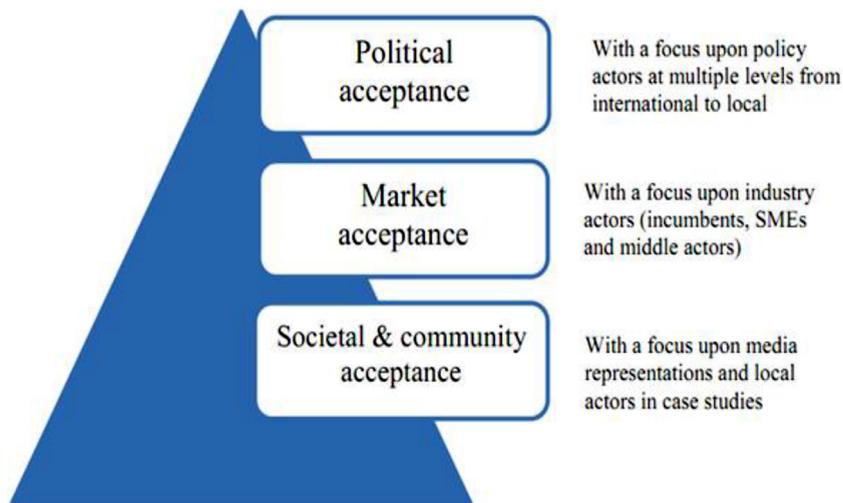


Fig. 1. A redefined approach to social acceptance by Devine-wright et al. [39] adopted from Wüstenhagen et al. [32].

full-scale projects and even less on the two perspectives at the same time. Another contention is that even the terms and goals utilised in literature have not been clear. Some of these terms include social and public acceptance, restriction or positive discernments, convictions and attitude of local people. These ambiguities make it challenging to consider public acceptance and recognition as a positive activity and to have a substantial clarification on them. It has even become difficult to see these terms as a mix or something broadly separated or as to whether acceptability can be imagined as an obstruction or an independent social phenomenon. Devine-Wright [36] and Stern, Sovacool & Dietz [43] advocate therefore that stringent approaches are needed to help separate, for example, convictions and attitudes of people from activities or practices of communities and stakeholders. Each of these factors might be formed by various hidden elements, which are not isolated but related to the propensity to cause renewable energy-related resistance at both national and local levels in a country. Authors, like Batel [44], have argued over the heightened attention in the last decade by social scientists on renewable energy acceptability and its technologies.

On the contrary, Devine-Wright et al. [39] underscore that many of these research on renewable energy are skewed towards understanding the resistance to technology implementation by 'NIMBY' (*Not In My Back Yard*) circumstances without full concentration on public responses to the detriment of policies, institutions and stakeholders. Shwom & Lorenzen [45], also indicates that there is only a partial picture of social acceptance without recourse to the distinct roles of various actors, their aspirations, and the varying expectations of both donors or developers and end-users as well as the diverse materialisation of technologies at different stages. Seminal contributions point to the fact that there is indeed a deficit of information and a "NIMBY" attitude by community members, which has daring consequences on strategies to engage and involve communities in renewable energy projects [46–48]. Another observation is that the determinants of public acceptance are rarely considered as a whole, taking account of the multiple personal, psychological, and contextual factors existing in a community [39]. Therefore, to have a holistic overview of renewable energy acceptance, it is imperative to study renewable acceptance from various theoretical perspectives scientifically, to arrive at a more detailed and defined conclusion of conflicting factors that characterise renewable energy [39,49].

### 3. Acceptability of renewable energy at different levels

To have a better conceptual understanding of acceptance, Wüstenhagen et al. [32] propose a three-dimensional framework. The acceptability framework encourages discussions on political, market and community dimensions. Under political acceptance, its focus lies on policies, key stakeholders and the policymakers. Procedural justice, distributional justice and trust are also elements considered under community acceptance whereas, the consumers, investors, and intra-firm are the focal areas of consideration under market acceptance. The framework is valuable for recognising diverse parts of acceptance, including desires and aspiration. Devine-Wright et al. [39] however, painstakingly identifies weakness of the framework because it fails to recognise how each measurement between relating variables differs from global, regional and local levels. In a revised version of the theory by Devine-Wright et al. [39], as depicted in Fig. 1, there is a particular focus for acceptance. To address the nonattendance of examination concerning social acceptability, Devine-Wright et al. [39] recommend governance and control, markets and innovation, socio-cultural and public acceptance as three subjects of interdisciplinary points that can shape social acceptance.

### 3.1. Socio-cultural and acceptance aspects

The social-cultural dimensions of local communities can profoundly influence innovation and the testing of new technologies. As reported in some literature, socio-cultural acceptance is tenuous as people support renewable energy projects or general rural electrification programs as far as it has no direct effect on, for example, their land or property or based on latent aspirations [40,50–53]. Devine-Wright [54] refers to this as 'NIMBY' (Not In My Back Yard) attitude by individuals in a community. Wolsink [55] in Wüstenhagen et al. [32] explains that local acceptance has varying pattern before, during and after a project. That is, the level of people's acceptance can be high but drop after project completion and vice-versa. As suggested by Devine-Wright et al. [39], to have a clear view and approach in managing communities under such circumstance, one can look at the everyday practices of householders or people at the local level through observations and interviews, as it helps reveal over time how they (community or people) use energy and their sense of acceptance. The authors warn, however, that such engagement does not guarantee acceptability. For instance, people may have a different approach towards answering questions when quizzed, mostly when they are organised in an open space to speak. In some parts of Africa, women may even refuse to talk due to cultural or religious restrictions. More effort, therefore, needs to go into gleaning all concerns of the people through different means and approaches. Thus, detailed micro-level research is required to help unearth the thoughts, beliefs and attitude of people, to understand better their actions and responses towards renewable energy projects [44]. A case in point is in Niger, where preparing meat on naked fire is a cultural way of cooking, hence, for successful clean cookstove project in the country, there needs to be the possibility to dry and roast meat without significant challenges. Thus, the acceptance of a cookstove project will primarily be based on the cookstove/ technology's ability to enable meat roasting and drying. Traditionally, cooking of "Banku" or "konkonte" in Ghana, and "Jollof" in Nigeria are best-prepared using biomass source of energy on coal pots due to the cooking process and to some extent the taste it comes along with it. This also influences the fuel type needed by a household to meet household energy needs [88].

In Ghana, according to Asante *et al* [56], the inability of the country to meet its 2020 renewable energy (RE) vision was due to ignorance associated with RE in rural communities, as some people see RE technologies as a complementary electricity source rather than as a reliable energy alternative coupled with other social obstacles. In the district of Gihanga in Burundi, household income, the gender of household heads and expenditure of firewood and candles also impeded household adoption of a biogas project [57]. These socio-cultural and economic factors are prevalent in many parts of Africa and contribute significantly to challenges with energy acceptability at community levels. In Tanzania, respondents in a study carried out by Ahlborg & Hammar [58], revealed a low interest in RE due to traditional thinking and gender issues at local levels, especially on wind energy. In Nigeria and Zambia, limited access to RE at community and provincial levels as well as, different administrative and political stages of decision making have also resulted in limited awareness and information of the socio-economic and environmental benefit associated with RE [59–61]. Social obstacles arising from improper community engagement due to a lack of collaboration with local actors and external agencies have also interfered with acceptability in the two countries. From these examples, it can be deduced that socio-cultural acceptances are from perceptions and opinions formed from different factors already existing in a community. As such, the social concerns of local communities should be carefully and deeply integrated into all RE project stages in order to achieve sustainable project implementation and optimization.

### 3.2. Market and innovation

Although market and innovations are under-researched regarding renewable energy acceptability [32], there is presently intense study in the area (see examples [62,63]), judging from the critical role market and innovation can play in sourcing for funds and project implementation processes. These studies have become necessary because of potential deadlocks that may arise without a critical assessment of a market, including how to create a financial and repayment module for renewable energy project and a careful selection of specific technologies and equipment that can suit a particular community or country. Some energy consumers avoided certain brands of solar kits due to prolong faults and extra cost associated with its repairs and accessories in Niger. The importers of these brands possibly did not consider the technology and the climatic condition in Niger, hence the substandard materials imported. Also, in Nigeria, many solar projects have been executed by inexperienced technicians and practitioners using substandard products [59]. Ineffective quality control of products, coupled with the absence of standardised specifications and manufacturer ratings, also undermines RE in Nigeria, thereby resulting in a lack of confidence amongst public and private initiatives aimed at accelerating RE adaptation at local levels in the country [59]. A 2.5 MWp Navrongo solar photovoltaics (PV) project in Ghana equally faces technical challenges because of unfit inverters used by the contractor, thereby affecting the annual yield and performance ratio of the panels as they work under suboptimal levels [64]. Replacing the inverters have proven difficult with fears of high losses in the future at the end of the inverter's useful life. Tender specifications and due diligence, such as site visitation and acceptance testing, could have helped avoid these technical fallouts before allowing the project into full operation for a better lifetime cost-ratio [64]. These example and many others are issues with PV tenders and implementation in many African countries, which affects energy acceptability and access for communities that have high hopes before project implementation.

As also specified in Rogers Diffusion Innovation theory, there are levels of adopters to technology (early adopters, early majority, late majority and laggards) who also influence innovation and market [65]. According to the theory, if potential adopters judge innovation positively, the product will diffuse through society in a relatively easy way. Hence, consumers,

inter-firm, and investors are to be highly involved in market and innovation processes because of their influential role in energy acceptability. Besides, to avert potential conflicts that may emanate from market and innovation acceptability, a project implementer needs to comprehensively know the market dynamics and how to price the energy generated. For such reasons, Devine-Wright et al. [39] emphasize that supply chain and technologies should be adopted based on empirical studies that are rooted in a well-structured business model to reflect the economic viability of a local community. Market structuring and technological innovations that appear sophisticated and unreasonably technical to use may trigger discomfort from communities. A survey carried out in Kendu Bay area of Kenya by Opiyo [66] reveals that the majority of residents prefer small solar home systems or PV-based communal grids to national grid connection which comes with high connection fees, grid system failure and corruption. A reference scenario by Mondal et al [67], also reveals that the use of firewood in Ethiopia will decline only slightly to 89% in 2020 and 82% in 2030 with the use of charcoal expected to increase by 5% in 2030 due to end-use technologies for alternative energy sources of energy and the cost of different fuel sources. Eder et al [61]. indicate how unclear information provided by companies regarding energy process and services as prevalent in Uganda also impact acceptability. In the Republic of Benin, most rural households are not frequently aware of the economic impact of electricity; this influences energy acceptability due to limited information to consumers [68,69]. Market and innovation should therefore leverage synergies and involve all actors, and also include project design, business models, finance instruments, information dissemination and research development and deployment in order to foster community acceptability.

Private sector engagement should also be encouraged. Despite challenges with private sector engagement, countries that have embarked on private sector involvement in renewable energy implementation have started reaping its benefits in Guinea where local private operators have made over 12,200 mini-grid connections in twenty-four remote villages with a partnership from the Bureau for Decentralized Rural Electrification (BERD) in Guinea [86,87]. Domestic private companies and NGOs in partnership with Mali's Rural Energy Agency have also connected about 43,300 households in Mali as part of the governments drive to include the private sector in energy access programs [86].

### 3.3. Political acceptance/ governance

In many African countries, the acceptability of renewable energy is highly political [50]. Devine-Wright et al. [39] equally hypothesise that political acceptance/governance plays a crucial role in recognising the thin line between policy output and results. At community levels, the inability of the local people to acquire the requisite knowledge on rules, options, and rights regarding a project may further impede project success, because of how knowledge and policies are kept at the national level and hardly disseminated to the local levels [70]. It becomes problematic when the government uses such national policies to lure investors into renewable energy projects without the citizens or residents having a fair understanding of the policies and implementation processes—an example of this by Peters et al [68]. is how the cost of accessing electricity to households in Benin is mostly dependant on whether it is a political party project or by a non-governmental agency. In Sierra Leone, the political interplay between ownership and access influenced a 40,000-hectare bioenergy project that ended up disempowering many women, particularly those in rural areas regarding access to bioenergy [71]. Also, as of 2005, 35% of 515 solar installations in Mali and Burkina Faso were out of operations due to various technical and organisational problems that characterised the project implementation [72]. The tension that existed between villages and management groups accounted for the failure of most of the solar installations [72]. The tensions were caused by the lack of attention to internal politics at the local level during the project planning and initiation stages. In Nigeria, the slow growth and exploitation of renewable energy significantly link with political or governmental policies and incentives [59]. Although developmental partners and non-governmental organisations do fund projects such as cooking technology and rural electrification in Ethiopia, there are still challenges with institutional capacity and implementations of sustainable energy access projects in rural areas as most budgetary allocation for energy projects are usually political decisions made by the Ethiopian government [73]. Contrary, the success of wind energy projects by Eskom in South Africa, Cabeolica in Cape Verde, Zafarana in Egypt, ErongoRED in Namibia, and KENGEN in Kenya, have a strong influence of political will which determined its rate of success [74]. Kenya is regarded as an off-grid and innovation hub in East Africa due to the nature of its political system and the level of state involvement and environmental regulatory measure that drives investors interest. As a result, there are many private sector involvements in energy provision and access in the country [74,75]. Kenya's story of renewable energy adaptations depict roles that actors from grassroots to national levels can support or impede renewable energy technology transfer and sustainable development initiatives in Africa [42].

Since political decision making has an impact on socio-economic, environmental and sustainable energy, particularly at the local levels in Africa, it must be pursued with tact [76]. Political acceptability/governance should be analysed thoroughly through a mixed-methods approach that involves perusal of viable documents and belief systems held by various stakeholders and the policymakers before concluding renewable energy project implementation. LaBelle [77] and Newig, Voss, & Monstadt [78], as borrowed by Devine-Wright et al. [39], advance the argument that a mixed-method analysis of governance helps get a clear comparative picture of different geographical locations as well as their localised narratives on technological innovation and policy approaches, which also allows researchers to identify disagreements and stakeholders with different concerns. Although González et al. [40] avoided politics while using the sustainable livelihood framework (SLF) to analyse community acceptability of energy, they concede in their recommendation that it is imperative to consider politics, because the actors involved have a powerful influence on renewable energy deployment. It is exemplary to accept that politics and

**Table 1**  
Classification of RE barriers across some selected African countries addressed in the literature.

Selected community barriers in Africa	Country	References
Social/cultural	Niger, Ethiopia, Benin Mali, Burkina Uganda Ghana, South Africa	[52,61,67,68,72]
Economics (mar- ket, Political ho- policies	Burkina Faso, Burundi, Kenya Mozambique, Tanzania, Sub Saharan Africa, Ghana Ethiopia, Benin Nigeria, Sierra Leone	[57,58,64,66,80,81] [59,73,74,76]

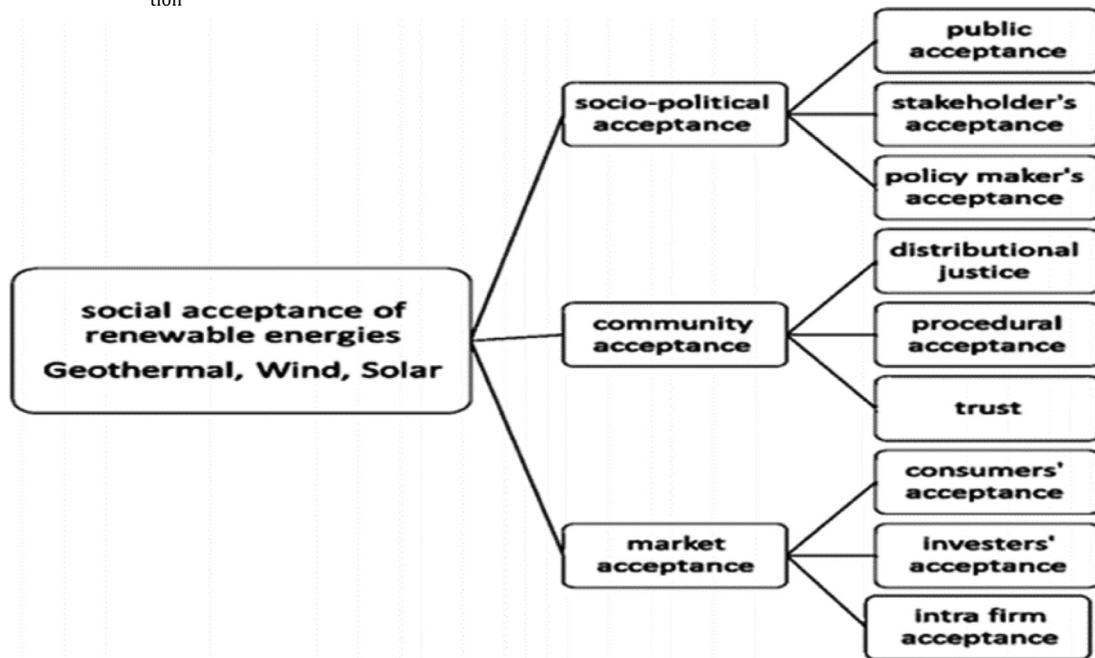


Fig. 2. A unified conceptual model of acceptability. Source: [41].

ideologies influence social actors and their response to a renewable energy project. A typical reference is the success of Germany’s renewable energy penetration which was built under political influence and deeply rooted under the renewable energy Act 2000 referred to as Erneuerbare Energien Gesetz [79].

The interplay between political, market and community acceptance (Table 1) therefore, carries significant stakes in determining how a country or community can transit from one energy use to another, as stakeholders at each level have some level of influence in determining energy project implementation success and acceptance.

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#### 4. Dynamics of community acceptability

Aside from the three-dimensional framework as reviewed above, a study by McCormick [82], concludes that people’s overall attitude towards acceptance of renewable energy can be shaped broadly by personal, psychological, and contextual factors. As explained by Alasti [50], knowledge, fears and perceptions also influence acceptability. Alasti further maintains that available information about various parts of other innovations, peoples understanding of new technology, and how individuals decipher the physical and psycho-sociological strength of it can shape agreements on renewable energy in general. Other factors such as communication and diverse factors, like social history, commercial setting, topographical, and cultural components can also prompt distinctive dimensions of societal acceptance of an innovation related to energy [50]. In the same vein, Moula et al. [83], considers distributional and procedural justice, age, political convictions, and position of energy installations as other factors that equally influence social acceptability of renewable energy.

Fast & Mabee [84] as cited by Ellis & Ferraro [35], conveniently partition how communities understand and define acceptability into place and trust-based explanation (Fig. 2). In place attachment and place identity, the authors suggest that an individual’s reaction to a proposed project may primarily be one of ‘place-protection’, stimulated as an emotional response to what they see as a disruption of places that they have developed a close affinity from childhood or for the better part

of their life. Trust and procedural justice are also essential. The issues of trust also have a crucial role in moulding social acceptance, regularly interceded through apparent procedural justice [35]. Walker, Wiersma, & Bailey [85] therefore warn that we ought to think about trust as a juxtaposed idea that carries a wide array of representation, especially when connected to a substantial thought of a community. Both place attachment and procedural justice, certify how enhancing social acceptability goes beyond just an acceptable project structure, or even a hearty participative process to depend on a more extensive social and institutional dynamics. To put it differently, the manners by which individuals talk about a project, how it is depicted in the media or by opinion leaders', matters as to whether it will be accepted or not [35].

This conceptual model summaries the dynamics of acceptance as influenced by Hosseini et al. [41]. The conceptualised model is regarded as an elaboration on what has been started by Wüstenhagen *et al* [32].

## 5. Discussion and conclusion

The question of how the acceptability of renewable energy can be achieved at the community level has been a matter of ongoing discussion. In this paper, we have examined the three stages that affect community acceptability of renewable energy, namely market and innovation, socio-cultural acceptance, and political acceptance and governance. This paper has also highlighted the most recent conceptual model of acceptability, which places more emphasis on factors like trust, perceptions, and stakeholders as influential factors to renewable energy acceptability at community levels. As stated by Wüstenhagen *et al.* [32], the essence of acceptability cannot be underrated, and with Africa having a diverse cultural and social setting in terms of ethnicity, leadership hierarchy, economic classification, gender activity roles, and expectations, issues boarding on acceptability cannot be side-stepped in any energy project implementation on the continent. Thus, there can be real community RE project success when the inclusion of societal levels, from end-users through regional decision-makers to governments and agencies have been thoroughly taken into consideration.

The conceptual review has also embraced broad scholarly studies, which shows that an extensive and complex arrangement of relationships between people, technology, communities, and regulatory bodies, working at the different levels does affect social acceptability. We argue that social acceptability should, therefore, be seen inside these extensive arrangements of connections and as a significant aspect of the progress to attain energy access for communities. There is a sheer urgency to enhance procedures and practices identified within the implementation of renewable energy across local communities in Africa. By ensuring a careful and coordinated approach towards the social dynamics of communities, including a wide variety of stakeholders and partners who will directly or indirectly be affected by a project, will have an impact on renewable energy success. The process will undoubtedly require a fundamental methodology on social acceptance, dependant on trust between project initiators and the community to advance thoughts and mutual respect for one another.

Thus, to succinctly deal with the implications of acceptance, we recommend amongst the following that, a bottom-up approach that allows local people to be primary actors from project initiation to monitoring and evaluation is a prerequisite that should not be downplayed. By allowing communities to lead a project will bolster not only acceptability but also sustainability and a strong sense of ownership, which is crucial to project implementation success. Additionally, there is a need to survey the procedure on how national policies on energy can be converted into community projects through other elective methods to promote the sense of community ownership and sustainability. Perception may also influence the acceptance of renewable energy. With renewable energy technologies being relatively new in the African context, understanding psychological factors that interrelate and influence acceptance can enhance project design and implementation, for example, understanding how a technology works and its impacts, may shape the cost-benefit perception of consumers.

More so, we found out that quality standards, effective communication of policies, and skilled labour force, are prevalent challenges in the energy sector of many African countries. These challenges can be addressed through joint public education and decentralised training programmes for communities, to awaken their consciousness on policy initiatives and efforts by government. This approach is crucial in addressing the shortfalls of public awareness and information as it appears that many a time, citizens are kept in the dark on energy policies, making them unable to appreciate the effort by their respective government in meeting their energy demand and supply needs. Our review also indicates the need to increase local and private sector participation in sustainable renewable energy services in Africa. Policy instruments and incentives like a tax credit, feed-in-tariffs, grants, power subsidies, and payback credits should therefore be encouraged. Other potential impediments that deter private sectors from investing in the energy sector should also be removed, and by so doing, it will increase private investors' confidence and security and also take the burden off the government's shoulder in meeting the energy needs of citizens, mainly in rural settlements.

Lastly, the cultural dynamics and reverence for traditional leadership, local traditions and community beliefs should be treated under the lens of respect to ensure that community ownership and acceptance is fully guaranteed. To a possible extent, identified cultural institutions' or equivalent should be actively involved in project processes to ensure that no tradition, custom or rules are breached but fully integrated into project implementation.

While this study has demonstrated that community acceptability is a suitable approach in designing and implementing renewable energy projects at the local level towards achieving the triple benefit of energy access, project sustainability and sustainable development; we recommend that future research should seek to include more community-based initiatives from many other parts of Africa to help bolster the findings and conclusions of this paper. Future research on private sector involvement, policy options and strengthening of local government towards decentralized energy planning, integration and transition is also a knowledge gap that needs further studies to bridge the gap

## Declaration of competing interest

Authors have no competing interest.

## CRedit authorship contribution statement

SHA: Conceptualization, SHA: Writing- Original draft preparation, DL: Review and Supervision.

## Acknowledgment

The authors are thankful to the journal editor and the anonymous reviewers for their insightful comments and suggestions which significantly improved the manuscript. Thanks, are also due to the staff of West African Science Service center on Climate Change and Adapted Land Use (WASCAL) - Niamey-Niger, specifically Prof Rabani Adamou, Dr Maman Maarouhi Inoussa and Mr Abdoul Momine Amadou- coordinator for RARSUS project at WASCAL and the participants in the research for their contributions to this study.

## Funding

This paper is part of a master thesis on Community acceptability of renewable energy and its implication for climate actions in Africa: the case of Niger, funded under the Risk Assessment and Reduction Strategies for Sustainable Urban Resource Supply in Sub-Saharan Africa (RARSUS-SEMALI) Projects in Niger and Mali.

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