ESJ Social Sciences Peer-reviewed

Comparative Analysis of Community Energy Projects: Policy Lessons for Kenya from the United Kingdom

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Doi:10.19044/esj.2024.v20n31p32

Submitted: 25 September 2024
Accepted: 01 November 2024
Published: 30 November 2024

Cite As:
Kitony S., Onyango V., Duot J.D., Ologhadien N.G. & Pouhe S.N. (2024). *Comparative Analysis of Community Energy Projects: Policy Lessons for Kenya from the United Kingdom*. European Scientific Journal, ESJ, 20 (31), 32. https://doi.org/10.19044/esj.2024.v20n31p32

Abstract

Assuming a scope for policy learning across jurisdictions, this paper compared policies relevant to community energy projects (CEPs) in a developed country where they have been adopted (i.e. the UK), against policies in an emerging country where CEPs are scarce (i.e. Kenya). Through comparative analysis, successes and failures in the policies' landscapes were examined, with the aim of distilling lessons that could enhance CEPs adoption in Kenya. Both countries have some similar core functional mechanisms in their policies, e.g. Feed-in-Tariffs, energy auctions, and grid access. These are demand-side in nature and create a market for CEPs while derisking investments to local communities. However, key differences exist, reflecting the levels of maturity in the energy mix and policy-making in either country. The UK has more demand-side and 'implementation oriented' policies, compared to Kenya. For Kenya, key lessons include incentives prioritising appropriate grant programs, Feed-in-Tariffs targeting CEPs, adopting Smart Export Guarantee, implementing grid connection agreements, and fostering centres for data and knowledge exchange. However, these require a laser-focus to make them bespoke to the Kenyan context. Our recommendations envisaged a carefully calibrated confluence of pull-push policy factors, involving: a CEPs-friendly policy landscape, CEPs targets under a long-term

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

strategy, natural abundance of different RE sources, and, Kenya's appetite for using different policy solutions for different needs. Two key areas for relevant research are worth mentioning: exploring where the equilibrium for cost-effective energy mix integrating CEPs lies, in Kenya's future, and; empirically exploring systems-wide analyses to reveal the inter-dependencies and inter-relations of the various contextual and policy factors, aimed at CEPs as an outcome.

Keywords: Community energy projects (CEPs), Comparative analysis, Policy lessons, UK renewable energy, Kenya renewable energy

Introduction

Community energy is defined as the "delivery of community-led renewable energies, energy demand reduction and supply projects, *wholly owned or through a partnership* with commercial or public sector partners" (Bauwens *et al.*, 2022; DECC, 2014). While several strands of community energy approaches exist (Brummer, 2018; Dall-Orsoletta *et al.*, 2022; Norbu *et al.*, 2021), the definition of a community energy project (CEP) is flexible, with diverse groups applying the term to distinct types of schemes. Generally, it is acknowledged that a CEP is the installation of one or more renewable energy (RE) technologies in or close to a rural community. The CEP must benefit the community, either directly through the supply of energy to multiple properties or a community facility, or indirectly, e.g., through sale of energy generated to the grid. Community input may be in various forms e.g., project initiation, administration, implementation, financial support, or decision-making.

CEPs have evolved across technologies, ownership structures, and engagement approaches (Bauwens *et al.*, 2022). They now incorporate various REs, adopt cooperative ownership, employ innovative financing, and emphasise social, economic, and environmental sustainability purposes (Nolden *et al.*, 2020). Literature from various parts of the world (Herzog *et al.*, 2001) observe various benefits of CEPs, while highlighting several opportunities for a cheap and sustainable energy transition process. CEPs can also enhance community empowerment by facilitating community engagement in the development and ownership of energy projects, and fostering a sense of responsibility and active participation in decisions related to energy production and consumption (Coy *et al.*, 2022). This supports the achievement of universal energy access by 2030 (UN SDG Goal 7) (UN, 2015).

Today, CEPs are disproportionately found in the developed countries, following policies that promote them as part of efforts to fulfil Net Zero targets (Leonhardt *et al.*, 2022). In contrast, they are relatively scarce in developing

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

countries, especially where cooperating and pooling of community resources could be a viable and beneficial option towards energy transition (Coy *et al.*, 2022; Klein and Coffey, 2016). Thus, CEPs are a niche that can be fraught and varied in approach, with various contexts having own drivers and enablers, and diverse barriers to adoption and implementation, to which appropriate solutions must be found. For Nolden *et al.* (2020), financial constraints from limited access to capital, high upfront costs, and uncertainties around return on investment, may hinder CEPs development. For Brummer (2018), limitations in connecting CEPs to existing electrical grids can be a hurdle, via e.g. grid capacity constraints, inter-connection costs, and regulatory approval processes. For some (Mirzania *et al.*, 2019; Nolden *et al.*, 2020), a lack of ambition and unhelpful changes in government policies, which can create uncertain policy environments for CEPs, is a challenge. A lack of awareness or misconceptions about the benefits and feasibility of CEPs is also highlighted as a hinderance.

Nevertheless, the literature is united about both the need and crucial role for clear, consistent and supportive policies, to promote and enable long-term planning and implementation for CEPs (Brummer, 2018). As some jurisdictions have managed to adapt CEPs while others have not, it bears asking whether lessons from the successful jurisdictions could enhance CEPs adoption in the less successful ones, especially where CEPs are potentially viable and beneficial (Norbu *et al.*, 2021). Yet this dearth of CEPs in developing countries has not been covered in the literature, especially from a policy learning perspective, which has the benefit of exploring the extent to which a less successful country can borrow lessons from a more successful one.

To address the knowledge gap, this paper looks to an early adopter, e.g. the UK, and compares its policies with those in Kenya, which has not yet successfully adopted CEPs. The aim is to distil lessons that can inform effective and successful policy approaches for CEPs adoption in Kenya. This is within the broader field of policy transfer or lessons learning (McCann and Ward, 2012; Park *et al.*, 2014), where policies from one place can be considered and adopted in another. The scope in this paper is about lessons learning and not the mechanisms involved. Therefore, the paper is underpinned by two well-studied interrelated theories. First, policy learning, involving accumulation of data about problems and solutions through social interactions. This examines how learning and policy change occur from different theoretical perspectives to substantiate, legitimise, or transform beliefs (Dunlop, 2020; Hall, 1993).

Policy learning is the process of updating knowledge, beliefs, and actions based on experiences, analysis, or social interaction within the context of policymaking. It can aid in understanding why a policy was implemented,

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the policy's effects, and how the policy could apply to the policymakers' jurisdiction (Dolowitz and Marsh, 2000; Dobbin et al., 2007). Learning serves as a lens to explore questions about policy diffusion and transfer (Benson and Jordan, 2011), policy convergence (Plümper and Schneider, 2009), and evidence-based policy (Cairney, 2015). It is considered a fundamental component of the policy process (Béland and Schlager, 2019; Heikkila *et al.*, 2013). Secondly, policy transfer, referring to the process where information or policy from one political system is utilised by another (Dolowitz and Marsh, 2000; Peck and Theodore, 2015).

Following the introduction providing a brief overview of the evolution, benefits and challenges of CEPs, the methodology is presented, followed by the results chapter, which includes policy recommendations for Kenya. In the conclusion, we highlight key policy implications and propose areas for further research to support the adoption of further policies for CEPs in Kenya.

Methodological approach

This study conducted a comparative case analysis between two contrasting policy contexts: the UK as an early adopter and Kenya as a laggard in adopting CEPs. While there is no methodology peculiar to comparative research, comparative analysis in the social sciences is aimed at making comparisons across different countries or cultures (Clasen, 2013). This entails comparing two or more things with a view to discovering something about one or all the things being compared e.g. their similarities and differences.

According to Esser and Hanitzsch (2012), comparative analysis serves several interlinked and essential functions that are highly relevant to our research aim. It enhances the understanding of one's own society by contrasting its familiar structures and routines with those of other systems. It also heightens awareness of other systems, cultures, and ways of thinking and acting, enabling critical comparison with one's own. Additionally, comparative analysis allows for the testing of theories across diverse settings, contributing to the development of universally applicable theories. It helps prevent over-generalisation, which is often based on scholars' personal experiences, and provides alternative options and solutions to problems.

Comparison is the defining component of our research design, focusing on the similarities and differences in policies related to CEPs across the two countries. Different contextual conditions (i.e., influencing factors) will be used to explain varying outcomes concerning CEPs, while similar conditions will be used to explain parallel outcomes. Quoting Mancini and Hallin (2012), "theorising the role of context is precisely what comparative analysis is about." According to Bartlett and Vavrus (2017), a comparative case study approach attends simultaneously to two logics of comparison. Firstly, the more common ‘compare and contrast’, often traversing across

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macro, meso, and micro dimensions of case-based research, e.g., 'tracing across' sites or scales, from the national to the local cases of CEPs. Two, ensuring that the objects of analyses are compared based on a common theoretical framework drawing on equivalent conceptualizations and methods, with carefully defined boundaries of their cases.

To match our research question and data needs, we chose a descriptive comparative analysis type, which focuses on summarising and comparing characteristics of different datasets (Pickvance, 2001), i.e. CEPs-relevant policies. This echoes Tilly's (1984) variation-finding comparison which seeks to 'establish a principle of variation in the character or intensity of a phenomenon by examining systematic differences between instances' (1984, p. 82). Herein, comparing numerous forms of CEPs policies to discover logical differences among their characteristics and associated impacts.

Three steps elaborated in the comparative analysis literature (Bartlett *et al.*, 2017; Clasen, 2013) were followed. First, *selecting the cases* for comparison, ensuring that any revealed similarities or differences is not merely an artifact of the choice of countries, but a consequence of the policy environment in those countries (Hantrais, 1999). The rationale for our case selection is linked to a conceptual framework that justifies the idea that observed energy transitions are an outcome of the prevailing policy environment e.g., incentives, targets, institutions and budgets (Becker and Kunze, 2014). Our cases for comparison were selected based on the following criteria: availability of country data showing the levels of CEPs adoption and performance, and accessibility of documents on policy and regulations in the English language.

Second, we provided *contextual descriptions* in each case study, of CEPs and relevant policies, to enhance our understanding about factors that may help recognise *functional equivalents,* which are important for explaining similarities and differences that will be observed in our data. For example, what are the policy or contextual equivalents in both countries, as only objects that meet the same function (or role) may be meaningfully compared with each other?

Third, we *compared* the existing typologies and elements of policies in each case, and interpreted the policies as either representative (typical of a category) or a critical case (if it works here, it will work everywhere) (Hallin and Mancini, 2004). Any policy deemed to have delivered widespread adoption of CEPs shall be classified as 'effective' and labelled 'A'. Any policy that delivered some but not a significant number of CEPs shall be classified as 'moderately effective' and labelled 'B'. Any policy that will not have delivered any CEPs shall be classified as 'ineffective' and labelled 'C'. Such judgement calls by the authors, based on reports of performance, helped distinguish the role of the policies and accomplish the important step from

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"description" to "explanation" (Hameleers and Vligenthart, 2020) of the observed CEPs and associated policies. However, we do not go into reasons for policy success or failure (Daddow, 2019), which was outside the scope of the paper.

We also compared the policies in terms of their characterisations, whether it was a supply side (SS) or demand side (DS) type of policy (William, 2009). Demand-side policies create high demand for products and services, via controlling the availability of credit (borrowing) and its price (interest rates), and changes in government spending and taxation. In contrast, supply side policies enhance an economy's ability to produce goods and services, e.g. by stimulating investment, innovation, efficiency in industries and promoting healthy competition, via free-market and interventionist measures to overcome market failure. The methodological approach in the paper is summarised as follows:

- An online search for CEPs policies and performance reports, for the UK and Kenya, on Google search engine, was undertaken.
- A review of available policy documents and energy mix reports, noting the policy landscape and levels of CEPs adoption and contribution, dissecting the regulatory frameworks, government incentives, funding mechanisms and overarching support mechanisms that likely influenced the adoption of CEPs, was undertaken.
- Critical analyses and comparison of the policies to identify similarities, parallels and divergences was undertaken to discern causal elements that could explain the adoption and performance of CEPs. A verdict score between grades A and C helped describe policy effectiveness, and a distinction between supply side and demand side helped describe the different policy types.
- A reflection was done, drawing on both successful and non-successful policy elements and approaches implemented in the UK, to provide policy recommendations for Kenya.

Results

Case study 1: Overview of CEPs in the UK.

First established in 1997, CEPs in the UK have evolved over the past decades (Younity, 2022). In the early 2000s, projects focusing on RE sources emerged and in the mid-2000s, the formation of cooperative models and social enterprises laid the groundwork for more CEPs (Nolden *et al.*, 2020). Data on the state of community energy in the UK (CES *et al*., 2022) show an upward trend (Figure 1), and despite the difficulties posed by the COVID-19 pandemic

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and the withdrawal of Feed-in-Tariffs (FiT), CEPs have generally increased, though at different rates.

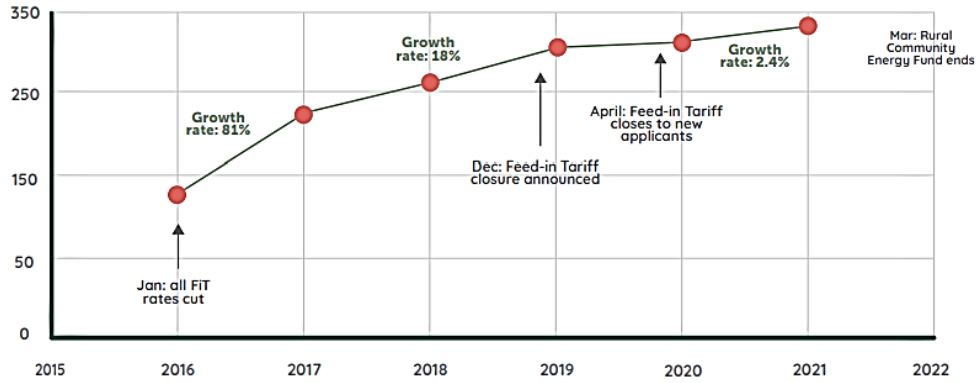

Figure 1: Growth of community-owned electricity in England, Scotland, and Wales (Source: from CES *et al*., 2022)

A key organisation relevant to CEPs in the UK is Community Energy England (CEE), founded in 2014, Community Energy Scotland (CES) founded in 2008, and Community Energy Wales (CEW) established in 2012, by practitioners within the community energy sector, to act as the voice of the sector and help put people at the heart of the energy system. For instance, with over 300 community energy organisations in 2022, CEE's vision is "A thriving community energy sector integrated into and truly powering a fair, zero-carbon energy system". Their mission is "To create the conditions within which community energy is able to thrive and scale". CEE launched a national public-facing, downloadable and user-friendly map containing all CEPs initiated under the UK's Rural Community Energy Fund (RCEF), now replaced with the Community Energy Fund. CEE, CES and CEW produce several research and review reports, e.g. annual State of the Sector Reports, providing an overview of how the community energy sector has developed and performed.

The State of the Sector Report 2022 shows that in 2019, CEPs generated equivalent 264.9MW, accounting for less than 1% of total renewable capacity in England and over 65,000 tCO2e savings. As of 2021, CEPs in the UK demonstrated substantial success, with highlights including 217,489 people engaged in the sector, 495 community energy organisations, compared to 477 in 2020 and 275 in 2019, and 271 participating in electricity generation. The cumulative installed capacity for 2021 reached an impressive 331 megawatts (Figure 2), with 645 full-time employees created, £3 million saved on energy bills, and 143,000 tCO2e saved. Nevertheless, this progress is slow and will need to increase considerably to help the UK reach Net Zero

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by 2050 (Brown, 2022). While in 2014, the UK Government anticipated 1million homes to be powered by CEPs by 2020, in 2018, there were only 67,000 homes benefiting from such schemes (Green Alliance, 2019). 31% less generation capacity was installed via CEPs in 2017 than in 2016, and at least 66 projects are known to have failed or stalled in 2017.

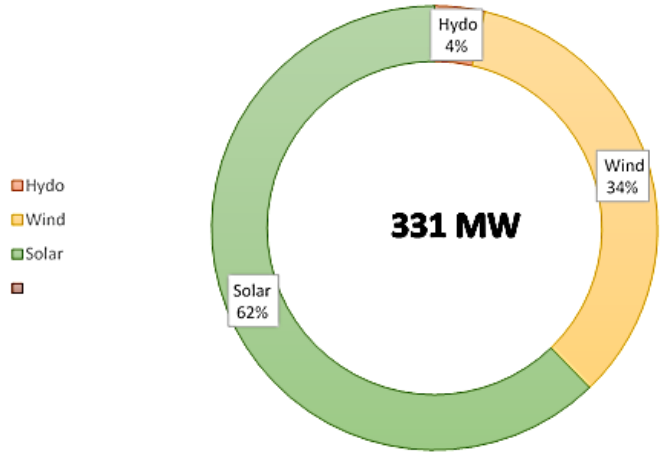

Figure 2: Community-led RE installed capacity in 2021 by energy mix, showing that most of new CEPs was solar (138.3 MW) while wind (27.4 MW) and hydro (2.2 MW) trailed behind (CES *et al*., 2022).

In terms of heat generation, until March 2021, while subsidies were still available under the Renewable Heat Incentive (RHI), very few were installed. Three new heat installations were reported in 2021 with a capacity of 138 kW and two of them secured RHI support. Understandably, communities can find the high installation costs of networks and transmission systems, challenging (Brummer, 2018). Another actor potentially relevant to creating a conducive environment for CEPs, is the Energy Saving Trust, based in all the UK nations of England, Wales, Scotland, Northern Ireland. It provides technical advice on setting up groups, feasibility studies, financing projects, and reducing carbon emissions etc. In Scotland, to help achieve its target, Energy Saving Trust is running the Scottish Government's Community and Renewable Energy Scheme (CARES) (Scottish Government, 2024), giving guidance to communities interested in CEPs.

Although there are almost 5000 active CEPs across the UK (CES *et al*., 2022) and about 500 generating electricity, some (Brown, 2022) argue that a lack of coherent Government support or several changes in strategy (Green Alliance, 2019), and/or poor policy decisions, have stopped the sector from flourishing in recent years (See Figure 1). While CEPs were heralded in 2014 as the next big thing in local energy provision, visible support from the Government has mostly disappeared (CES *et al*., 2024), and the last update to the Community Energy Strategy was in 2015. The policy environment has

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impacted the viability of CEPs, yet the opportunities of CEPs are still as valid as ever. For Farrell (2019), frequent Government strategy changes have left CEPs struggling to put forward effective business cases. For Lee (2019), a Community Energy Strategy must be created to invest and re-mobilise the community energy sector, putting community energy at the heart of the roll-out of Smart Local Energy Systems and Local Area Energy Planning. According to CES *et al*. (2022, 2024), several reoccurring themes explain this: inadequate time and capacity; lack of early-stage funding; inadequate expert support and guidance for new business models; unattractive grid connection costs; planning complexity, and unattractive finances. However, this may change with the new labour government installed in July 2024.

Policy Framework and Fiscal Regime

Our search identified at least six policies which can be said to have directly or indirectly enabled CEPs in the UK, listed chronologically, to show the trend in the policy spectrum. One, introduction of Feed-in Tariffs (FiT) in 2010, was a most impactful policy decision, financially incentivising CEPs by offering payments for the electricity they generated and exported to the grid. Various technology types qualified: solar PV, wind, micro combined heat and power (CHP), hydro, anaerobic digestion, for installations of a capacity up to 5 megawatts, or 2 kilowatts for Micro CHP. Payable for the installation's eligibility period (typically 20 years) and adjusted annually by the Retail Price Index (RPI), FiT led to substantial growth in CEPs despite rates cut in 2016. In 2019, the FIT scheme was terminated although the policy's legacy continues to support CEPs (Ofgem, 2023a). Overall, FiT policy was very effective and perhaps was prematurely terminated, before enough CEPs to meet the UK's Net Zero targets were adopted.

Two, since 2014, although targeting large companies, the Contract for Difference (CfD) mechanism saw some local communities adopt CEPs (Nolden *et al.*, 2020). The CfD is a contractual mechanism designed to incentivise investments in RE projects: i.e. a long-term contract between an electricity generator and the Low Carbon Contracts Company (LCCC), allowing the generator to stabilise its revenues at a pre-agreed level for the duration of the contract (DBEIS, 2019). Three, the Community Energy Strategy, in 2014, aimed at inaugurating CEPs through financial incentives, grants, and streamlined regulations (DECC, 2014). However, this has not been very successful based on the proportion of CEPs in existence. Four, the Rural Energy Community Fund (RECF), now the Energy Community Fund, was a national scheme launched in 2019 by the Department of Business, Energy & Industrial Strategy (DBEIS). It invested £10 million to support over 200 new CEPs, delivered via five regional Net Zero Hubs (CES *et al*., 2022).

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Five, in January 2020, the FIT scheme was replaced by the Smart Export Guarantee (SEG) scheme. SEG supported CEPs by requiring electricity suppliers with over 150,000 customers to have export tariffs available for customers and to pay for surplus electricity exported to the grid. Unlike the previous FiT, SEG allows community projects to negotiate rates directly with suppliers (Ofgem, 2023b), although it has been criticised for lacking a framework to help reward community groups providing economic, environmental and societal benefits, and failing to incentivise community energy at all (Mirzania *et al*., 2019). Six, CEPs got a vital grid connection agreement with the Distribution Network Operator (DNO), covering key areas of application, assessment, and negotiation of technical requirements, charges, timelines, and compliance (Cornwall Energy, 2013). A DNO is a company licensed to distribute electricity in the UK. These companies own and operate the system of cables and towers that bring electricity to UK homes and businesses.

Case Study 2: Overview of CEPs in Kenya

Kenya has a backdrop of encouraging and ambitious policy commitments for RE. Its national development plan, Kenya Vision 2030, sets out to be a regional leader in sustainable industrialisation, including a transition to 100% clean energy by 2030 (GoK, 2023a). While Kenya has its share of challenges in the energy transition (Kazimierczuk, 2019), data from the Kenya National Bureau of Statistics (KNBS, 2022) indicates a diverse composition of the country's total installed capacity, of which none was accounted from any CEPs (Figure 3).

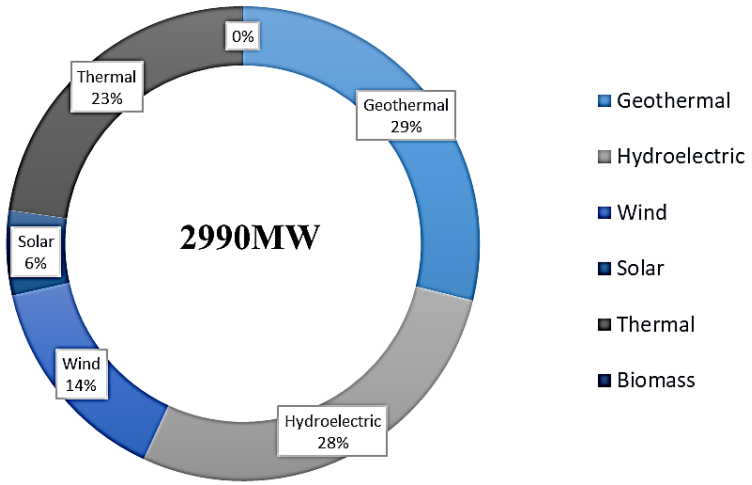

Figure 3: In 2021 approximately 1/3 of the installed electricity capacity (data source: KNBS, 2022) was under the ownership and operation of Independent Power Producers (IPP), e.g., privately owned Lake Turkana Wind Power Project with a capacity of 310 MW, which injects power into the national grid.

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To fully understand Kenya's policy context for the energy mix planning and decision-making, one must note that in 2013 Kenya established a devolved system of government, of 47 counties, which decentralised significant powers and resources with county governments developing strategies and policy frameworks to address their energy needs in a specific and more concentrated manner (Ngigi and Busolo, 2019; Volkert and Klagge, 2022). With 23.5% of Kenyans still having no access to electricity, let alone sustainable energy solutions (EPRA, 2022), several counties have developed detailed energy plans integrating RE into their County Integrated Development Plans (CIDPs). However, these energy development plans need to be strengthened by incorporating capacity building and participatory planning strategies to better address all the energy issues, and strongly promote the adoption of RE technologies within the local communities (Janho, 2020).

Although no CEPs are currently documented in Kenya, the government, in partnership with the Kenya Off-Grid Solar Access Project (KOSAP) (GoK, 2023b), plans to combat rural energy access gap by building 137 solar mini-grids across 12 of the 14 counties not connected to the main grid. The project will electrify 567 public facilities, including secondary schools, health facilities, administrative offices, and power water pumps for 380 boreholes. The project will give access to electricity to approximately 277,000 households, or 1.5 million people (GoK, 2023). Thus, the extent to which this can integrate CEPs requires exploration. Another potential for CEPs can be found in the variety of innovative business ventures which have emerged within Kenya's dynamic energy market ecosystem. A notable initiative is M-KOPA, which helps low-income communities to gradually increase their ownership of installed RE, through flexible micro-payments, enabled by smartphone technology (M-Kopa, 2024). At the end of 2021, M-KOPA had unlocked $600 million in credit for its customers and installed one million Solar Home Systems that prevented around two million tonnes of CO2e from being emitted (M-KOPA, 2021). A Bloomberg New Energy Finance report from 2019 ranked Kenya as fifth globally in terms of investment opportunities in clean energy (Okoth, 2019), boding well for CEPs.

In terms of institutional actors, the NGO Power Africa, has supported capacity-building to guide energy-sector stakeholders in developing policies and legislation. As a U.S. government-led partnership, Power Africa aims at harnessing the collective resources of public and private sectors to double access to electricity in Sub-Saharan Africa, with a goal to add at least 30,000 megawatts (MW) of cleaner and more reliable electricity generation capacity and 60 million connections by 2030 (USAID, 2024). It is advocating for communities at the centre of energy infrastructure development, supporting energy companies and developers in Kenya to proactively assess community

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needs, develop relationships based on transparency and trust, and reshaping how energy infrastructure impacts their customers.

Kenya can be at the forefront of meaningful community engagement in the energy sector, with a vibrant civil society, and clean energy potential of: 10,000 MW of geothermal, 15,000 MW of solar, 6000 MW of hydro and 4600 MW of wind (GoK, 2021a; RTA, 2022) providing significant scope for CEPs. Kenya is currently the eighth largest geothermal energy producer in the world, while its solar potential of 15,000 MW is the same generation target President Biden has set for the USA for wind capacity by 2035 (Zemanek, 2022). Some of Kenya's targets, which could drive CEPs, aims to generate 2,036 MW of wind power, i.e. 9% of its current capacity, by 2030 (Kazimierczuk, 2019). According to the Energy and Petroleum Regulatory Authority (EPRA), 73% of Kenya experiences wind speeds of 6 m/s or higher at a hundred metres above ground level (EPRA, 2013), making it an optimal place to bolster wind generation. With such potential, which policies can deliver and sustain CEPs?

Policy Framework and Fiscal Regime

In Kenya, several policies which have enabled RE and could potentially contribute to CEP adoption, are worth mentioning. One, in 2008, Kenya launched FiT on electricity generated from wind, biomass, and small hydropower (GoK, 2010). In 2010, this was extended to include geothermal, biogas, and solar energy; updated in 2021, to cover RE plants under 20 MW in biomass, biogas, and hydro, allowing electricity producers to sell power to the off-taker at a predetermined tariff for a set period (GoK, 2010). However, a study by Ndiritu and Engola, (2020) found FiT to not have been effective in Kenya in terms of CEPs, as none exists. Two, the Renewable Energy Auctions Policy (REAP) of 2021, enables competitive procurement aligned with the Least Cost Power Development Plan and Integrated National Energy Plan (INEP). REAP (GoK, 2021b) outlines the approach to RE procurement based on competitive auctions, provides a transition scheme from FIT, as no RE projects larger that 20MW will be eligible under FIT policy. Instead, they shall be transitioned to the REAP framework. Geothermal projects will be procured under the policy on Licensing of Geothermal Greenfields.

Three, in 2018, USAID released a *Guide to Community Engagement for Power Projects* (USAID, 2018), as a reference tool in Kenya, setting standards for effective, comprehensive, and transparent community engagement by infrastructure project developers. The guide is based on global best practices, knowledge and information gathered from local stakeholders, tailored to the Kenyan context. Four, a revised *Resettlement Policy Framework was released in 2021 (KETRACO, 2021)* by the Kenya Electricity Transmission Company (KETRACO), integrating international statutes and policies and serving as a policy guide for the growing number of power

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transmission projects in East Africa. It outlines action plans for communities affected by land acquisition for transmission infrastructure and emphasizes fair and prompt compensation for resettlement. Moreover, the Kenya Electricity Generating Company (KenGen) has announced the intention to develop a mechanism to handle community grievances about energy development (Rotich, 2019), to secure goodwill from communities and ensure speedy implementation of energy infrastructure projects. This can be a useful tool in facilitating CEPs.

Five, **in terms of environmental awareness,** the *Mainstreaming Wildlife Incident Management into Utilities in East Africa* guide (USAID *et al.*, 2022), outlines potential wildlife interactions with energy infrastructure, relevant outcomes and costs, and mitigation measures for smarter utility planning vis-à-vis environmental concerns. Six, the 2019 Energy Act is a comprehensive regulatory framework governing electricity generation, establishing licensing requirements, setting Renewable Portfolio Standards and incentivising RE through FiT and Power Purchase Agreements. It provides for community engagement, land access, revenue allocation, and resettlement compensation, thus potentially encouraging CEPs by simplifying procedures, enhancing grid access, and ensuring compliance with regulatory standards (Janho, 2020). Seven, The Draft Energy (Net Metering) Regulations, released in 2022, allows electricity prosumers to sell surplus energy to the national grid and earn credits (EPRA, 2022). Eight, in 2021, the Finance Act 2021 reinstated VAT exemptions on RE products ranging from small-scale solar modules and mini grids to larger wind power equipment, as well as clean cooking technologies (Njuguna, 2021). However, overall, as no CEPs have been adopted in Kenya, the policies therefore can be assigned the verdict: C.

Kenya's Community Energy Projects: Harnessing UK Policy Expertise for Sustainable Development

Having examined six UK and eight Kenyan policies relevant to CEPs, some similarities, parallels and differences, can be identified. But first, it is important to compare the policies in terms of effect and typology (Table 1).

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Table 1. A summary of the impact the policies and regulations have had on CEPs, with a grade assessing performance, and comments on whether it was a supply side (SS) or demand side (DS) type of policy. From the reports, any policy deemed to have delivered widespread adoption of CEPs shall be classified as 'effective' and labelled 'A'. Any policy that delivered some but not a significant number of CEPs shall be classified as 'moderately effective' and labelled 'B'. Any policy that will not have delivered any CEPs, shall be classified as 'ineffective' and labelled 'C'.

Policy / regulation (UK in italics and Kenya in bold font)	**Comments and verdict**
1. *Feed-in Tariffs (FiT)*	Initially effective but terminated before critical threshold achieved [B; DS]
2. *Smart export guarantee (SEG) scheme*	Did not result in CEPs [C; DS]
3. *Contract for Difference (CfD)*	Partially effective; some CEPs delivered [B; SS]
4. *Community Energy Strategy*	Partially effective; some CEPs delivered [B: DS & SS]
5. *Rural Energy Community Fund (RCEF)*	Partially effective; some CEPs delivered [B; DS & SS]
6. *Distribution Network Operator (DNO)*	Partially effective; some CEPs delivered [B; SS]
7. **Feed-in Tariffs (FiT)**	**Ineffective as no CEPS delivered [C; DS]**
8. **Renewable Energy Auctions Policy (REAP)**	**Ditto [C; SS]**
9. **Guide to Community Engagement for Power Projects**	**Ditto [C; SS]**
10. ***Resettlement Policy Framework***	**Ditto [C; SS]**
11. ***Mainstreaming Wildlife Incident Management into Utilities in East Africa***	**Ditto [C; SS]**
12. **2019 Energy Act**	**Ditto [C; DS & SS]**
13. **Draft Energy (Net Metering) Regulations**	**Ditto [C; SS]**
14. **Finance Act 2021**	**Ditto [C; SS]**

From Table 1, both countries have at least three similar core policy elements i.e., FiT (policy nos. 1 & 7), energy auctions (nos. 2 & 8) and grid access (nos. 6 & 13); which are largely demand side (66.7%) in nature, thus helping create a market for CEPs while also derisking the investments to local communities. These are examples of similar functional policy mechanisms being deployed. Notably, both countries generally have similar timelines for these policies e.g. FIT introduced in the UK in 2010 and in Kenya in 2008.

However, despite some similarity in the core policies, the details reveal key differences, likely reflecting the levels of maturity in the energy mix and policymaking in either country. In terms of outcomes, the FiT scheme in the UK delivered CEPs while the Kenyan one ended up supporting Independent Power Producers (IPPs) and no CEPs. In terms of implementation, FiT in the

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UK was prematurely terminated and rolled over into an auction scheme, before CEPs reached maturity and were able to compete on their own terms (without subsidies), with other sources of energy.

In Kenya, FiT has not been terminated but expanded to cover more technologies, although no explicit targeting or quota for CEPs, has been set. The Kenyan policy, like the UK, has set a threshold of 20MW to qualify for FiT. That Kenya launched its FiT scheme two years ahead of the UK implies that the absence of CEPs in Kenya must have a specific explanation. Perhaps, any combination of 1) CEPs are not yet a community or government priority; 2) CEPs are not yet acknowledged as viable in Kenya; 3) no explicit provision e.g. via ring-fencing, quotas or targets for CEPs; 4) unawareness about CEPs; 5) inadequate capacity in technical, project management, and investment spheres, and; 6) fear of financial risks, real or perceived. These are tentative explanations which should be examined more empirically.

From Table 1, five out of the six (83%) listed UK policies can be classified as 'implementation oriented', compared to only two out of nine (22%) policies in Kenya. Most policies in Kenya are guidance documents, i.e. about setting the 'environment or framework' and less of direct 'implementation and delivery' of targets. This shows the levels of advancement in the policy agendas between the two countries, towards CEPs. Here, we see policies and institutions in the UK explicitly addressing CEPs, unlike in Kenya. Furthermore, at least 50% of UK policies had a demand side element, compared to Kenya's 25%. This implies a bigger push towards delivering CEPs in the UK, compared to Kenya, where CEPs are possible but there is no direct policy drive and community motivation towards their adoption. Notably, the policy targets in the UK acted as a driver for CEPs. Wales has a policy target for 1GW of locally owned RE by 2030. By the end of 2020, an estimated 853MW locally owned capacity was operational in England, meeting around 42.6% of Government target of 2GW of community RE by 2030.

However, Kenya has successful interventions in RE e.g. KOSAP and M-KOPA, which can potentially anchor the jump to CEPs. The existence of policy targets e.g. for Net Zero and RE, can also act as policy drivers for CEPs.

In terms of policy performances relative to CEPs adoption, the UK has a mix of moderately effective and ineffective policies (Table 1), while Kenya's are generally ineffective. Arguably, the UK, by having active CEPs in existence, means that their policymakers, communities, and potential investors already have proof of concept, unlike in Kenya where no such demonstration, exists.

Moreover, in terms of supporting institutions, the UK's CEE, CEW, CES, The Energy Trust and CARES, are well-supported by the UK government funds, and at a minimum, pursue government-led mandates and

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explicit government targets, including CEPs. In contrast, Kenya has no such government-supported institutions. For example, Power Africa is not funded by or answerable to the Kenya government. Furthermore, while the UK institutions are directly pursuing delivery of government agenda, the NGOs in Kenya are more focused in supporting capacity building, community awareness and engagement in energy decisions, and policy-formulation, generally. In contrast to the UK, and a crucial difference, they are not successfully promoting CEPs as stakeholder investments i.e. income generation for local communities. Instead of empowering communities to *own* the CEPs, they are more engaged in empowering communities to participate in *acquiescing to or facilitating* IPPs. Whether this is because communities in Kenya, at this juncture, are not ready to undertake meaningful CEPs, or this is a form of state capture (Crabtree and Durand, 2017; Ries, 2020), is unclear.

Having considered and compared the above UK and Kenya policies, we subsequently recommend seven priority policy lessons for Kenya: to enhance the policy environment for adopting CEPs.

Multifaceted Grants Program

It is crucial that Kenya deploys a carefully calibrated mix of pull-push policy factors to attract and sustain CEPs. This will require a wide spectrum of attractive financial initiatives to help derisk and meet the investment needs of communities and individuals that could potentially adopt CEPs. This matters, as Kenya initiated FiT two years ahead of the UK, still has a FiT scheme, but no CEPs. Drawing inspiration from CARES in Scotland, Kenya can offer various grants and low-interest loans to facilitate capital access: a funding program that integrates technical assistance and capacity-building components ensuring the acquisition of essential skills for effective planning, implementation, and long-term management. Such a multi-faceted grants program will ensure that various types and stages of CEPs readiness can be supported. Furthermore, it should avoid a one-size fits-all policy approach, given the various barriers that may exist in Kenya's counties, and varied energy resources, cultures and socioeconomic conditions. The key lesson is to capture the relevant risk(s) and incentive(s), via appropriate funding scheme and target various entry levels for supporting the adoption and delivery of CEPs.

Introduce FIT for CEPs

Given the qualified success of FiT in the UK, Kenya's FIT scheme should treat CEPs as nascent RE technologies. Later, when CEPs are established and cost competitive, FiT can be replaced with a more cost-effective model e.g. auctions, like REAP, which Kenya already has. This should offer an attractive rate to incentivise, de-risk and provide a ring fence

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or quota for CEPs, and; compensate communities for the RE they generate, with additional payments for surplus energy fed into the national grid. Such a dual incentive structure will encourage sustainable energy production fostering a more attractive, equitable and inclusive approach to the country's energy mix. FiT in Kenya should also consider preferential support for CEPs based on more local resources and content, thus providing considerable local jobs and environmental protection to the community. CEPs which are not home-grown and are built largely on imported products, foreign investment or systems, should be lower in the hierarchy for support. This will address the concern that Kenya's energy market may over-depend on imported technologies and input e.g. from China, rather than developing low carbon value chains at home or on the continent. Another key lesson from the UK is to avoid withdrawing FiT until threshold levels of CEPs adoption and performance have occurred.

Introduce Principles of Smart Export Guarantee

Kenya can expand the benefits of Net Metering regulations by targeting CEPs and enabling small-scale CEPs to sell their surplus energy directly to electricity suppliers, ensuring guaranteed payments. However, aware that the UK SEG approach has not been very successful in terms of CEPs, Kenya should study why, and craft its own in such a way as to avoid the barriers and pitfalls in the UK one. In this policy, the county governments should be at the forefront, following the subsidiarity principle and bottoms-up approach to benefits creation, supported by the national government. Currently, in Kenya, only private Independent Power Producers (IPPs) are exporting to the grid.

Grid Connection Agreement Principles

Kenya can emulate the UK by implementing the principles of grid connection agreement strategy at the local DNO level. This approach would allow communities to establish direct connections to microgrids and national grids, enhancing local energy autonomy, and potentially earn much-needed income. Following Klagge *et al.* (2020) study supporting county level initiatives, each county should have its own rates of incentives to reflect local context resources, barriers, and opportunities. A one-size fits all national rate may be counterproductive as it may underplay the incentive and disincentive factors for CEPs in each county. Kenyan policies could consider setting targets and quotas, for CEPs connectivity, especially in places where CEPs are feasible or have emerged.

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Mini-Grids

The Kenya government's Off-Grid Solar Access Project (KOSAP) is a worthwhile opportunity to stimulate awareness, integrate capacity-building and appropriate policy incentives for CEPs. As solar, geothermal and wind are abundant in Kenya, creativity in CEPs-based ecosystems should be prioritised to help communities exploit these readily available resources. From the UK experience, community groups can have difficulty securing planning permission, lack skills in negotiating leases and getting CEPs off the ground and maintaining them (CES *et al*., 2022). A study by Cloke *et al.* (2017) found that rural CEPs in the Global South have too frequently been framed within a top-down technologically driven framework that limits their ability to provide sustainable solutions to energy poverty and improving livelihoods. So, Kenya should prioritise formulating polices to address these issues, e.g. via mini-grids (Kirubi, 2009) based on local communities, instead of IPPs only.

Social License to Operate

Community engagement has emerged as key to the success of RE projects (CES *et al*., 2024), including CEPs. The UK policy experience has revealed tensions between communities and RE projects; and some reluctance to undertake CEPs, even when some incentives have been offered, e.g. under SEG. Developing countries like Kenya (Abdi *et al.*, 2024) *and Tunisia (Hammami et al., 2016),* have similar *underlying complex dynamics that restrain RE, and potentially, CEPs. Thus,* Kenya policymakers must be alive to these sensitivities which are likely to affect CEPs, especially in wildlife-rich and indigenous community areas (Renkens, 2019). For CEPs based on geothermal energy, the principles of social license to operate (Mading, 2013) must nurture new thinking at the grass-root level for CEPs related policies, to account for equity and the influence of culture and organisational factors. This is because social acceptance is considered a *sine qua non* for geothermal development in the 21st century (Cataldi, 1999).

Kenya already has an advantage by having a *Guide to Community Engagement for Power Projects*, a *Resettlement Policy Framework*, and a *Mainstreaming Wildlife Incident Management into Utilities in East Africa* guide. These are relevant framework policies which can be used as building blocks to address social license to operate issues. Especially when considering environmental impacts on indigenous communities in whose lands CEPs may be based, to account for their cultural interests, socioeconomic welfare, and their fundamental collective human rights (Renkens, 2019). This will be during the overall planning and consenting process, especially via Environmental and Social Impact Assessment (ESIA) procedures (see Onyango and Wiman, 2020).

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Hubs and Centres of Excellence

The UK has several institutions tasked with funnelling funds to CEPs; undertaking awareness and training on specific areas in RE technologies and supporting policy formulation, e.g. CEE and the Energy Saving Trust. Kenya needs such centres of excellence, to significantly promote CEPs, by creating hubs for knowledge exchange and technology transfer, within counties. These centres should not only focus on establishing adequate community participation models but pursue a laser-focus link to adequate financial and non-financial models that can deliver CEPs. A study reviewing community energy in the UK revealed that having access to data on the sector is vital for community energy organisations, stakeholders and policymakers, to understand and communicate about the sector, encourage investment and bring about supportive policies (Brown, 2022).

Discussion

In this paper, informed by the theory of policy learning, we have gleaned some policy recommendations which we believe can lead to more CEPs being adopted in Kenya. Our paper's key contribution to the literature is to invoke policy lessons learning as a way for Kenya to enjoin the energy transition, via CEPs. As Kenya aims to be Africa's RE superpower, CEPs, as an avenue towards an equitable, home-grown, and sustainable energy transition, is yet to take root for various reasons that can be addressed by policy. Our seven recommendations are made with the proviso that Kenya can learn from others; and leverage on several existing opportunities, e.g. by integrating incentives and business models for CEPs into initiatives like Kenya Off-Grid Solar Access Project (KOSAP) and M-KOPA.

Looking to the third term of county governments (2023- 2027), the scope for adopting appropriate policies for CEPs should be carefully explored, focusing on community RE generation (Oluoch *et al.*, 2020; Otundo *et al.*, 2020) to address climate change and achieve universal energy access by 2030 (UN SDG Goal 7) (UN, 2015). Furthermore, Kenya should live to the spirit of CEPs defined as a group of people or individuals, joining together to *own*, manage and generate RE.

However, the lessons from the UK show that care is required as some policies are more effective than others, e.g. FiT, energy auctions and grid access schemes, preferably, with explicit targets and/quotas for CEPs. In the UK, although CEPs were heralded in 2014 as the next big thing in local energy provision, visible support from the UK Government waned, e.g. the last update to UK Community Energy Strategy was in 2015. Furthermore, an effective policy like FiT was altered / terminated before it had attained a threshold level of success. Therefore, failures in the UK are also sources of lessons, of what Kenya should beware of and consider bespoke solutions, including their

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positionality in the just energy transition (Onyango and Gazzola, 2024). As recommended for the UK by Green alliance (2019), Kenya should also consider 1) opening new markets for community energy; 2) designing local energy markets that fully value community energy; 3) stimulating local innovation with more [local] trials, and; 4) supporting RE ownership via CEPs.

However, the political economy and moral issues around energy transitions, including CEPs, and rights of indigenous communities and wildlife, should be explicitly and methodically accounted for in Kenya's policy considerations. We fear the governing status quo has preferred an energy system that prioritises centralised energy generation and IPPs, in the face of an increasingly unstable energy market.

We envisage that if recommendations in this paper are implemented, Kenya's potential success with CEPs can provide a blueprint for other African states. Nevertheless, an attempt at lessons learning from a developed to an emerging economy, portends methodological limits due to contextual disparities, such as socio-political priorities e.g. climate emergency, regulatory frameworks, funding accessibility, and community dynamics. Furthermore, comparative analyses may overlook nuanced cultural, political, and economic factors influencing project viability and scalability. Selecting only two contrasting countries limits generalisability of the findings and thus the opportunities for prediction (George *and* Bennett, 2005).

Finally, a major constraint in comparative research is that the documents and data sets in different countries may define categories e.g. success or effectiveness, differently or may not use the same categories. Therefore, for Kenya, translation of successful policy models from the UK will require careful consideration of local nuances and systemic challenges.

Conclusions

This paper considered the limited adoption of CEPs in the UK and the associated policies. Aware of the dearth of CEPs in Kenya, it then compared the UK and Kenyan policies, with the aim of recommending policies and policy elements that could effectively promote CEPs in Kenya. This was based on a descriptive comparative analysis, focused on summarising and comparing characteristics of different datasets, i.e. policies. By comparing both successful and ineffective elements of the policies, the idea of lessons learning allowed us to recommend key policy lessons for Kenya to consider.

Our recommendations envisaged a carefully considered and calibrated confluence of pull-push policy factors, involving: 1) a CEPs-friendly policy landscape, 2) ambitious CEPs targets under a long-term strategy, 3) natural abundance of different RE sources, and, 4) Kenya's appetite for using different

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policy solutions for different needs. This confluence is envisaged to deliver a conducive policy platform that will motivate CEPs.

As a priority, Kenya's policies should aim to apply the advantages of FiT schemes while avoiding its disadvantages. As learned from the UK case study, Kenya must formulate appropriate FiT policies, which are revised and updated as times and conditions change, to ensure that the relevant push-pull factors that promote CEPs are maintained until certain thresholds for CEPs are met. Clear targets and quotas for CEPs, at national and county levels, will be useful.

It can be concluded that the wider policy environment for RE in Kenya is generally supportive and could potentially promote CEPs, if the right policies are implemented. But Kenya's policies must go beyond 'community involvement in the energy transition', e.g. from mere procedures of public participation to a laser-focus on actualising socio-economic models where communities *own* and adopt CEPs. For this to occur, our case studies revealed that both supply side and demand side policies are necessary: but these must match CEP's objective(s) with the most efficient and cost-effective policy intervention.

Another important lesson is that Kenya's demand side and supply side policies should be carefully integrated to create a confluence where CEPs are incentivised: matching appropriate funding streams with CEPs targets, technical assistance and capacity-building components, to equip communities with the skills needed for effective planning, implementation, and long-term management. Creating awareness of CEPs, providing proof of concept, and de-risking the initial wave of CEPs, until they become established and attract own investments, is the holy grail for CEPs policy-making. Furthermore, the adoption of grid connection agreement principles, enhancing local energy autonomy, will be a key policy item. As will be policies expanding on the benefits of Net Metering regulations in Kenya, and incorporating SEG principles, to enable small-scale CEPs, aligning with principles of decentralization, energy market liberalization, and sustainability at the local level.

It also matters that the politics must support the policy environment, otherwise, the CEPs policies will be frustrated. Although we provide seven recommendations, Kenya must use carefully considered context-sensitive policy approaches. The limited success of CEPs in the UK implies that Kenyan policy-makers must be very careful to consider how to leverage what has been successful, whilst carefully avoiding what has not, and aim for a bespoke Kenyan perspective.

Two key areas for research are worth mentioning. One, exploring where the equilibrium for cost-effective energy mix integrating CEPs lies, in Kenya's future. Two, empirically exploring the systems-wide analyses to

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reveal the inter-dependencies and inter-relations of the various contextual and policy factors, including CEPs, aimed at Net Zero as an outcome.

Conflict of Interest: The authors reported no conflict of interest.

Data Availability: All data are included in the content of the paper.

Funding Statement: The authors did not obtain any funding for this research.

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