

Can decentralised energy technologies improve community energy?

Research on community energy in Europe and North America has shown that decentralised energy technologies enable flexible delivery and governance models, whereby communities can play a role in energy projects' design, operation, and maintenance.

What are off-grid and decentralized energy systems?

Provided by the Springer Nature SharedIt content-sharing initiative Off-grid and decentralized energy systems have emerged as an alternative to facilitate energy access and resilience in a flexible, adaptable way, particularly for communities that do not have reliable access to centralized energy networks both in rural and urban areas.

What if Ethiopia's energy landscape is shaped by centralised state provision?

If Ethiopia's energy landscape is shaped by centralised state provision and uncoordinated, smaller scale efforts to provide renewable energy where it is needed, the energy transition remains in the government's grip and dominated by large-scale hydropower production.

Does Ethiopia have a wind power system?

Ethiopia has connected 33% of its population to the national grid and 11% with off-grid solutions--mostly mini-grids and solar PV systems. Since 2012, wind farms have been installed to compensate for the shortfalls of hydroelectric power in the dry season, but wind energy remains marginal in the national energy mix [63].

Can communities be engaged in deploying off-grid energy systems in Ethiopia and Mozambique?

Community energy offers a framework to develop local technology implementation and management skills to create close relationships between communities and their infrastructure. However, current legislative and governance frameworks in Ethiopia and Mozambique constrain the possibility of engaging communities in deploying off-grid energy systems.

Why do energy transitions need inclusivity in Ethiopia & Mozambique?

Energy transitions in Ethiopia and Mozambique, and many other countries with significant gaps in access to centralized energy systems, require putting inclusivity at the forefront to ensure that energy policies and infrastructure support the well-being of society as a whole.

Our results shed new light on the potential of decentralized energy systems to offer a reliable, quick, and cost-effective way to increase access to electricity for rural healthcare facilities in sub-Saharan Africa. ... Ethiopia, the Democratic Republic of the Congo, the Central African Republic, Chad, and Madagascar. Concerning the differences ...

Recent events have reduced the otherwise steadily increasing annual percentage of the global population with

access to electricity for the first time in years [1]. Due to long distances to grid infrastructure, off-grid renewable energy systems are economically viable options to provide larger electricity access in developing regions like sub-Saharan Africa [[2], [3], [4]].

Background Off-grid and decentralized energy systems have emerged as an alternative to facilitate energy access and resilience in a flexible, adaptable way, particularly for communities that do ...

6. Energy-smart solutions, such as improved energy efficiency, energy storage technologies, efficient water use, and off-grid, mini grid and decentralized renewable electricity and heating and cooling systems, can provide access to affordable and ...

Several attempts have been made in the literature to delineate and discuss potential energy futures emphasising the interplay from both societal and technical perspectives. For example, Thombs [1] analyses the future in terms of power, equity, and ecological impacts offering a typology of four: libertarian energy decentralism, technocratic energy centralism, ...

The main objective of this capstone paper is to identify the barriers in developing sustainable solar-powered electricity for rural Ethiopia and to review solutions and access the ...

By placing a strong emphasis on meeting the energy needs of marginalized groups and aligning with sustainable development objectives, community energy systems have the potential to play a pivotal role in accelerating Ethiopia's inclusive and clean energy ...

Energy transition can also be regarded as energy system change, i.e., a change in the constellation of energy inputs and outputs, involving suppliers, distributors, and end-users along with institutions of regulation, conversion, and trade [58]. In countries like Ethiopia, energy transition is often associated with moving up the energy ladder ...

Background Off-grid and decentralized energy systems have emerged as an alternative to facilitate energy access ... we introduce the concept of energy landscapes as an analytical lens to analyze the dynamics of change in the energy systems of Ethiopia and Mozambique and its suitability to explore the potential of off-grid community-centered ...

Access to reliable and affordable energy is vital for sustainable development. In the off-grid areas of developing countries, decentralized energy solutions have received increasing attention due to their contributions to reducing poverty. However, most of the rural population in many developing countries still has little or no access to modern energy ...

understand how off-grid energy systems can support Ethiopia's energy transition, this paper analyzes the country's current energy situation, highlights the role of off-grid solutions, and ...

Research attention on decentralized autonomous energy systems has increased exponentially in the past three decades, as demonstrated by the absolute number of publications and the share of these studies in the corpus of energy system modelling literature. This paper shows the status quo and future modelling needs for research on local ...

1. Introduction. The adoption of off-grid or decentralized renewable energy technologies (RTech), such as solar photovoltaics (PV), biogas digesters and improved cook stoves (ICS), is seen as a solution to reducing the effects of poverty especially in rural communities in sub-Saharan Africa (SSA) where it is not technically nor economically feasible ...

expansion of energy access to remote communities, usually rural areas, where grid extensions are unfeasible. Decentralized electricity access is commonly provided either through mini-grid solutions or off-grid systems such as stand-alone power systems (SAPS) (Figure 4). A mini-grid system is a localized power network where

Energy transformation is addressed as a global trend to more sustainable world and future. Zero-emission targets pave the way to reach this goal with brilliant presence of renewable energy resources. Obviously, transforming the structure of the energy industries including power systems to decentralized frameworks is inevitable.

Analysis: decentralized energy systems and smart grids. Decentralized energy resources will play a critical role in boosting global energy resilience. The global transition from centralized grid networks to ...

Background: O-grid and decentralized energy systems have emerged as an alternative to facilitate energy access and resilience in a exible, adaptable way, particularly for communities that do not have reliable access to centralized energy networks both in rural and urban areas. Much research to date on community energy systems has focused on

We take our experience of site selection, manufacturing of E-hubs, installation, and implementation of over 50 solar-powered kiosks, and managing the operation of the energy outlets throughout the country as an asset for upcoming high-potential off-grid and productive use of decentralized energy systems.

Decentralized energy systems featuring local generation and storage empower individuals and communities, reducing grid dependence and enhancing sustainability. This article explores the profound impact of these innovations on the energy landscape, emphasizing the benefits of sustainability, efficiency, and resilience in the evolving future of ...

DRE is defined as on-site, off-grid, mini-grid or distributed energy systems that use renewable energy resources including small hydro, agriculture & forest biomass waste, wind, solar, and other new renewable energy resources. The outstanding characteristics of the use of DRE include local availability and no or low impact on both the local and ...

Decentralized energy systems Ethiopia

What Are the Advantages of Decentralized Energy Systems? Many decentralized energy systems are based on renewable energy systems and sustainability. The first winner is planet Earth, which would receive fewer carbon dioxide emissions, helping the climate change battle. Many decentralized energy systems are based on renewable energy ...

Analysis: decentralized energy systems and smart grids. Decentralized energy resources will play a critical role in boosting global energy resilience. The global transition from centralized grid networks to decentralized distributed energy systems is accelerating. From microgrids, small-scale renewables, and combined heat and power facilities ...

The last decade has seen a significant interest in microgrids throughout the world, even though they remain an early stage niche innovation. In response to growing energy needs, demands for greater reliability, lack of access to electricity in many places that remain unconnected to a central power grid, massive power outages and natural disasters, microgrids ...

1. Rural Electrification and Increasing Energy Access to the Largely Underserved Market. Using blockchain systems for decentralized energy generation and peer-to-peer transactions can enable local solar power generators to sell power to ...

The Ethiopian authorities approve Biopipe Global to introduce its decentralized wastewater treatment solution in Ethiopia. The subsidiary of the American company Lifequest World Corp (LQWC) will soon install a wastewater treatment plant for a public building in the capital Addis Ababa.

Conclusions Energy transitions in Ethiopia and Mozambique, and many other countries with significant gaps in access to centralized energy systems, require putting inclusivity at the forefront to ...

These researchers have proven that decentralized renewable energy (DRE) systems can offer a significant contribution into addressing complex challenges between energy access, infrastructures, water management, and food security in rural Africa. ... Ecuador, Ethiopia, India, and Nepal. They highlighted the potential for improvements in food ...



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