



**KASESE
MUNICIPAL
COUNCIL**
Where Nature Meets

FINAL ENERGY & CLIMATE ACTION PLAN FOR PUBLIC

2024 – 2029

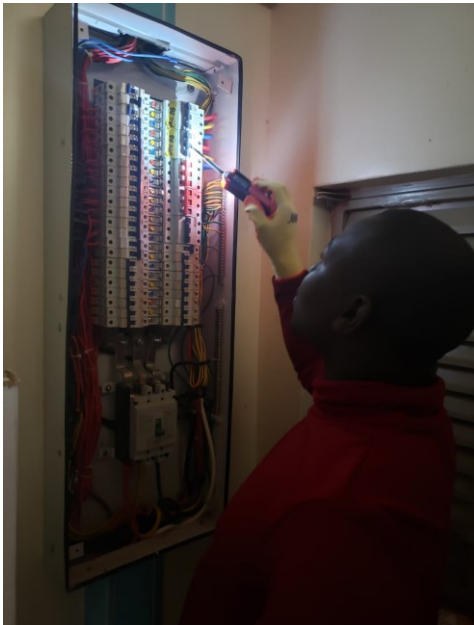


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1. INTRODUCTION AND BACKGROUND

The Energy and Climate auditing of public buildings in Kasese Municipality painted a multifaceted picture, reflecting a blend of commendable practices and areas for improvement. The existing energy and climate resilient practices, notably the integration of solar energy in 40% of public buildings and the adoption of efficient lighting systems, demonstrate a forward-thinking approach towards sustainable energy utilization. Equally important are energy conservation measures, effective water management strategies, and the promotion of green spaces, all contributing to a more sustainable and environmentally conscious public infrastructure.

However, this progressive landscape is contrasted by several key areas of inefficiency, highlighting the challenges still faced by the municipality. Issues such as sub-optimal electricity utilization, dependency on inefficient lighting systems, and the use of traditional cooking methods underscore the need for enhanced energy management. Variability in appliance use, inconsistent energy-saving practices, and the limitations in water management during seasonal shortages further emphasize the gaps in current practices. Additionally, indoor air quality concerns in some buildings and the limited green spaces in certain areas point to the need for more holistic environmental management.

To address these challenges, a comprehensive action plan focusing on energy efficiency and climate resilience is imperative. This plan therefore provides an outlook of the climate and energy status of public buildings in Kasese Municipality, and a costed action plan to address these inefficiencies. The action plan offers a roadmap for advancing towards a more energy-efficient and climate-resilient future, ensuring the municipality's public buildings are not only sustainable but also conducive to the well-being of its community.

2. ENERGY OUTLOOK IN KASESE MUNICIPALITY PUBLIC BUILDINGS

This section illuminates the critical energy and climate practices within public buildings of Kasese Municipality, underscoring both the commendable practices and notable gaps. These insights form the foundation upon which the action plan is developed, aimed at addressing the identified inefficiencies and enhancing overall energy and climate resilience.

2.1 Existing energy and climate resilient practices

The Energy and Climate Auditing identified several notable strengths and commendable practices in energy and climate management. These practices exemplify the municipality's commitment to sustainable energy and environmental stewardship. These practices include:

Integration of renewable energy: A significant proportion (40%) of public buildings have integrated solar systems into their energy mix, demonstrating a commitment to renewable energy. Educational institutions and healthcare facilities like Kasese Municipal Council Health Centre III are notable examples where solar energy significantly contributes to their power needs.

Efficient lighting systems: The use of LED and fluorescent bulbs constituting 41% of the lighting systems, is a positive trend. These lighting options offer superior energy efficiency and longer lifespans, thereby reducing electricity consumption and costs.

Energy conservation measures: Many institutions practice turning off lights during daylight hours to leverage natural light, reducing energy consumption. Additionally, Select institutions like the Division Headquarters have adopted the practice of switching off computers when not in use, contributing to energy savings.

Water management strategies: Some buildings, like Railway Health Centre III, have implemented rainwater harvesting, which is a sustainable and cost-effective approach to water management, particularly beneficial during dry seasons.

Tree cover and green spaces: Educational institutions such as Kasese Youth Polytechnic and Kasese Secondary School have made significant contributions to tree cover, which enhances air quality and provides environmental benefits.

Community and environmental engagement: Some buildings like the Kasese Municipal Council Health Centre III, have active energy committees overseeing energy conservation efforts, which shows a community-engaged approach to energy management.

2.2 Climate and energy inefficiencies in Kasese Municipality public buildings

The Energy and Climate Auditing for public buildings in Kasese Municipality identified several key areas of inefficiency.

Sub-optimal electricity utilization: There are inconsistencies in electricity utilization efficiency, particularly in educational and healthcare facilities. There is lack of sub-metering in schools (40% of buildings), like the Kilembe Secondary School, hinders precise monitoring and management of electricity usage. Moreover, many buildings, especially healthcare facilities, are still relying on single-phase electricity despite having high electricity potential, indicating a need for an upgrade to three-phase systems for more efficient power delivery.

Besides, educational institutions like Mount Rwenzori Girls Secondary School experience frequent load shedding, severely affecting operations and resulting in low efficiency. Healthcare facilities like Rukoki Health Centre IV struggle to run all essential machinery simultaneously due to inadequate electrical infrastructure, impacting healthcare delivery during outages.

Dependence on inefficient lighting systems: Despite the adoption of LEDs and fluorescents, many institutions still use energy-intensive incandescent bulbs. The Division Headquarters operates incandescent bulbs for 12 hours daily, resulting in higher energy consumption and increased replacement frequency compared to more efficient lighting systems.

Variability in Appliance Use: The wide range of appliances and their usage patterns, especially in government and educational buildings, can lead to inefficiencies. The lack of a standardized approach to procuring energy-efficient appliances is a concern.

Inconsistent energy-saving practices: While some buildings have adopted measures like manual control of lighting and switching off idle appliances, there is a lack of uniformity in the implementation of energy-saving practices across all public buildings. The lack of structured energy management and regular reviews in most of the institutions results in ad hoc energy-saving practices without formal policies or routine assessments.

Traditional cooking methods: A considerable number of institutions, especially in the education sector, rely on traditional cooking methods like open fires and charcoal stoves. For instance, Rukoki Health Centre IV, which had to create a makeshift cooking area for patients after repurposing its kitchen into a maternity ward, uses firewood as the primary cooking fuel, a less efficient and more environmentally damaging method.

Seasonal Water Shortages: Many buildings like the Kasese Municipal Council Health Centre III experience significant increases or decreases in water use, often due to infrastructure issues like pipe breakages and seasonal changes. The lack of widespread rainwater harvesting systems exacerbates water management challenges during dry seasons. This highlights the need for more resilient water management strategies.

Indoor Air Quality: Some buildings like Local Government buildings such as Kasese Municipality One Stop Center Shared office and healthcare facilities recorded AQI far above the threshold, indicating concerning air quality. Healthcare facilities like Rukoki Health Centre IV recorded high levels of Volatile Organic Compounds (VOCs) and carbondioxide exceeding recommended thresholds and posing health concerns.

Limited green spaces: Despite the positive impact of trees in educational institutions, other public buildings, including some healthcare establishments and government offices, lag in tree density, which can affect air quality and the urban microclimate.

These inefficiencies highlight the need for tailored strategies in various public buildings to improve energy efficiency, enhance resource management, and ensure sustainable practices for better environmental stewardship.

3. ENERGY EFFICIENCY & CLIMATE RESILIENCE ACTION PLAN

3.1 Vision:

“To transform Kasese Municipality public buildings into exemplars of energy efficiency and climate resilience by 2029”.

The Energy Efficiency and Climate Resilient Action Plan for Kasese Municipality's public buildings envisions a future where all public infrastructures operate at the pinnacle of energy efficiency and environmental sustainability. This vision embodies a transformative journey towards a greener, more resilient urban landscape, where renewable energy sources like solar power are maximized, energy consumption is optimized, and sustainable practices are ingrained in every aspect of public building management.

At the heart of this vision lies a commitment to not only address current inefficiencies - such as sub-optimal electricity utilization and reliance on outdated energy systems - but to also pioneer innovative approaches that set new standards in energy management and climate resilience. The plan foresees every school, healthcare facility, government office, and public space in Kasese becoming a beacon of sustainable practices, from advanced solar installations and efficient lighting systems to robust water management strategies and lush green spaces.

Emphasizing community involvement and environmental stewardship, this action plan aims to transform Kasese's public buildings into models of sustainability that inspire and educate, fostering a culture of environmental awareness and action. This vision is not just about technological upgrades or policy reforms; it's about cultivating a sustainable ethos that permeates every level of the municipality, ensuring that Kasese's public buildings contribute positively to the community's well-being and the global fight against climate change.

3.2 Strategies

1. **Optimizing Electricity Utilization:** The plan includes the implementation of sub-metering across schools like Kilembe S.S and Mt. Rwenzori Girls S.S, ensuring precise monitoring and management of electricity usage. Transitioning to three-phase power systems in healthcare facilities like Rukoki H/C IV is another key strategy. This will accommodate higher power requirements and optimize electricity distribution.
2. **Promoting Energy-Efficient Appliances:**
3. A shift towards ENERGY STAR-certified appliances is encouraged to reduce energy consumption. This strategy targets buildings like the Central Division Offices and Mayor's Block, where the adoption of energy-efficient computers, laptops, and LED bulbs can significantly impact energy savings.

4. **Conducting Regular Energy Audits:** To identify areas of inefficiency, regular energy audits are planned across all public buildings. This initiative will help in developing targeted strategies for energy improvement.
5. **Integrating Renewable Energy:** Increasing the adoption of solar power systems in buildings such as the Kasese Municipal Council H/C III and Kasese Main Central Market is a priority. This not only promotes renewable energy use but also enhances the building's self-sufficiency in energy.
6. **Enhancing Climate Resilience and Environmental Health:** The plan calls for regular monitoring and management of air quality in public spaces to ensure a healthy indoor environment. The adoption of rainwater harvesting systems in buildings like Railway Health Centre III will mitigate water shortages and contribute to more sustainable water management. Enhancing tree cover around public buildings, such as in schools like Kasese Youth Polytechnic, is another critical step towards improving air quality and fostering environmental health.
7. **UV Radiation Protection:** Implementing measures like UV-filtering window films in buildings with high UV Index levels will protect occupants and contribute to a healthier indoor environment.
8. **Sustainable Practices and Community Engagement:** The plan includes conducting educational programs to raise awareness about energy conservation and sustainable practices.
9. **Involving local communities in implementing energy-saving measures** ensures a collective approach to building a more sustainable and resilient municipality.
10. **Environmentally Friendly Cooking Methods:** Replacing traditional cooking methods with more efficient and environmentally friendly options like 4 tier institutional stoves, particularly in educational and healthcare facilities, is a key aspect of this plan.
11. **Conduct an energy efficient & climate resilient building designs.** To enhance sustainability and resilience in public buildings, it is recommended to conduct energy-efficient and climate-resilient building designs. This encompasses integrating state-of-the-art insulation techniques, utilizing renewable energy sources, and adopting smart building technologies. By implementing design principles that optimize natural light and ventilation, buildings can significantly reduce energy consumption and carbon footprint. Additionally, incorporating climate-resilient features to withstand extreme weather conditions ensures the longevity and sustainability of infrastructure investments. This will not only minimize environmental impact but also promotes a healthier, more sustainable future for urban development.

Table 1: Costed Action plan

Strategy	Action	Targeted Buildings		Responsibility	Timeframe (Years)					Cost (USD)
					1	2	3	4	5	
	<ul style="list-style-type: none"> Implement sub-metering in all public buildings, especially schools, to allow for precise monitoring and management of electricity usage. 	Schools	Kilembe S.S, Mt. Rwenzori Girls S.S, Kasese S.S, St. Peters P/S	UMEME						1,500 @300 per building
	<ul style="list-style-type: none"> Transition buildings with high electricity potential, from single-phase to three-phase power systems to accommodate higher power requirements. 	Healthcare facilities	Rukoki H/C IV, Railway H/C III, Kasese Municipal Council H/C III	UMEME						4,500 @1500 per building
Promoting energy-efficient appliances	<ul style="list-style-type: none"> Encourage the use of energy-efficient appliances. Opt for ENERGY STAR-certified computers, laptops, printers, LED bulbs, air conditioners, and other appliances. Promote the use of laptops over desktops and LED lighting over incandescent and fluorescent bulbs. 	Local Government, Health Centre, Schools	Central Division Offices, Mayor's Block, Railway H/C III, Kilembe S.S, Kasese Youth Polytechnic	Building Administrators						25,000 @5,000 per building
	<ul style="list-style-type: none"> Conduct regular energy audits to identify inefficiencies and develop targeted strategies for improvement. 	All buildings	All buildings	Municipality						20,000 @1,000 per building to procure the auditing equipment
	<ul style="list-style-type: none"> Engage more public buildings in energy auditing to ensure efficient energy use and management. 	Local Government, Health Centre, Schools	Other buildings	Municipality						1,000 per building
	<ul style="list-style-type: none"> Increase the adoption of solar power systems in public buildings. 	Market, Health Centre, Schools	Kasese Municipal Council H/C III, Kasese Main Central Market, Kilembe S.S,	Municipality						25,000 @5,000 per building

Strategy	Action	Targeted Buildings		Responsibility	Timeframe (Years)					Cost (USD)
					1	2	3	4	5	
	<ul style="list-style-type: none"> Enhance the existing solar infrastructure and address maintenance or upgrade needs for suboptimal solar panel performance. 		Kasese S.S, Mt. Rwenzori Girls S.S							
	<ul style="list-style-type: none"> Assess the feasibility of other renewable energy sources like wind, geothermal, or biomass in addition to solar energy. 	All buildings	All buildings	Municipality						40,000 – feasibility study fees
	<ul style="list-style-type: none"> Regularly monitor and manage air quality in public buildings. Implement measures like efficient ventilation systems and indoor air purifiers to ensure safe air quality levels. 	All buildings	All buildings	Municipality						40,000 @2,000 per building
	<ul style="list-style-type: none"> Adopt rainwater harvesting systems in more public buildings to mitigate the impacts of seasonal water shortages and ensure a reliable water supply throughout the year. 	Health Centres	Railway Health Centre III, Kasese Municipal Council Health Centre III	Building Administrators						4,000 @2,000 per building
	<ul style="list-style-type: none"> Enhance tree cover around public buildings for improved air quality and environmental health. Encourage the cultivation of diverse tree species and maintain green spaces. 	Schools	Kasese Youth Polytechnic, Kasese S.S, Kilembe S.S, St. Peter's P/S, Mt. Rwenzori Girls School.	Municipality						5,000 @1,000 per building
UV Radiation protection	<ul style="list-style-type: none"> Implement protective measures against UV radiation in buildings with high UV Index levels, such as UV-filtering window films or shades. 	Health Centres, Schools, Local Government, Market	Railway Health Centre III, Kasese Municipality Health Centre III, Local Government	Building Administrators						8,000 @2,000 per building

Strategy	Action	Targeted Buildings		Responsibility	Timeframe (Years)					Cost (USD)
					1	2	3	4	5	
			Buildings, Kasese Central Market							
	<ul style="list-style-type: none"> Conduct educational programs and awareness campaigns on energy conservation, renewable energy, and sustainable practices in public buildings. 	All	All	Municipality						10,000 @500 per building (IEC materials, etc)
	<ul style="list-style-type: none"> Involve local communities in the implementation of energy-saving measures and climate resilience initiatives. 	All	All	Municipality						10,000 @500 per building
	<ul style="list-style-type: none"> Ensure that all public buildings comply with existing energy policies and regulations, and regularly review energy utilization. 	All	All	Municipality						20,000 @1,000 per building
	<ul style="list-style-type: none"> Explore more efficient and environmentally friendly cooking methods like 4 tier institutional stoves in public buildings, especially in healthcare and educational facilities, to replace traditional methods like open fires and charcoal stoves. 	Schools, Health Centres	All schools and Health Centres	Building Administrator						20,000 @2,000 per building
Conduct an energy efficient & climate resilient building designs.	<ul style="list-style-type: none"> Incorporate energy-efficient design principles in new builds and retrofits to enhance insulation and ventilation. Establish a maintenance schedule for all energy systems, including HVAC and lighting. 	All	All	Municipality						25,000

4. OPERATIONALIZATION OF THE ACTION PLAN

Implementation of the Energy efficiency and Climate Resilience Action Plan for public buildings require a multi-faceted effort, combining technical, educational, policy, and community-oriented strategies, all geared towards transforming Kasese Municipality's public buildings into sustainable, energy-efficient, and climate-resilient spaces by 2029. Some of the key approaches will include:

Collaboration and stakeholder engagement: Central to operationalizing the plan is engaging diverse stakeholders, including local government units, building administrators, utility companies like UMEME, educational and healthcare institutions, and the community. Collaborative efforts will ensure that initiatives are effectively implemented and that they resonate with the specific needs and capabilities of each building.

Capacity building and training: Building capacity through training and workshops is critical. This involves educating building administrators and facility managers on sustainable practices, energy management, and the benefits of renewable energy sources. Regular training sessions will empower them to make informed decisions and effectively manage energy usage within their premises. The Energy and Climate audit process incorporated trainings for Municipal officials on the processes and roadmap for undertaking climate and energy audits to ensure replication of the practice to other buildings and regular auditing of the targeted buildings.

Monitoring and Evaluation: Establishing robust monitoring and evaluation mechanisms will be vital in tracking progress and assessing the effectiveness of implemented strategies. Regular audits, feedback sessions, and performance reviews will provide insight into areas of success and those requiring further attention.

Incentives and support systems: Creating incentives for energy efficiency improvements can motivate stakeholders to actively participate in the plan. Financial incentives, recognition programs, and technical support will play a significant role in encouraging buildings to transition to more efficient systems and practices.

Information dissemination and awareness campaigns: Raising awareness through information dissemination campaigns will be crucial to changing attitudes and behaviors towards energy use and sustainability. These campaigns will focus on the importance of energy conservation, the benefits of renewable energy, and the role of individuals in promoting sustainability.

Policy and regulatory support: Working in alignment with existing energy policies and regulations and advocating for supportive legislative frameworks will provide a solid foundation for the action plan. This will ensure that efforts are not only compliant with national standards but also contribute to broader environmental and sustainability goals.

Resource allocation and investment: Allocating resources effectively and securing investment for critical areas such as the installation of sub-metering systems, transition to renewable energy

sources, and implementation of rainwater harvesting systems will be pivotal. This includes both financial resources and technical expertise.

Community participation and local empowerment: Encouraging community participation and fostering a sense of ownership among residents and institutions will be key. Community-driven initiatives and grassroots involvement will ensure that the action plan is relevant, sustainable, and enjoys broad-based support.

Technology and innovation: Leveraging technology and innovation in energy management and sustainability practices will be a cornerstone of this action plan. Embracing new technologies for monitoring energy usage, optimizing building performance, and enhancing renewable energy systems will be instrumental.

Sustainability integration in everyday operations: Embedding sustainability principles into the everyday operations of public buildings is critical. This means integrating energy efficiency and climate resilience considerations into routine maintenance, procurement, and operational decisions.