THE REPUBLIC OF UGANDA

KASESE DISTRICT RENEWABLE ENERGY STRATEGY

This publication is supported by WWF-Uganda

KASESE DISTRICT RENEWABLE ENERGY STRATEGY

FOREWORD

Kasese district is endowed with a rich natural resource base, which is an asset that has supported rapid development for the district. It has however continued to experience a number of human development challenges particularly the high poverty incidence levels, deteriorating human health and climate change among others. These are pronounced with continued Environmental degradation out of unsustainable harvesting of our natural forests for the supply of energy.

It is against this background that Kasese District has come up with a Renewable energy strategy to guide its initiatives of promotion and distribution of clean, renewable and efficient energy technologies through its Public Private Partnership (PPP) to replace the unsustainable harvesting of our natural vegetation in the name of energy supply.

The energy sector in Kasese district comprises of both traditional and conventional energy sources that are either locally produced or imported. However, the dominant locally produced energy sources at both the supply and demand levels are firewood, charcoal and hydro power. The energy consumed in households in the district is used mainly for cooking and lighting. Firewood is the most dominant sources of energy at 98.8%. The use of the traditional 3-stone stoves dominates with about 88%. Metallic charcoal stoves are commonly used in urban areas at 23%.

The overall objective of the Renewable Energy Strategy is to diversify the energy supply sources and technologies in the district and aim to achieve 100% access to renewable energy by the year 2020. It sets out the district's vision, strategic goals, principles, objectives and targets for promoting and implementing renewable energy investments in Kasese.

The implementation of the Renewable Energy Strategy objectives will positively respond to the various legal and policy instruments and programmes Government has put in place to address poverty, catalyze industrialization and protect the environment.

As we implement this strategy, I call upon all the people of Kasese to interest themselves in acquiring some of the technologies and subsequently review our actions and understand the implications of unsustainable energy sources for us to re-direct ourselves towards sustainable utilization of the existing forest resources.

When finally implemented, the district Energy Strategy will be a guide and contribution towards the government's efforts of pursuing socio-economic development through the promotion and distribution of clean, renewable and efficient energy technologies throughout the district.

I thank all those who have contributed towards the formulation of this Renewable Energy Strategy and wish everybody the very best during implementation.

I am grateful to World Wide Fund for Nature conservation (WWF) who facilitated the formulation of this Strategy through the District Energy Access programme.

Lt. Col. (Rtd) Adoula-Mawa Muhindo

District Chairman

ACKNOWLEDGEMENTS

Kasese district is privileged to present the district Renewable Energy Strategy (2013-2020). However, the formulation of this strategy has not been easy and nor a handwork of one individual but out of a concerted effort of both the district technical staff and World Wide Fund for Nature Conservation (WWF). In the spirit of the Public Private Partnership the contribution of the Civil Society Organisations was immense.

We as a district have spelt out a commitment to the development and use of affordable renewable energy resources for all categories of applications.

In this spirit therefore, I wish to thank our Development Partner WWF for the financial support that was provided towards the formulation of this document. It is this support that has enabled success in the process of developing the strategy.

Special recognition is extended to the team of consultants who moved around the various parts of the district to collect baseline information which formed a foundation for formulation of this strategy.

Allow me therefore to present this District Renewable Energy Strategy 2013-2020, as our contribution towards poverty reduction, improvement on the deteriorating human health and adaptation to the ever challenging climate change.

Finally, we extend our vote of appreciation to the task force that drafted this piece of work, and all the editorial work made. The Financial contribution from WWF towards the formulation of this strategy is much appreciated.

Kanyesigye William,

Chief Administrative Officer

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1.0 INTRODUCTION

1.1 BACKGROUND INFORMATION

Kasese District is located in Western Uganda and is bordered to the North by the district of Bundibugyo, the North East by Kabarole, to the South East by Kamwenge, to the South by Rubirizi partly Rukungiri and to the West by the Democratic Republic of Congo. It lies between latitudes 0° 12'S and 0° 26N; longitudes 29° 42'E and 30° 18'E.

The district has a total surface area of 3,389.8 square kilometres, of which 86% is dry land, 12% is open water and 2% is permanent swamp/wetland. About 63% is occupied by nature and wildlife conservation schemes; and also other government projects such as prison farms, mining institutions and irrigation farming. The population density in Kasese is 183 persons per square kilometre (450 persons per square kilometre in the area actually occupied by people).

Two of the biggest threats facing humanity today are climate change and poverty. These are set against a global backdrop of skyrocketing oil prices that have continuously eroded the meagre resources of the poorest in society and increased the negative impacts of climate change and the reliability of energy supply. This situation is accompanied by widespread global interest in renewable sources of energy, particularly solar energy, and is increasingly calling for urgent redress. It is important to note that renewable energy technologies produce little or no greenhouse gases, a main contributing factor to climate change. It is noted by the World Health Organization that nearly half the world's population[1] (3.5bn people) have no access to electricity and rely instead on traditional fuels for indoor heating and lighting. Burning biomass fuels like wood and fossil fuels such as kerosene is highly toxic and expensive.

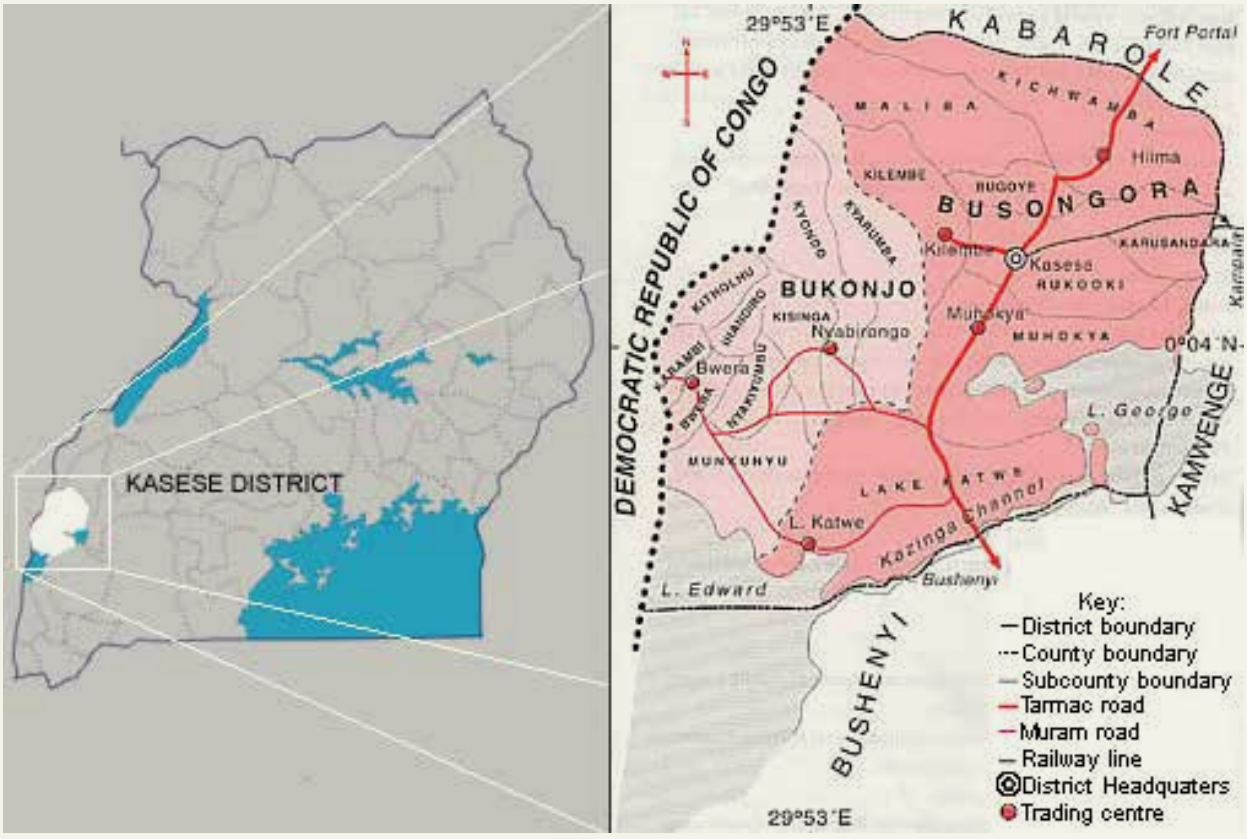

Fig 1: Map of Uganda showing geographical location of Kasese District. Source: http://www.weinformers.net/wp-content/uploads/2011/01/Map-of-Kasese-Uganda.jpg

The resulting indoor air pollution impacts negatively upon poverty, health, climate change and gender equality issues and is estimated to be killing over 1.6 million people[1] every year worldwide, more than 85% of which are women and children under five. It has also been scientifically proven that climate change is mainly a result of the large-scale burning of fossil fuels for energy that has emitted vast amounts of Green House Gases (GHGs), primarily carbon dioxide (CO_2), into the atmosphere. At the same time, we continue to destroy forests on a large-scale, an act that has released billions of tonnes of carbon dioxide. By replacing fossil fuel with renewable energy technologies, we can alleviate global warming and improve the health of the users.

[1] *Energy Policy, 2002*

Uganda mainly relies on biomass for meeting its energy requirements in unsustainable and traditional way. Biomass, which constitutes over 90% of the total energy consumption, is utilized in form on firewood (primarily in the rural areas) and charcoal (mainly used in urban areas).

The Uganda Population and Housing Census (UPHC) 2002 revealed that 97% of the households depend on biomass for cooking. Specifically, 81.2% of the household use firewood, while 15.2% use charcoal. This indicates that firewood is the most important source of energy for the population of Uganda, utilized by the rural population that constitutes 85% of the population. Biomass will remain the dominant source of energy for the projected future. This implies that the demand for energy puts a lot of pressure on the biomass resource, hence becoming the greatest threat to the environment. The driving factors for biomass consumption include a rapid population growth rate of 3.4%, poverty that hinders fuel substitution and use of inefficient end use devices. The traditional 3 stone fire stove[2] (characterized by a very low efficiency of less than 15%, and high health risks including Indoor Air Pollution) is the main cooking device used.

The Renewable Energy Policy for Uganda, 2007 recognizes that electrification access in Uganda is still very low, standing at approximately 9% nationally and 3% in rural areas and electrification of most parts of the country through grid extension in the near future is still a far cry. It emphasizes that promoting a decentralized (distributed), off-grid electricity supply model for remote areas by the deployment of locally available renewable energy sources of small hydro, solar energy, wind and biomass resources is the way to go. And that focus on decentralized supply systems is also more likely to achieve the objective of equitable regional distribution access to electricity, than if only the grid solution was pursued.

This policy[2] is therefore an elaboration of how Government will develop the necessary initiatives to create a demand for a wide range of renewable energy services. It provides a commitment of Government to develop the use of renewable energy sources aimed at creating the means of socio-economic development, especially by transforming the rural areas. It also strengthens Government's efforts to address poverty issues, catalyze industrialization and protect the environment.

Recent research[2] has revealed that the soot from biomass fires typically used for heating and lighting in most rural Ugandan households is only second to CO_2 in causing global warming. The kerosene lamp, used widely across the developing world and in Uganda, is estimated to create around a tonne of carbon over a seven year period. Replacing these lamps with solar lanterns will lead to significant reductions in carbon emissions. Promoting the widespread use of renewable energy will be a step in the right direction, particularly in developing countries like Uganda where energy poverty is endemic and widespread. This strategy is aimed at access to affordable renewable energy reducing rural poverty.

Kasese district is experiencing a number of human development challenges that include the high poverty incidence levels, currently estimated[3] at 48.4% of the population compared to a national average[3] of 31.1%; and a rapid population growth rate[3] of 3.6% compared to the national average of 3.4% which have resulted into the communities exerting pressure on the limited available resources for survival.

According to the District Poverty Profile[4], Kasese district has a total of 138,872 households (approximately 800,000 people). Over 98.8% of the households5 depend on fuel wood yet only 12% use energy-efficient cook stoves. This leads to fuel wood wastage accelerating deforestation, associated land-degradation as well as ill-health due to indoor pollution. Only 7.6% of the population has access to electricity for lighting [(1.4% of rural homes use HEP to light homes, 88.2% of urban homes in Kasese depend mainly on HEP to light homes); 80% of homes rely on expensive kerosene fuel to light their homes at night (90.5% of rural population use kerosene for lighting; 38% of urban homes use kerosene to light homes). This form of lighting is not only expensive, but is associated with toxic fumes both to human health and the environment through carbon-emissions that accelerate climate change. 4.3% of the rural population using solar energy for lighting. The reasons for low use of modern energy sources for lighting (electricity and solar) range from lack of access or unreliability for electricity and the high cost of energy types to both rural and urban household)[4]. In addition, 88% of households use the three stone fire stove for cooking which have a low thermal efficiency of 9%; 16% of urban homes depend on firewood for cooking; 22.9% of rural population depend on charcoal for cooking and using metallic charcoal stoves; 93.7% of urban homes depend on charcoal for cooking[5]. Important to note is that the energy situation in Kasese is a fraction of what is taking place at the national level where the country continues to lose over 6,000ha[66] of forest due to the over-dependence on firewood and charcoal.

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[2] *Renewable Energy Policy for Uganda, 2007*
[3] *UBoS, 2008*
[4] *Kasese District Poverty Profile, 2012*
[5] *Energy Access Baseline Study for Kasese District, 2012; WWF UCO baseline study report, 2012*
[6] *National Biomass Study, 2006*

Apart from promoting accelerated power generation from renewable energy, this Renewable Energy strategy for Kasese puts emphasis on development, adoption and utilization of other modern technologies, including those based on renewable energy sources, in order to achieve the objectives of emission reduction, protection of the environment and energy conservation.

1.2 The need for an energy strategy

Why Renewable Energy is a necessity

Throughout the world, concerted efforts are being made to make renewable energy replace non-renewable energy sources in the future.

The driving forces for investments in renewable energy are:

i. The ever increasing cost of fossil fuels makes them too expensive for developing countries.
ii. Fossil fuels have an uncertain future. Experts show that if the world continues to consume energy at the current rate, the non renewable sources will be exhausted in the near future.
iii. Although more oil fields are being discovered, the future of oil is bleak.
iv. The global proven gas reserve was estimated to be 176 trillion cubic meters by the end of 2003. The Russian Federation had the largest share of the emissions from coal and fossil fuels are responsible for global warming and climate change.

This strategy on Renewable Energy reinforces the

Fig.2 Map of Kasese and its Environs

Government's overall policy on energy set out in the Renewable energy policy for Uganda 2007, whereby Government has spelt out a commitment to the development and use of renewable energy resources for both small and large scale applications.

1.2.1 Proposed levels to clean energy access

While the energy demands are enormous it is important that access to these energy initiatives is implemented at specific levels taking into account the categories of the residents in terms of affordability. This affordability index[7] indicate that all Lower Local Governments in the district face severe income insecurity and poverty gaps. It identifies poverty categories as extremely poor, moderately poor, self sufficient and Wealthy.

Total number of Households[4,7] in the district is 138,872

If the energy access strategy takes into account these categories, then the programme will also have three levels of access which include:

Level 1: Energy access for basic human needs as for Lighting, Health centres - cooling, education and community services.

Level 2: Energy access for modern society needs for more domestic appliances and increased requirements for cooling, heating and also lighting.

[7] *Uganda Rural Poverty Rates Report, 2005*

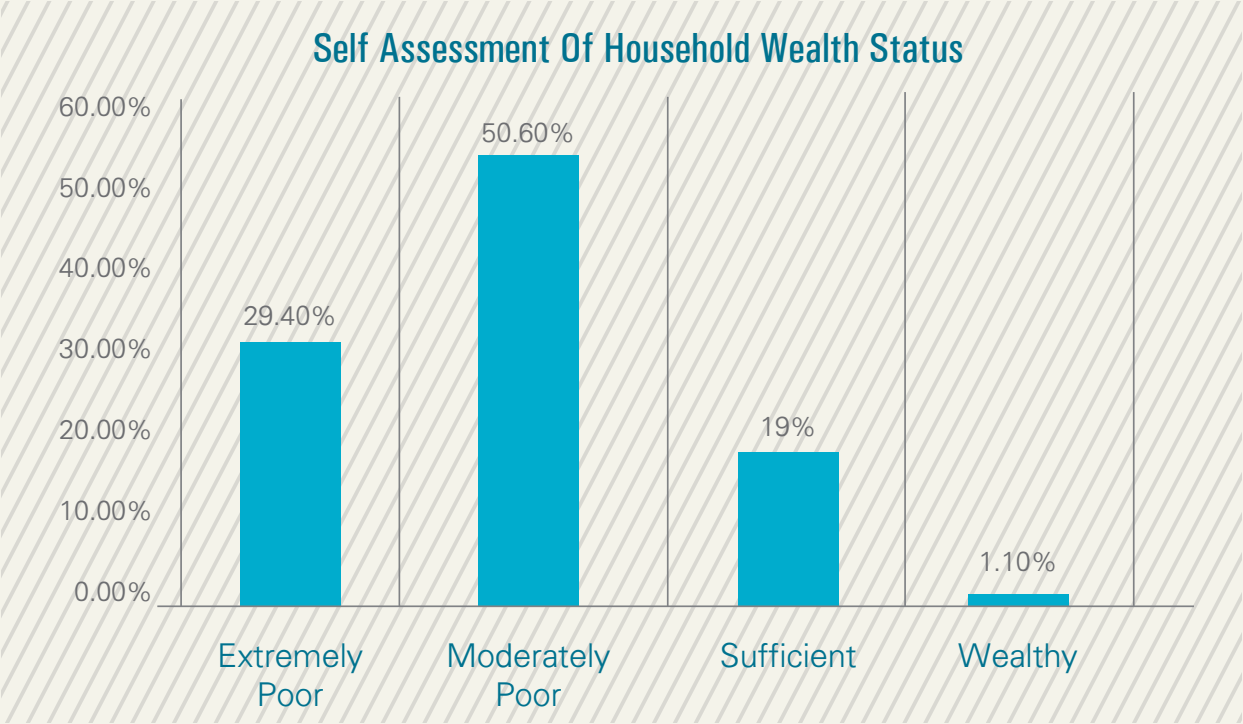

Fig. 4 Household wealth status[7]

Level 3: Energy access for productive uses and increase in productivity, for instance, pumping water for irrigation; and small scale processing.

This will guide in ensuring that all categories of people especially the rural dwellers and business owners are reached.

1.3 The Contextual Framework

The implementation of this strategy will positively respond to the various legal and policy instruments and programmes, which Government has put in place to address renewable energy issues.

The Constitution of the Republic of Uganda 1995
The provisions on equitable development (Article IX), the stimulation of agricultural and industrial growth (Article XI) and promotion of energy policies for meeting people's energy needs in an environmentally friendly manner (Article XI) provides the necessary mandate.

It also provides for the achievement of the objectives of the **Poverty Eradication Action Plan (PEAP)** and the **Millennium Development Goals (MDGs)**.

The Uganda Electricity Act 1999
This sets the legal framework for reforms in the Power Sub-sector and the Rural Electrification Strategy and Plan, the regulatory framework for power generation from small renewable energy sources and the establishment of the Rural Electrification Fund (REF). This Act gives guidance on:

a) Provision of a Standardized Power Purchase Agreement (PPA) to private sector project developers who want to feed power into the national grid.
b) Establishment of a Feed-in-Tariff, based on the principle of avoided cost pricing as part of the Standardized PPA.

The Renewable Energy Policy 2007
It provides a framework to increase in significant proportions the contribution of renewable energy in the energy mix in Uganda. It provides a commitment of Government to develop the use of renewable energy sources aimed at creating the means of socio-economic development, especially by transforming the rural areas. It also strengthens Government's efforts to address poverty issues, catalyze industrialization and protect the environment.

The National Environment CAP 153
This which obligates all energy projects to undergo an Environmental Impact Assessment (EIA) as a condition for licensing or implementation.

The Plan for Modernization of Agriculture (PMA)
This one has one of its main outcomes as "increased access to and use of electricity" to support on-and off farm economic activities.

The Prosperity for All (PFA) Government Policy (2006)
It addresses elevating standards of living through developing the economy in areas of micro-finance, marketing, production and processing. In order to achieve this, there is need to also address the energy issue, which is one of the driving forces.

The Kyoto Protocol
Uganda's ratification of the Kyoto Protocol provides incentives for investors in renewable energy technologies for the abatement of carbon missions and hence General Environmental management.

1.4 The process of formulation of the energy strategy

The chronological process followed in formulating this Strategy was as follows

i. Initial drafting of the strategy in line with the baseline study and other literature
ii. Discussion and review of the first draft with other district development partners
iii. Discussion of the second draft strategy with the private sector and Religious institutions representatives
iv. Discussion of the second draft with the Sectoral Committee of Council responsible for Natural Resources. Here a third draft was formulated with input from Sectoral committee members
v. Discussion of the third draft by the District Technical working committee that came up with a final draft
vi. Adoption and final Approval by the District Council

2.0 RENEWABLE ENERGY RESOURCES AND APPLICATIONS

2.1 WHAT RENEWABLE ENERGY[2] IS

Renewable sources of energy are those sources that are replenished continuously by natural processes. This includes solar energy, hydropower, biomass, wind and geothermal as well as organic wastes.

Non-renewable energy sources are energy sources that are not renewable and hence get depleted with time. These include the conventional fossil fuels such as coal, oil and natural gas.

Modern Renewable Energy means renewable energy resources that are transformed into modern energy services like electricity, which can be generated from water power, wind power, solar energy, geothermal energy and biomass cogeneration. It also refers to clean fuels derived from renewable energy resources like biogas, ethanol, methanol, hydrogen or solar water heating. In the context of this strategy, modern biomass technology includes energy efficient technologies, like improved charcoal and firewood stoves for both domestic and institutional applications.

2.2 Kasese District Renewable Energy Resource Base[8]

Kasese has considerable renewable energy resources for energy production and the provision of energy services, yet they remain unexploited, largely due to the perceived technical and financial implications. These resources include: biomass, geothermal, mini/micro hydro and solar energy. It is therefore important that the use of these abundant resources be enhanced.

Biomass

Biomass is any organic matter that is available on a renewable basis mainly through photosynthesis. In the energy context, biomass means products consisting of any whole or part of a vegetable matter from agriculture or forestry, which can be used as a fuel for the purpose of recovering its energy content. Biomass includes firewood, shrubs, grasses, forest wastes and agro-industrial residues. Examples are bagasse, husks, trash from sugar, oil milling, grain milling, etc.

In the context of this strategy, biomass will also include organic municipal and industrial wastes like paper wastes, old clothes, spent grains in breweries, animal wastes, abattoir wastes and sewage sludge, which can be used as sources of energy. Sometimes these are used as energy sources, but often inefficiently.

Biogas

Biogas is 55-70% methane (CH_4) with varying amounts of carbon dioxide (CO_2) as the chief constituents. It also has traces of hydrogen sulphide (H_2S), ammonia (NH_3), oxygen, hydrogen (H_2) and water vapour (H_2O), depending upon feed materials and other conditions. The feed materials are usually animal and human waste.

Biogas is a zero-waste technology. The products of biogas plants, like biogas and digested slurry, can be utilized economically for cooking and as manure for agriculture and horticulture. Methane burns very well, therefore biogas can be used as a substitute of kerosene, charcoal and firewood. It is one of the renewable sources of energy available to meet the cooking and lighting energy needs of families and institutions.

Wastes to energy (Gasification technology)

Gasification is a process that will convert organic carbonaceous materials into carbon monoxide, hydrogen and carbon dioxide. This technology is more efficient than direct combustion of solid waste. It will be used to convert municipal waste into renewable.

Municipal waste in Uganda is generally composed of wet carbon and nitrogen rich materials that include: organic waste from households, agro industrial waste (slaughter houses, food industry) and agro waste: manure and straw. There is a vast amount of municipal waste (both solid and sewage effluents) that is currently not being utilized for energy production. Kasese Municipal Council has a composite plant where waste is processed. The waste is delivered from waste trucks to the compost plant from Monday to Saturday, while sorting and treatment is done during weekdays. The plant receives around 1500t/month of waste[9]. From that, it produces about 90 t of compost, using leachates and a mix of water and animal manure as catalysts.

The plant can theoretically manage an inflow[9] of 70t /day, but is seldom operating at full capacity.From that it produces 90t of composite[9]. Other urban centres in the district also generate considerable amounts of waste, but do not have in place proper waste management plans. The current practice is either to burn these wastes in the open air or dump them in landfills with no extraction of their energy contents. This does not only result in a waste of energy, but also causes environmental risks, as the burning is not controlled and the landfills are poorly managed. The combustible waste matter can be used for electricity generation while the non-combustible organic matter can be digested to produce biogas.

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[8] *Kasese District Development Plan, 2010-2014; Kasese District Development Path Initiative, 2005*

[9] *At The Junction, 2013. Potential Pathways for the Waste Management System of Kasese*

Geothermal

Kasese district has potential of generating power from the geothermal resource[10]. The potential is expected to be 140MW from the Katwe geothermal resource area. However, the feasibility studies are yet to be completed. This plus the fact that it would require a setting up expensive grid to reach the customers makes geothermal to be only an option for grid supply but not for rural electrification. The investment required for geothermal is also deemed high and prohibitive for small scale rural applications

Solar

Existing solar data clearly show that the solar energy resource in Kasese is high throughout the year. The mean solar radiation[2] is 5.1 kWh/m^2 per day, on a horizontal surface is enough isolation level favourable for the application of a number of solar technologies including but not limited to:

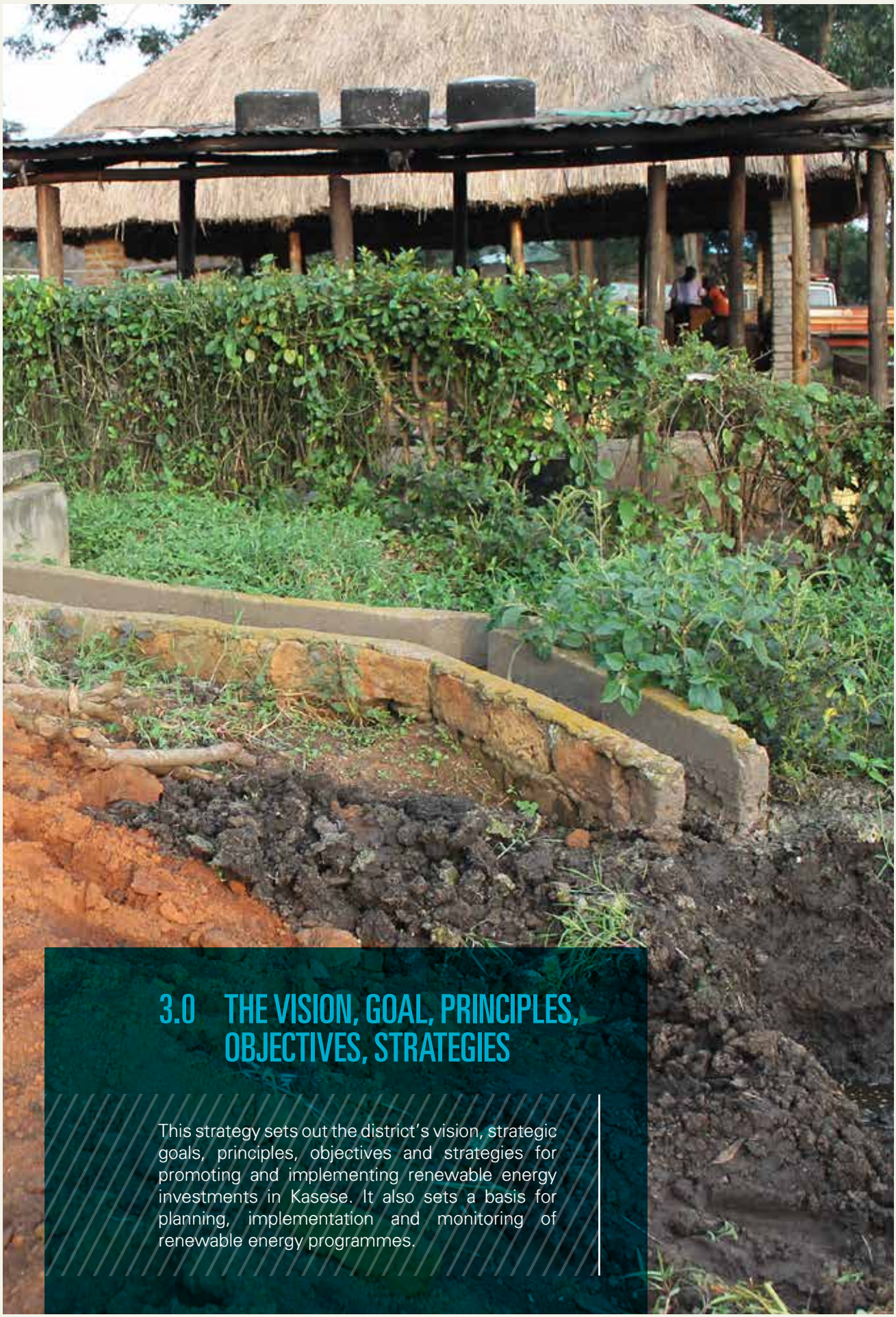
i. Solar water heating; and
ii. Solar photovoltaic systems for supply of basic electricity in rural institutions and households
iii. Solar to be connected to the National grid.

2.3 Challenges in the Renewable Energy Development process

The various challenges facing the steady growth for renewable energy resources development and utilization in Kasese district include but not limited to:

- High initial investment Costs
- Limited Technical and Institutional Capacity
- Limited Financing options
- Underdeveloped Market
- Inadequate awareness
- Lack of Standards and Quality Assurance for some echnologies
- Weak Enforcement of the standards
- Lack of Sufficient Data on renewable energy Resources. Need for Integrated renewable energy Resource Planning.
- Inadequate Research and Development (R&D) in renewable energy options
- Need to accelerate renewable energy resource technology transfer.
- Need for increased stakeholder participation in the planning and implementation of renewable energy projects.

[10] *National Planning Authority, 2010*



3.0 THE VISION, GOAL, PRINCIPLES, OBJECTIVES, STRATEGIES

This strategy sets out the district's vision, strategic goals, principles, objectives and strategies for promoting and implementing renewable energy investments in Kasese. It also sets a basis for planning, implementation and monitoring of renewable energy programmes.

3.1 Vision

A district where all households have access to clean renewable energy by 2020.

3.2 Goal

Increase the availability and usage of affordable clean renewable energy technologies.

3.3 The Key Principles for the strategy

The following are the fundamental issues that the energy development phenomenon will base during implementation of access to renewable energy. They include:

1. Energy and Development

Renewable energy technologies such as lighting, heating, cooking etc are essential for socio-economic development since they yield social benefits, create employment and generate income. A strategy for their implementation has to be put in place for their sustainability and relevance to the users.

2. Environmental Sustainability

The strategy will ensure environmental sustainability during the process of renewable energy supply and consumption

3. Reliability, Efficiency and Sustainability

The deployment of renewable energy technologies should be done in such a way that they provide reliable and efficient services to consumers to ensure sustainability.

4. Energy Diversity, Security and Independence

Diversify energy resources and technologies to ensure energy security, independence, quality with versatility in use.

5. Public-Private Partnerships

Government will provide a conducive environment for the private sector to invest in renewable energy development. The framework for this environment will contain, among others tax rebates, subsidies, favourable power purchase/pricing terms,

6. The Gender Dimension

The implementation of the strategy will provide equal opportunity to both male and female for investment and use in the energy sector

7. Stakeholder Participation and involvement of the vulnerable population

The strategy will promote multi stakeholder participation in renewable energy projects so as to promote acceptance and ownership of renewable energy projects.

8. Employment creation and poverty alleviation

This strategy will lead to employment creation and poverty alleviation.

3.4 Objectives

i. Increase the number of institutions accessing clean renewable energy by 20% annually.
ii. Increase in the number of renewable energy enterprises in the district by 20%annually
iii. Increase the number of households accessing modern renewable technology by 10% annually. Increase the number of local industries using renewable energy technology by 10% annually.
iv. Improve on community awareness of socioeconomic advantages of reform to clean energy by 50 % annually.

These objectives will provide a starting point for establishing key benchmarks that will be used to monitor progress as well as inform policymakers about potential refinements to the strategy that might be needed to ensure optimal progress on the path to a cheaper, cleaner, and more reliable energy future in the district.

3.5 Strategies

1. The institutional framework

i. Develop appropriate operational guidelines for implementation of the strategy
ii. Establish a District Technical Energy Working Group with representatives from stakeholders to provide

strategic policy guidance

iii. Establish a decentralized coordination at Municipal and Lower Local Government levels to support the promotion of renewable energy investments at the lowest level.
iv. Create renewable energy hubs in all trading centres in the district
v. Integrate energy issues into the Sub county, Municipal and District Development Plans for sustainable energy service provision

2. Financing

Resources for financing implementation of the strategic interventions of this strategy will be through public private partnerships, developing bankable proposals for funding, direct funding from financial institutions and direct purchase of energy solutions from authorized distributors.

i. Developing bankable proposals in collaboration with partners for funding.
ii. Pursue funding from financial institutions and purchase of energy solutions from authorized distributors.

3. Information Dissemination and Capacity Building

To raise public awareness on the benefits and opportunities of renewable energy technologies, the district will:

i. Manage a data base on the renewable energy resource availability.
ii. Develop and promote knowledge and exchange of information on renewable energy to all stakeholders in the district.
iii. Promote and stimulate the renewable energy technologies through dissemination of information regarding the economic, social and environmental benefits of renewable energy technologies.
iv. Conduct a comprehensive capacity building programme on availability, affordability and use of renewable energy.

4. Biomass Resource Base Management

To manage the biomass resource base in a sustainable manner, the district will:

i. Promote in collaboration with NFA and MAAIF the growing of energy crops including fast maturing trees.
ii. Support establishment of commercial woodlot plantations on private land as well as government lands.
iii. License charcoal production and transportation and encourage its commercial production in an efficient and sustainable manner.
iv. Increase the number of household/ institutional biogas plants from the current two (2) at present to 50 by 2020.
v. Support reduction of use the three stone fire stove for cooking from the current 88% of homes in the district to 40% by 2017
vi. Increase the rate of adoption of use of energy-efficient cook stoves from the current 12% to 100% by 2020
vii. Ensure that an improved energy-saving cook stove is part of the requirements for registration of education and other training institutions in the district.

5. Wastes to Energy

To promote the conversion of municipal and industrial waste to energy, the District and Municipal Council will:

i. Support conversion of municipal solid wastes to energy and other related solutions.
ii. Put in place fiscal measures that will discourage open burning or disposal of wastes without extracting their energy content.

6. Poverty alleviation and gender

To promote mechanisms that enhance appropriate gender responsive renewable energy technologies; the district will:

i. Sensitize stakeholders in the district on the linkages between gender, renewable energy and poverty and specify their different roles in promoting the synergies.
ii. Mainstream gender and renewable energy technologies and benefits in district and sub county development plans.
iii. Mainstream HIV/AIDS issues during planning, development and implementation of renewable energy projects and activities.
iv. Ensure participation of women in distribution, installation and use of particular energy technologies.

7. Solar and energy cook stoves

To promote a paradigm shift from use of Kerosene lamp (tadooba) and the traditional 3-stone cook stove to

solar for lighting and energy saving cook stoves respectively, the District through public-private partnership will:

i. Support reduction of use of kerosene for lighting from the current 80% of homes in the district to 40% by 2017
ii. Support lighting of 20 trading centres with solar energy hubs in the district by 2017
iii. Increase the rate of adoption of use of solar energy in households by 10% annually through supporting 16,000 households to access solar PV by 2015.
iv. Support 20 social institutions to access renewable energy options in Kasese District by 2017.

3.6 The Main Targets

The main targets of the Kasese district Renewable Energy strategy are summarized under the four programmes indicated in the Table below

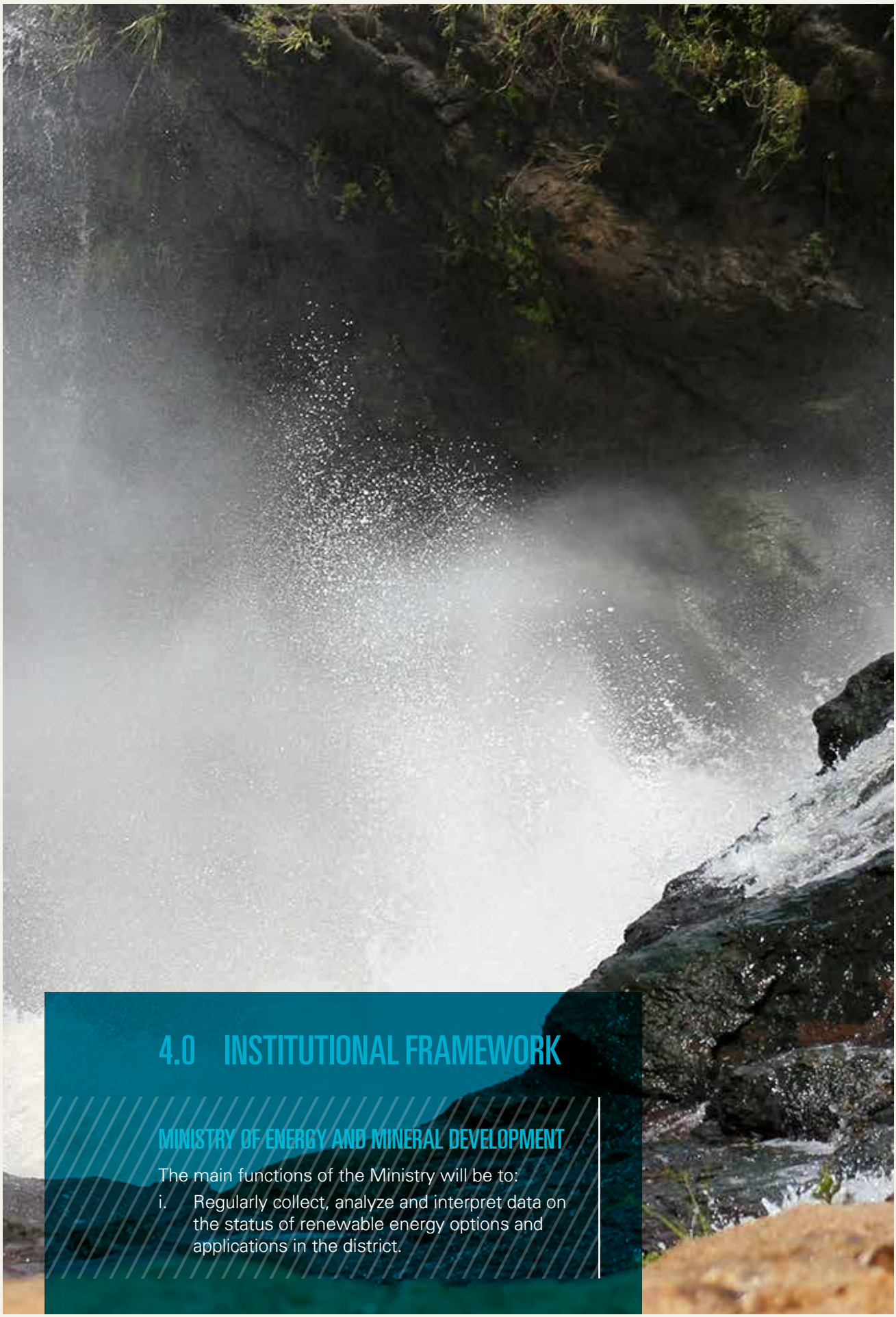
Table 1. Energy strategy Main Targets

	PROGRAMMES	BASELINE	TARGETS
		2013	2020
	Power generation		
	Hydropower plants (MW)	25	40
1	Cogeneration (solar power) (KW installed)	0	1
	Geothermal (KW installed) *		
	Municipal waste (KW) *		
	Biogas (KW) *		
2	**Rural Electrification (%)**	**7.6**	**25**
	Modern energy services for households		
	Improved woodstoves (%)	12	100
	Improved charcoal stoves (Number)	0	100
3	Institutional stoves (Number)	0	100
	Baking Ovens (%)*		
	Kilns (lime, charcoal, brick...)*		
	Household/institutional biogas plants (Number)	1	20
	Solar Home Systems (%)		
4	**Energy Efficiency***		

**No baseline data available*

3.7 Key Outputs

i. A functional institutional framework to oversee the implementation of the strategy in place.
ii. A socio-economically empowered community accessing and utilising renewable energy technologies in place
iii. Management efforts of the biomass resource base strengthened for sustainability.
iv. A paradigm shift from use of Kerosene lamp (tadooba) and the traditional 3-stone cook stove to solar for lighting and other energy saving cook stoves respectively promoted.



4.0 INSTITUTIONAL FRAMEWORK

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

The main functions of the Ministry will be to:

i. Regularly collect, analyze and interpret data on the status of renewable energy options and applications in the district.

ii. Develop strategies and programmes to improve renewable energy options and applications in the district.
iii. Recommend and develop standards that can be used to improve renewable energy options and applications in the district.
iv. Provide advice and technical guidance to energy users on the best practices of renewable energy options and applications in the district.
v. Disseminate information on renewable energy options and applications to the district and translate this information into local languages.

The District Technical Energy Committee

A technical committee on energy will be constituted. The committee will include the Chief Administrative Officer; Technical heads of the sector of environment and natural resources, works, planning, production and marketing, community based services; representative from the CSOs; representative from the private sector; representative from energy related parastatals, Uganda Wildlife Authority; representative from WWF UCO; representative from Kasese Municipal Council; representative from the Faith Based institutions; representative from the Cultural institution(s); and any other co-opted member depending on the issues of discussion.

The Chief Administrative Officer will be the chair and the head of environment and natural resources will be the secretary.

Role of the committee

i. Oversee and coordinate implementation of this strategy with various stakeholders and partners
ii. Ensure the effectiveness of the activities

The District Energy Steering Committee

In addition, an energy political steering committee will be constituted and this will be the committee of the district council responsible for environment and natural resources. This committee will play an oversight role in implementation of the strategy

District, national and international level stakeholders and partners

The overall responsibility for implementation of this strategy lies with Kasese District Local Government who will be charged with overseeing and coordinating the implementation of this strategy through partnership with various stakeholders and partners at district, national and international level.

The various stakeholders and partners will work with the district to specifically promote Renewable Energy and Renewable Energy Technologies. WWF and other district, national and international partners/ institutions shall work hand in hand with the district particularly to:

i. Identify new sources of energy to be developed in the district
ii. Collect and process the information concerning renewable energy resources.
iii. Mobilize technical assistance and funding for the development of the sources.
iv. Supervise projects in renewable energy.
v. Liaise with the Ministry of Energy and Mineral Development to identify potential private sector companies able to carry out pre-feasibility and pre-investment studies of the various potential sources and sites, promote and develop appropriate and for the provision of technical support to the district local governments and other renewable energy technologies

Role of other Stakeholders

N	Roles	Stakeholders
1	Awareness	All CBOs involved, cultural institution, Kasese District Local Government, WWF
2	Financing	All stakeholders (Development Partners, banks), MEMD, WWF,KDLG (SACCOs)
3	Policy support/implementation	KDLG, MEMD
4	Regulation, Standards and Quality	WWF, District, UNBS, CREEC, CIRCODU, BEETA, MEMD
5	End user technology Access	CBOs, suppliers, SACCOs
6	Production/supply	CBOs, suppliers/private sectors
7	Remove trading licence	Municipalities, Policy makers

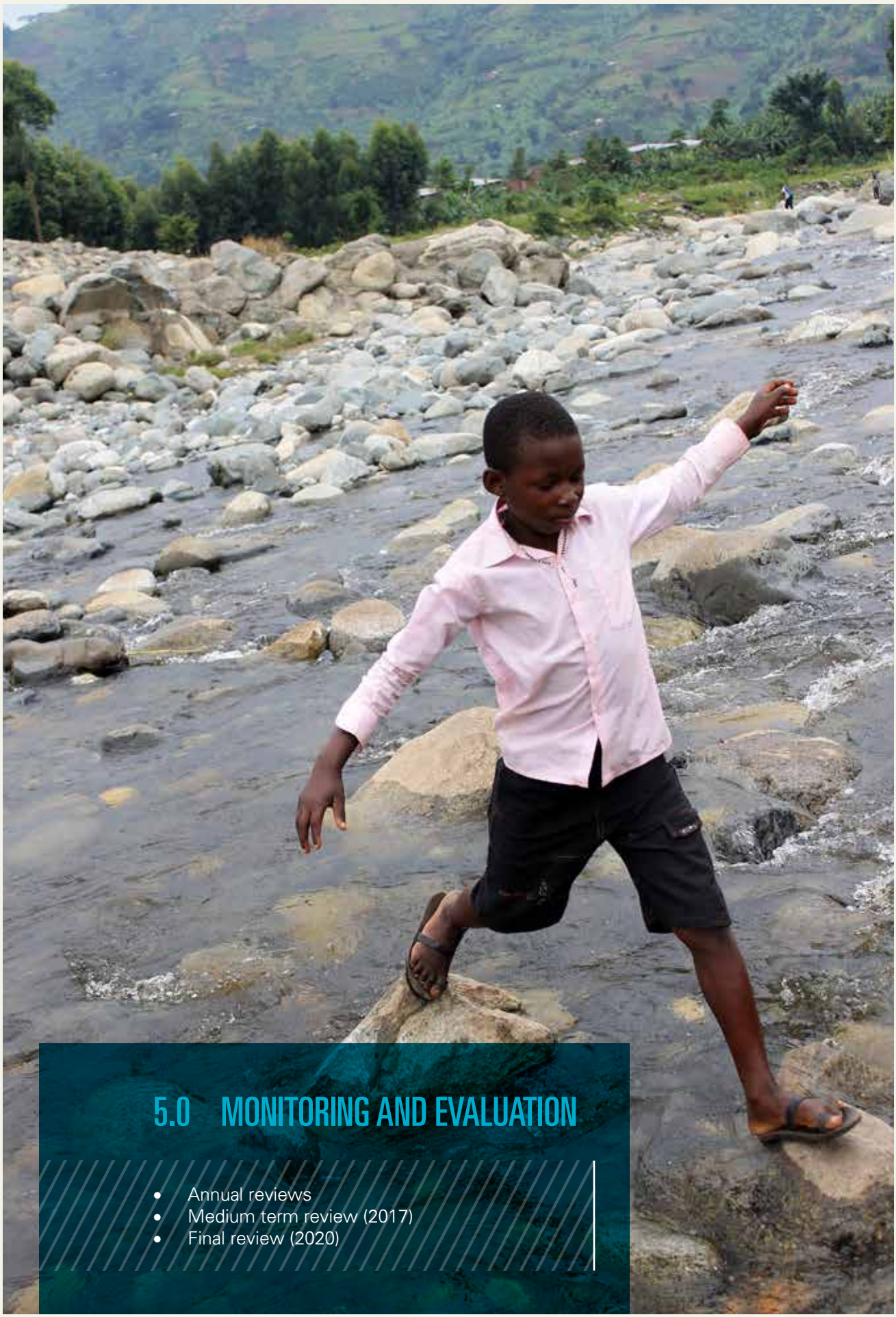
8	Upfront purchase for employees	Employers (Hima Cement, hospitals, police, banks, Government etc)
9	Create local sales teams	Private sector
10	Coordination and oversight	Kasese District Local Government
11	Promotion for renewable energy technologies	District, national and international stakeholders
12	Mobilization	CSOs, Local Government, Radio stations
13	Capacity building, CBOs, end-users	BEETA, CBOs, suppliers, WWF and other partners
14	Monitoring and evaluation	WWF, KDLG, partners
15	Mass production	Companies like Ugastove

The other main stakeholders include the following:

Electricity Regulatory Authority (ERA),
The Rural Electrification Agency (REA)
The Uganda Electricity Transmission Company (UETCL)
The Uganda Electricity Distribution Company (UEDCL)
The Uganda National Bureau of Standards (UNBS)
The National Environment Management Authority (NEMA)
The Directorate of Water Development (DWD).
The Private Sector Foundation (PSFU)
The Uganda Investment Authority (UIA)

Other bodies, which will participate in implementing this strategy are the Uganda Manufacturers Association (UMA), which is a body that brings together key users of renewable energy and potential manufacturers of the equipment; the Uganda Renewable Energy Association (UREA), which brings together companies, NGOS and CBOs that are implementing renewable energy projects.

The Media Houses, which include the radio and print, will also participate in the sensitization campaigns.



5.0 MONITORING AND EVALUATION

- Annual reviews
- Medium term review (2017)
- Final review (2020)

List of Annexes

Annex 1: SWOT Analysis

Resource	Geo thermal	Hydro	Biomass	Solar
Strength	Suitable generation sites like in Katwe Kabatoro (Hot springs). Existing infrastructure like the roads and electricity grid.	Existing resources (5 rivers) with huge potential for hydro power Conducive environment for hydro power investment Existing infrastructure like the roads and electricity grid. Technical capacity available	Adequate supply of feed resources	Enough radiation (5.1) Existence of distributors
Weaknesses	Being a new concept, the technical and institutional/ financial capacity is inadequate The existing sites are not easily accessible (being located in the National Park) The degradation of the catchment areas	Conservation of the catchment areas (degradation Forest resources (seasoned wood) Low purchasing power in the local communities	Generating small amounts only feasible for small productive Limited awareness and technical know-how.	Limited technical expertise Low purchasing power Limited awareness and Negative attitudes of the end users Disposable measures Poor quality products
Opportunities	Existence of the financing capacities like Stanbic Bank, Barclays Enabling regulatory framework like the Uganda Vision 2040 Existence of the private investors at national level. Growing demand for energy Un met demand.	Enabling regulatory framework like the Uganda Vision 2040 Existence of the private investors at national level.	Enabling regulatory framework Existence of renewable energy resources Potential for increasing productivity Growth in urbanization which can increase municipal / urban waste	Existence of growing demands/ population 3.6%
Threats	Sustainability of resource Natural calamities like the recent in Kasese	Climate change causing the rivers to reduce in volumes and sometimes change course	Environmental degradation Soil mining Land fragmentation	Massive theft and vandalism of the panels.

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