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ZAGP News

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EDITORIAL

Zimbabwe's economy is predominately agro-based and with the bulk of the population living off the land, green technologies are critical to boosting economic performance, and at times helping to mitigate climate change and reduction of greenhouse emissions.

Engaging in green technologies, such as renewable energy and sustainable production techniques that reduce environmental damage are essential for the success of any green economy initiative. According to the United Nations Environment Programme (UNEP), a green economy is one that results in improved well-being and social equity with a minimal impact on the environment. The Government of Zimbabwe has already set the framework and agenda for the Green Economy, so it is essential for the agriculture industry to take this seriously, and move with the times.

As one of the major contributors to the economic development of Zimbabwe, agriculture is a key player in the green economy, especially given its sometimes detrimental contribution to the environment. As global trends have shifted towards sustainable

development, agriculture is expected to adopt environmentally sound management techniques and mainstream sustainability as part of its business strategy.

Climate change is already affecting many of the lives and livelihoods in Zimbabwe. It is undermining the nation's economic development through compromised livelihood outcomes that result from gradual changes in temperature and rainfall patterns, combined with increasing frequency and intensity of natural hazards, such as floods and droughts. The poorest communities in Zimbabwe are being hardest hit because they are more dependent on their climate-sensitive natural resources and ecosystems, such as agriculture.

Small to medium scale farmers are particularly vulnerable because of their overdependence on rainfed agriculture, limited adaptive capacity and an inherently variable climate.

The potential of green technologies, such as solar energy, biogas and good agricultural and animal husbandry practices have not been fully realised in the country.

(Cover photo: An aerial view of the horticulture business unit at Matopos Research Institute Agricultural Centre of Excellence).

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EDITORIAL

In this issue, we report on several initiatives being implemented by the Zimbabwe Agricultural Growth Programme (ZAGP) through its six projects. Among these initiatives are renewable solar solutions to power animal health centres, Cattle Business Centres (CBCs), Goat Improvement Centres, transportation and irrigation systems. ZAGP also focuses on green technologies in the area of biogas digesters, a simple technology to develop clean and easily accessible renewable energy from biomass.

Investing in green technologies is a promising option for combining the multiple goals of climate change mitigation, a low-carbon economy, employment creation (especially among the youth) energy security and sustainable development.

This issue comes out as we commemorate Earth Day, an annual event held on April 22 to demonstrate support for environmental protection.

Green investments are also an important component for supporting entrepreneurial initiatives, skills development and technology transfer, all of which are critical to economic growth and development. ZAGP will not be left behind in adopting green technologies which are expected to contribute not only to lowering carbon emissions, but also improve production and productivity within the livestock sector without adverse effects on the climate.

Green Technologies for Poultry Production

Poultry producers under the [Inclusive Poultry Value Chain \(IPVC\)](#) project have started to implement the use of renewable energy technologies. Energy plays a crucial role in poultry production. In a typical chicken house, energy is used for several applications; most importantly for lighting, heating, ventilation and cooling.

IPVC is contributing to an inclusive green economy in Zimbabwe by piloting green technologies in poultry production, with the aim to reducing the environmental impact of the production activities. To date, the project has successfully installed 24 green technologies which include 4 x 20 cubic metre fixed dome and tubular biogas systems for heating, 5 solar lighting systems and 14 solar powered incubators. The solar lighting systems and incubators are now fully functional, while some of the biogas systems await commissioning. Installations of more green technologies is currently underway mainly targeting lead farmers and producer group across all the clusters.

Tubular and Fixed Dome Biogas Systems



The biogas systems are to be fed with waste daily to avoid any glitches in functionality. Waste fed includes any bio-degradable waste around the household and other livestock waste including chicken waste. The biogas systems have a heating capacity for 5 000 chickens.

"With the inception of the bio-digester, we are looking to make a saving of about 20c per bird. We were running our cycle with 200 bags of charcoal at \$10 per bag. Substituting with gas produced by our own bio-digester will provide a huge saving at day 35, making our birds more affordable and more competitive on the market" said Simbarashe Nyamanjiwa our lead farmer from Murehwa district, Mashonaland East province.

Nyamanjiwa had a fixed dome biogas system installed and tested at his farm. The test proved that the system was working perfectly and was given a green light to place his day-old chicks.

"We have been capacitated to go further and if this biodigester really works, even after the project ends because with our savings, we can now construct another biodigester to cater for more production should we intend to increase our number of birds per cycles." Nyamanjiwa added.

Green Technologies for Poultry Production

Solar Lighting Systems



The solar lighting systems aim to improve access and availability of lighting in poultry housing units and have proved to be ideal for producers that are off-grid and in areas with frequent power cuts. The solar lighting systems' sizes are dependent on the size of the poultry farm. Improved lighting in poultry production especially in commercial layers acts to artificially increase day length and this stimulates increase in egg production.

"After receiving the solar system, my batch of 1000 layers which was at the end of its cycle and ready for the market continued producing eggs", said Clever Manonga, a leader farmer from Gweru in the Midlands province.

Manonga received a photovoltaic lighting system for his batch of 3 000 layers.

"I have layers nearing the end of their cycle, and were supposed to be at 65% production, but the introduction of the lighting system kept the production rate 85%" Manonga further added.

Manonga plans to get the eggs tested for calcium in the event that egg production for this batch continues at such an unusual rate for layers at the end of their cycle.

Solar Powered Incubators



The installation of solar powered incubators has assisted farmers with easier access to hatching facilities at a lower price. Mechanical hatching over natural hatching has an advantage that it improves productivity in birds as hens quickly go back into laying as they do not need to spend time brooding the eggs.

With no interruptions to incubator power supply, mechanical hatching has high hatchability as compared to natural hatching. In some of the clusters where producers benefited with solar incubators, farmers had been traveling long distances to access hatching services, thereby incurring high transportation costs.

"Before, we were taking eggs to Harare for hatching at \$4 per crate and \$6 transport costs. Now we are hatching at no transport costs and at \$2 per crate. We are now making a profit", said Rosemary Madzivo from Zvimba district, Mashonaland West province.

Rosemary is part of a group of 25 farmers from Zvimba who benefited from the installation of a solar powered incubator. The incubator has a capacity of 520 eggs.



Biogas is a clean, and easily accessible energy option to address energy access challenges faced by poultry producers.

Agricultural Centres of Excellence (ACEs) ZAKIS in Green Technology Initiatives



Since its inception in 2018, the [Zimbabwe Agricultural Knowledge and Innovation Services \(ZAKIS\)](#) project has invested in various technologies that support green agricultural practice at the Agricultural Centres Excellence (ACEs) and District Agricultural Centres of Excellence (DACEs). The centres of excellence conduct crop and animal husbandry research and demonstrate good agricultural practices.

ZAKIS is also promoting the adoption of low cost and high impact technologies to support environmentally friendly agriculture by farmers.

The solar powered boreholes that were installed at all sites which support the water conserving drip irrigation systems at the centres' horticulture plots.

They are supporting drip irrigation at all DACEs, and plots under horticulture at the ACEs

All DACE activities are powered by solar. The drip irrigation systems that are supplied by solar powered boreholes are efficient and have significantly reduced the costs of electricity at the ACEs.



Agricultural Centres of Excellence (ACEs) ZAKIS in Green Technology Initiatives

The power backup solar systems for the administration blocks at the Agricultural Centres of Excellence at Matopos Research Institute and Chibero College of Agriculture.

The systems allow smooth operations during load shedding and power cuts which used to cripple activities at the centres.



Solar powered smart weather stations at the ACEs to provide weather forecasts to farmers within a 40km radius of the stations. The stations automatically compile weather data and sends it to a portal where the responsible focal person can access and share with farmers. This will improve farmers' decision making for production.

Greening Milk Production, Transportation, Processing and Storage Processes

The Transforming Zimbabwe's Dairy Value Chain (TranZDVC) project aims to support investments to increase milk production as well as greening of production, transportation, processing and storage processes involved in the dairy value chain by adoption of renewable energy technologies. Provision of Matching Grant Funds for investment under the project has supported implementation of green technology initiatives at various stages of the value chain i.e. farm, transportation, storage and processing. The projects target to increase green energy use for lighting, refrigeration, heating, water pumping and milking. Adoption of green technology entails a significant reduction in energy costs for both the MCCs and individual farmers who have and will adopt solar energy use.



At farm level, solar powered boreholes have been installed at eleven farms in Mutasa, Mhondoro-Ngezi, Chikomba and Makonde districts to ensure increased fodder production through continuous irrigation all year round.

"I have invested in a solar powered borehole to grow pastures at the farm. Through the trainings from the project, I have learnt how to grow Lucerne as a source of protein for my cows."

"Our biggest challenge was providing adequate feed during the dry season. This was affecting the cows' condition and milk production" said Olivia Marunda, a member of Chitomborwizi Dairy Network, in Makonde District in Mashonaland West

Two solar powered boreholes have also been installed at two milk collection centres (MCCs) in Hwedza and Chikomba districts. This is to ensure a continuous supply of clean water hygienic processes involved in milk handling and processing at the MCCs.



TranZDVC's Matching Grant Facility (MGF) supported small-scale farmers in Chikomba, Makonde and Chipinge districts by investing in solar powered cooling systems. Improved cold chain management now allows the dairy producers to milk twice a day ensuring the capacity to aggregate and store larger milk volumes reducing potential for spoilage and daily transport costs ultimately resulting in increased producer incomes.

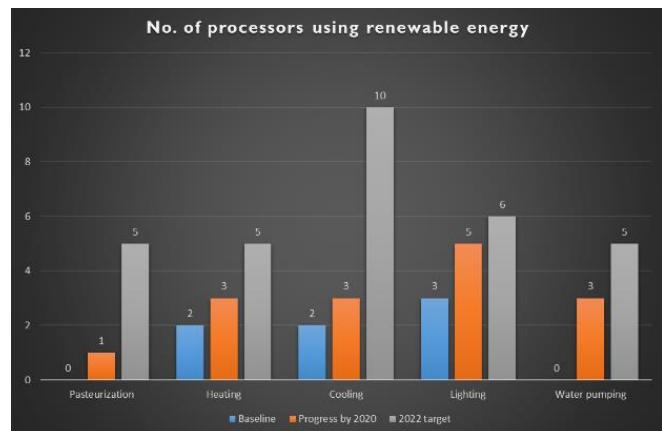
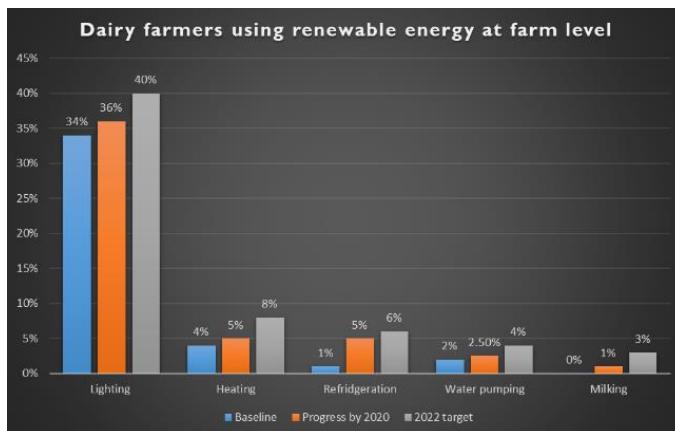
In Chikomba district, Mashonaland West province, the Chitomborwizi Dairy Network invested in a 42-panel solar system enabling them to cool their milk.

"Before, the investment we used a diesel generator which consumed 35 litres of diesel a day, translating to US\$40.00 per day. Electricity charges were around USD400.00 per month. We now have an efficient electricity supply system allowing us to bulk and chill their milk as soon as it is collected", said Claudio Burira, a member of the Chitomborwizi Dairy Network.

Greening Milk Production, Transportation, Processing and Storage Processes



TranZDVC partnered with Mobility for Africa to pilot of a solar powered transport intervention for dairy producers in Chipinge district, Manicaland province. Four solar powered motorcycles are currently being tested by Rusitu Valley dairy farmers. The roll out of the solar powered motorcycles will ensure that the dairy sector's environmental footprint is significantly lowered.



TranZDVC to Hand Over 147 in-calf Heifers worth US\$129.037 to Dairy Farmers

The TranZDVC project will on 23 April 2021 hand over 147 in-calf heifers to 121 dairy farmers (59 women) in 18 districts from 10 provinces. The project imported the in-calf heifers from South Africa.

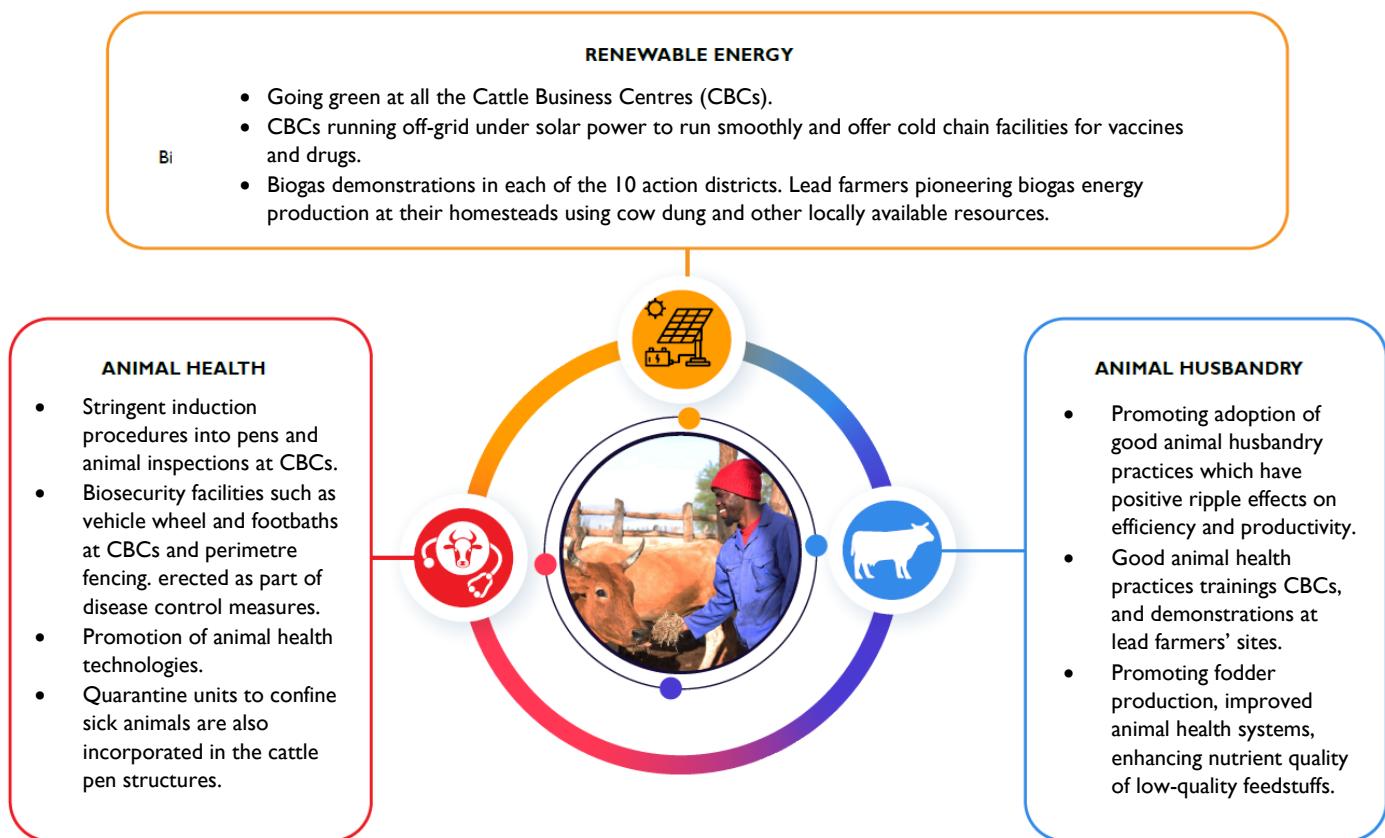
To date, TranZDVC has assisted more than 33 smallholder farmers across 15 districts in 10 provinces to access 200 imported heifers on a 1:1 matching grant facility. The target is to procure 500 heifers with farmers matching with 500 heifers totalling 1,000 heifers during the life of the project. These additional 1000 heifers will contribute over 5.5 million litres of milk annually.

The first 200 heifers were distributed through processors who matched for their small-scale farmers – anyone producing less than 200 litres of milk per day. The 200 heifers were distributed to 33 beneficiaries (24 males and 9 females) through processors based on their 2018 milk intake and their work with small-scale farmers.

The last batch of 153 heifers will be distributed to 134 smallholder farmers (50 women) in May this year. The animals are being distributed directly to small-scale farmers as follows: 45% to existing small-scale farmers, 45% percent to new farmers aligned to processors and/integrators while 10 percent goes to green fields- new dairy farmers.

Promoting Environmentally Friendly Interventions for Beef Cattle Producers

The Beef Enterprise Strengthening and Transformation (BEST) project green technologies intervention has three main pillars; the promotion and demonstration of renewable energy solutions, good animal husbandry and good animal health practices.



BEST Establishes Biogas Demonstration Sites



BEST has selected lead farmers to host biogas digesters to demonstrate the benefits of clean energy sources. These farmers are piloting this technology with cascading of the same expected across all the project districts.

Farmers provided locally available materials such as bricks and stones as part of their commitment to the intervention. Other districts will embark on construction once main CBC structures are complete and functioning.

Follow the story of Hlengani Chivale (72) a lead farmer selected to host a biogas digester demonstration site in Chiredzi district in Masvingo province. [Read more](#)

Sustainable Solutions for Animal Health and Food Safety

Solar Power at Anchor Animal Health Management Centres (AAHMC)

The [Transforming Animal Health and Food Safety for the Future \(SAFE\)](#) project is working with the Department of Veterinary Services (DVS) in the investment of sustainable energy technologies through installation of solar systems and cold chain equipment AAHMCs.

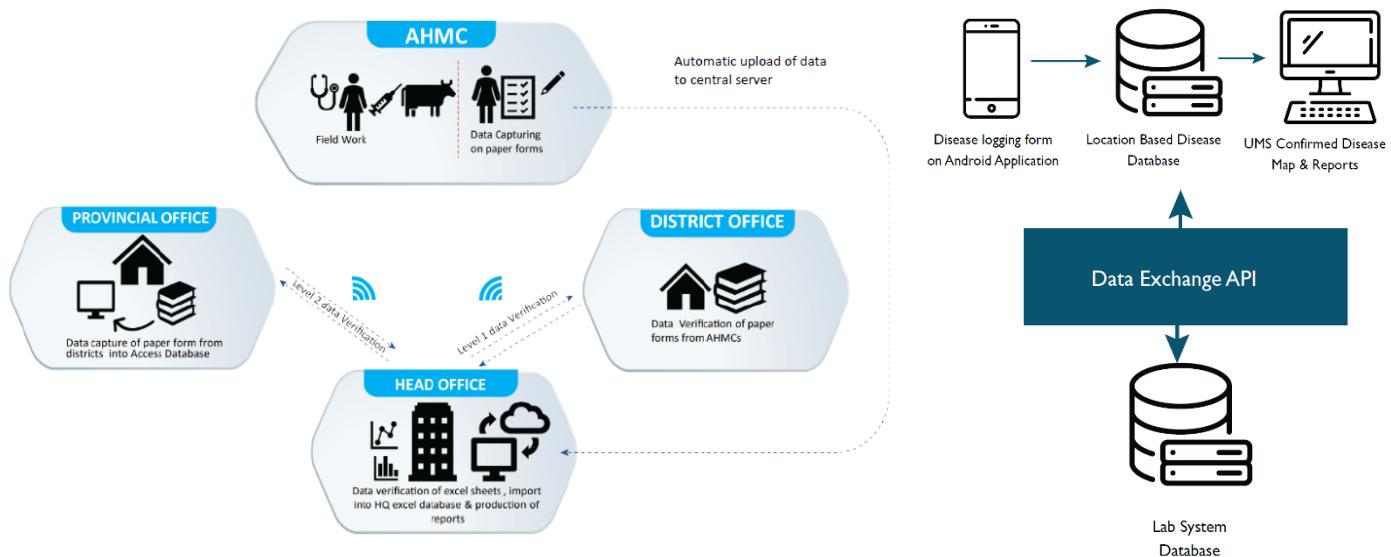
Twenty six AAHMC are set to be fitted with solar power systems for lighting, refrigeration and powering of information and communications technologies (ICT) equipment.



- AHMCs were established in remote rural areas to service marginalised smallholder farmers. Most are located off the electricity grid, limiting the delivery of the basic animal health services to those that require cold chain maintenance.
- Where electricity is available, some of these AHMC have accrued electricity bills beyond the reach of the parent ministry as the fiscal space continue to be constricted. Lack of electricity and requisite infrastructure has deemed some of the AHMCs unattractive investment destinations by the private sector.
- Installation of solar system for cold chain management will also imply cost saving to smallholder farmers as they will access veterinary drugs and vaccines locally. Improvement in service provision at AAHMC will also contribute to reduced mortality and increased growth in livestock herds.

Electronic/ Digital Animal Disease Reporting Modules under LIMS

The SAFE and BEST projects are collaborating to upgrade the DVS Livestock Information Management System (LIMS). The current system is predominantly paper based. A national database is maintained at the DVS head office by manually collating spreadsheet datasets submitted from each province by email monthly. The current system is costly (paper and ink for printing), labour intensive, prone human error and has delays in information relay for timely decision making. The upgrade is going to introduce a more environmentally friendly and cost effective digital capture, analysis and reporting of livestock diseases from both the national and subnational levels.



Driving Green Technologies Key to Developing Sustainable Goat and Pork Value Chains

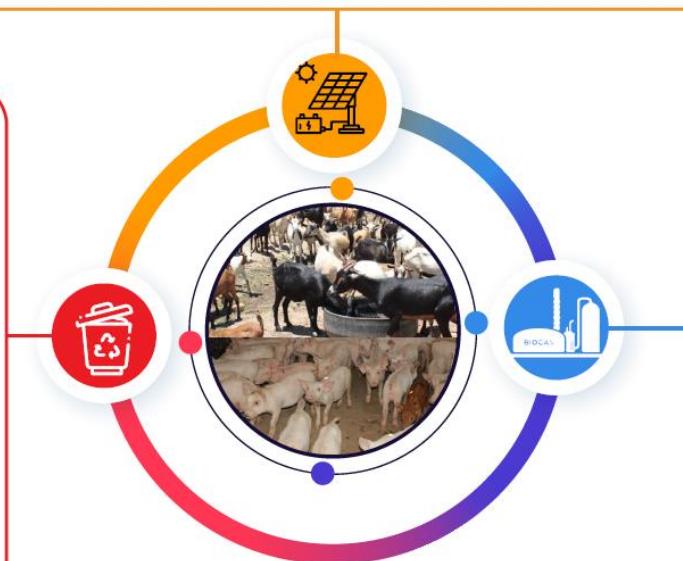
Aware of the potential damage to the global and local environmental damages arising from growth in goat production especially in the drought-prone district, the [Value Chain Alliance for Livestock Upgrading and Empowerment \(VALUE\)](#) project has put in place measures to reduce local environmental damage and offsetting measures to minimize overall impact on greenhouse gas emissions.

SOLAR POWER

- Solar powered boreholes at 12 Goat Improvement Centres (GICs). (Buhera, Chipinge, Rushinga, Mbire, Chikombwa, Mudzi, Binga, Lupane, Nkayi, Beitbridge, Gwanda and Matobo).
- Support fodder seed production on 1.5 hectares. Seed sold to Goat Producer Association Members for pasture regeneration as goats are heavy grazers.
- Solar powered boreholes at pork producers' farms.

WASTE MANAGEMENT

- Promotion of appropriate pig housing structures with efficient waste management facilities.
- Training the Pork Producer Business Syndicates on appropriate waste management and compliance with the Environmental Management Agency's waste disposal regulations and protocols.



BIOGAS

- Biogester construction at the pork value chain integrators in Mashonaland East and West provinces.
- Smart subsidies have supported farmers to set up biogas digesters to produce clean energy for lighting and heating of pig sties. These farms are acting as centres of excellence on promotion of green technologies for sustainable and profitable pig enterprises.



Under the livestock matching grant, the project has supported some of the farmers to set up biogas digesters to produce clean energy for lighting and heating of pig sties. These farms are acting as centres of excellence on promotion of green technologies for sustainable and profitable pig enterprises.

One such farmer is Mr. Rodney Musara of Murehwa district who has always desired to set up a biogas digester at his farm but was hamstrung by financial constraints. After successfully applying for a matching grant, he was supported with 70% of the costs to put up a five cubic biogas digester

"I had initiated the process of establishing the biogas digester, but was facing financial constraints, I am happy that the project not only trained us on green technologies but also supported us to complete the setup, said Musara.

[Watch full story of Rodney Musara here.](#)