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Foreword by the Minister of Infrastructure

The Government of Rwanda has been receiving financial support from the Kingdom of Belgium as it implements its development plans since year 2000. Specific support was directed to Rwanda's energy sector where different grants contributed greatly to the current improvements in both electrification and distribution network strengthening.

The first project that was implemented by the Rwanda Energy Group (REG)'s subsidiary Energy Development Corporation (EDCL) and co-managed by the Belgian Technical Cooperation (ENABEL) started in 2014. This project and others that followed, contributed enormously to the current electrification rate across the country.

The same projects also contributed to the strengthening of the old network through the rehabilitation of old network and construction of new power lines which have stabilized the supply of electricity country wide.

Other than the infrastructure development that these projects directly contributed to, they also had an impact on the livelihoods of Rwandan communities ranging from economic to social and health.

Due to the electricity connections to homes and other social and administrative centers such as schools and health centers: the education sector has improved since students are able to gain more ICT skills at school and to study long hours at night in their homes; service delivery at administrative institutions has also improved considering that most services are delivered via internet. use of more sophisticated equipment has also improved patient care; new industries are developing in different rural districts since electricity supports their operations. The projects have also facilitated the substantial growth of businesses in different districts as several productive use activities are being developed (artisan centers, business centers, milk collection centers among others).

I would like to express the Government of Rwanda's gratitude towards the support given by the Kingdom of Belgium that made it possible for the above-mentioned impact to be realized in the different parts that these projects operated in.



Claver GATETE
Minister of Infrastructure

Message from the Ambassador of the Kingdom of Belgium to Rwanda

The growth of the energy sector in Rwanda during the recent decade has been impressive. It is often celebrated as a leading example of success across Sub-Saharan Africa. The development of the country's energy infrastructure has played a major role in Rwanda's consistent economic growth since the mid-1990s. Despite the recent global economic fallout due to the impact of the COVID 19 pandemic, from which Rwanda has not been exempted. the country holds enormous potential to grow further. Having access to affordable and sustainable energy will continue to play a critical role in this future growth. Belgium takes immense pleasure in having a long-term partnership with the Government of Rwanda in the achieving its energy goals and targets. The BEEARP project is a strong component of this collaboration and partnership.

Since the inception of BEEARP in 2014, Enabel and EDCL/REG have demonstrated a very effective collaboration in carrying out several electrification projects that have provided access to electricity to over 120,000 households, and hundreds of businesses and public institutions across

the country. Electrification projects are not only about constructing new power lines or upgrading the existing networks, they are about transforming a community's way of life, the way of doing business, thereby stimulating social and economic benefits for multiple strata of citizens within a region. In this sense, the electrification projects implemented through BE EARP have laid the foundations for broader socio-economic growth by opening up avenues of income-generating activities and other forms of productive engagement.

The 20 stories in this booklet show how access to affordable and reliable electricity transforms the lives of people who had previously no access to electricity.

I would like to take this opportunity to thank all the partners, both public and private, national and international, who continue to work together to bring affordable and reliable energy to the citizens of Rwanda



Benoit RYELANDT

Ambassador of the Kingdom

of Belgium to Rwanda

Project Introduction

Access to universal and modern electricity services is at the heart of Rwanda's social and economic development goals. The BE EARP project, funded by the Kingdom of Belgium, contributes to that very aspiration by supporting the implementation of on-grid electrification projects.

The project has been carried out as part of the Electricity Access Rollout Programme (EARP), which is the Government of Rwanda's initiative to provide grid electricity services (electrification) across the country. The Belgian contribution to this initiative, referred to as BE EARP, is a part of the Rwanda-Belgium Integrated Cooperation Programme (2011-2014).

BE EARP comprises a 39-million Euro grant envelope supporting the **Electricity Development Corporation** Limited (EDCL), a subsidiary of Rwandan Energy Group (REG). in upgrading and expanding the electricity network in Rwanda.

The intervention has three main phases:

- Phase 1 which started in 2014 BF1 (€17M):
- Phase 2, launched in 2015- BE2 (€12M)
- Phase 3. started in 2016 -BE3 (€10M).

The final component of the BE EARP project will conclude in February 2022.

Project results and outcomes

The intervention has made a crucial contribution to the Government of Rwanda's goals and achievements of giving every citizen access to electricity by 2024, with 52% of such access expected to be derived from on-grid services

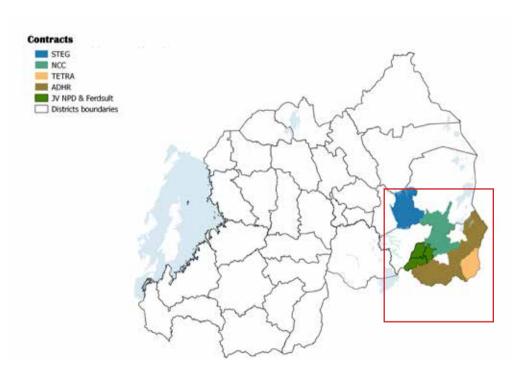
To date, over 900 km of power networks (both medium voltage and low voltage lines) have been constructed under the programme, thereby connecting over 44,500 customers in Eastern Province in the districts of Rwamagana, Kayonza, Ngoma and Kirehe.

Today over 160.000 people who previously had had no access to electricity, are now benefiting from a reliable and affordable power supply. In addition, the project has connected 33 schools, 14 health facilities, over 400 businesses and SMEs, as well 24 public administration institutions. The project also funded the upgrading of the 50 km power distribution network in Rubavu. located on Rwanda's western border

Major components of such on-grid electricity infrastructure normally have a lifespan of over 20 years. The electricity networks laid down by this project will, therefore, continue to contribute to economic growth, employment generation and improvements in health and education facilities in the region over many years to come.

The stories in this booklet are testimony to the positive transformation that having reliable and affordable access to electricity can bring to people. businesses, and to the diverse social and public institutions which previously had no access to electricity.

BE EARP Project Areas of Intervention



Contractor	Scope	Areas covered	Key Public institutions connected
STEG International Services	Connections: 8077 Transformers: 40 MV lines: 64km LV Lines: 200km	Rwamagana District (Gishari, Muhazi, Kigabiro, Munyaga, Munyiginya, Mwurire, Rubona Sectors) Kayonza District (Nkamba Sector)	10 Cell Offices2 Health facilities9 schools
National Contracting Company (NCC)	Connections: 7130 Transformers: 52 MV lines: 76.9km LV Lines: 174.7km	Kayonza District (Kabare, Kabarondo, Murama Sectors) Ngoma District (Rukira, Kibungo Sectors) Kirehe District (Mushikiri Sector)	 6 Health facilities 1 MCC 4 Water Pumping Stations 5 Cell Offices 10 Schools
TETRA	Connections: 2516 Transformers: 13 MV lines: 10km LV Lines: 48.98 km	Kirehe District (Nyamugari, Mahama Sectors)	1 Cell Office5 Schools1 Health facility
ADHR Ltd Lot	Connections: 7489 Transformers: 41 MV lines: 58.3km LV Lines: 135	Kirehe District (Nyarubuye, Kigina, Mpanga, Gatore, Musaza Kigarama and Gahara Sectors)	 1 Genocide Memorial 1 MCC 4 Schools 3 Health Facilities 6 Administrative Office
JV NPD & Ferdsult	Connections: 2,440 Transformers: 61 MV lines: 82.03km LV Line: 179.82km	Ngoma District (Murama, Mutenderi, Kazo Sectors) Kirehe District (Gahara Sector)	 2 Health facilities 2 Cell offices 5 schools

Total Connections	27,833
Medium Voltage lines built	291.2 km
Low Voltage lines built	738.5 km
Transformers installed	207
Fill-in connections with	16,667
materials	

Stories of Change



Rwamagana District











"We lived in a dark house and then we saw the light coming!"

Saint Paul's Parish Church Munyaga is an Anglican church located in a rural area of Munyaga Sector in Rwamagana District. The church is led by Reverend lyakaramye Martin, the pastor, and supported by Ndahayo Valens, the catechist. The office in the church compound accommodates the pastor and four staff who all work on a project funded by Compassion International. In the church compound, there is a primary school with 1.117 pupils.

The church was started in 1980, and the building could seat up to 400 people sitting close to each other. At that time, they were using traditional music instruments, like drums and 'ipendo' (a kind of rattle). In 1998, as the church congregation grew in numbers, they bought two batteries for the church piano. They used to change them over as a battery did not last a full day. They paid 500 RWF to re-charge a battery plus 2,000 RWF for transport. During the morning prayers, they used candles, torches and oil lamps.

In 2005, the project bought a solar system. They used it for lighting and administrative purposes, operating two laptops, a printer and their phones. The school administration always



came to the project office to print and photocopy things. If they wanted to print a lot of copies, they would go to Rwamagana. Some of their reports were handwritten. In 2008, the church realised they needed better services because the congregation was growing a lot. They bought a generator, but it cost them 4,000

RWF a day for the fuel to run it. Reverend lyakaramye says: "When our local leaders explained to us that the electricity was finally coming, first we did not trust them because they had promised us this before – but nothing had happened. We thought it was like other projects which come and measure things, or ask questions,

and then never come back. But, to our surprise, REG worked very fast and within a few months we got electricity connected to the church, the office, our houses and the school. It was like a miracle! It was like living in a dark house, and then seeing the light coming."

They bought two amplifiers. "People like good music; it makes them happy with the service" the catechist explains. "Just imagine: before this, when the choir was singing, and the amplifier battery ran out, you would see the congregation feeling sad and demoralised; some of them even leaving the service."

Reverend lyakaramye continues: "The number of believers in the morning and



evening prayers increased from 15 to 40. During the services, people are happy because they can read their prayer and songbooks, and they can see each other well. The number of regular attendees has now increased to 600. The savings we've made on fuel, transport, printing and photocopying, are being invested in the reconstruction of the church. We used to be late reporting our activities to the regional diocese, because we had to go to Rwamagana to write our reports and send them by email.



Now we can do all that from here, and we are always on time."

To churches which are not yet connected, the pastor has the following advice: "Start by buying a simple solar panel. That is already a great help with basic activities. But also prepare for the day that the grid extends to your place by saving some



money now for its installation within the church premises because you will have to pay for that yourselves."

"When we got connected to the grid, it was like a dream"



N I dahimana Augustin is the 30-year-Vold owner of a hairdressing salon in Munyaga Sector in Rwamagana. He has a wife and two children. Besides working in the salon, Augustin is also a farmer. When he is not cutting hair and shaving people, he tends his garden and takes care of his two cows. He usually works in the salon in the afternoons and evenings when most of his customers can go to him. His only competitor in the village is also one of his customers because "Augustin has excellent customer service" When Augustin heard in 2018 that the village was going to be connected to the electricity grid, he was sceptical. He said, "Nzawubara nywubonye - I'll only believe it when I see it." Totally against his expectations, within a month, the REG team had arrived to start putting up the poles. "It was like a dream!" he says. "Before we got the electricity, I was using a solar system in my salon. That allowed me to work about three hours a day, and I could serve about 20 customers. Being connected to the grid means I can work as many hours as I want. On a daily average. I can serve over twice as many customers as I used to do. Most people come in the evenings so, I often work until 10 pm nowadays. I charge 200 RWF for an adult, and 100 RWF for a child.

When I was using the solar panel for my lighting, I paid 17,100 RWF each month, but now I pay just 2,000 RWF a month for electricity. With my profits, I have bought more clippers, a radio and a TV. I am also planning to hire a second employee, so

that we can serve more customers each day. Last, but not least, I was recently able to buy a second cow which will help to safeguard my family's future development."



"What a joy to be connected to the rest of the world!

Mukakalisa Chantal is a farmer and mother of two children: one is studying at university and the other is in high school. They live in Munyaga Sector in Rwamagana District.

"We used to make up songs in which we would ask for electricity" Chantal tells us. "But in fact, no-one believed that it would ever happen. So, when the local authorities told us we were going to be connected to the electricity grid, it sounded like a miracle! However, it took another two years before the electricity was installed, but we did not mind. We were happy not to be left behind. Having electricity brings a sense of liveliness, and activity. The government encouraged us to put lights outside our houses and now our neighbourhood feels like a city at night; there are lights everywhere. It used to be very dark at night and it was scary to walk around or just go outside. Nowadays, even the children are not afraid to move around at night. We used to use traditional oil lamps. They provide very little light and were bad for our lungs. In the mornings, we sometimes found black dirt in our noses. Oil lamps also are more expensive than electric lights.



We used to spend around 5,000 RWF a month to buy petrol, whereas now we buy a unit of electricity for just 250 RWF which lasts for more than two months. We use it for lighting, the radio and to charge the mobile phone.

Theft used to be a big issue in our neighbourhood before we got electricity. Just imagine: the door to our toilet was stolen while we were all inside the house! But these days the amount of theft has gone down because thieves are afraid of being seen."

These days, Chantal does not have to rush home to cook in the evening hours. "It doesn't bother me any more if I am away from home like at a wedding, or in the field, because I can cook at any time when I return home. This was not the case before. To be honest, we used to go to sleep on empty stomachs almost every time that I was late home to do the cooking."

School studies and revision for the children have also become easier. "My children had to squeeze in around the oil lamp to review their lessons from school. Now, they can study either in the livingroom or in their bedrooms, and they can take as much time as they want. Communication has also improved, we are better connected



Some of us were hesitant to buy phones because it was inconvenient to go somewhere a long way from home to charge it. At the shops where you could re-charge the phone's battery, you ran the risk that the shop would give you a different to the one you had given them to charge – one that was older and more worn-out!"



"We can water our kitchen gardens and eat nutritious food."



Agabo Taibu operates a pumping station in a deep valley on the shores of Lake Muhazi in Munyiginya Sector. His task is to switch the pump on and off and maintain the system. He has been with the project for the last two and a half years. He is a generous, welcoming man willing to explain the project: "This

pumping station was installed by Better World. This is an NGO helping farmers to improve their livelihoods, creating community groups and teaching them about good agricultural practices and healthy food. The pump fills a small reservoir to irrigate the demo-plot and four tanks, two containing 5,000 litres and

two others of 10,000 litres.

A total of 150 households use this water, mainly for irrigation.

When the community started to cultivate together as a group in 2014, they used a small two-acre demonstration plot. They hardly had enough water to irrigate it as they had to use a hand pump at a well in Nayikondo which had limited capacity. The only other place they could fetch water from was Lake Muhazi, but that is too far from the plot to bring irrigation water by hand.

One day in 2017, we heard from the Rwamagana mayor that we were going to get electricity. It was like a dream! We couldn't believe that people living so remotely, like us, would get electricity!" The electricity opened new opportunities. The project built an electric pumping station. They expanded the demo plot and built a small reservoir to irrigate it. They also placed four water tanks scattered about the area to bring water closer to people's homes to irrigate their kitchen gardens.

The reservoir and the four tanks are all filled by the pumping station. All fields are irrigated twice a day; in the



morning and in the evening. The project agronomist now has a laptop and a projector which he uses to train farmers. Water is everywhere, and the community can irrigate their kitchen gardens easily at zero cost.

Gisagara Innocent and Nyirandayambaje Donatha are a couple. They have five small plots for their kitchen garden. Nyirandayambaje says proudly: "We can earn at least 25,000 RWF from this small

plot. We are planning to expand our kitchen garden to cultivate not only tomatoes, carrots and fruit, but also other vegetables like dodo, cabbages and onions. Thanks to the electricity and the project which brought us the electric pump, we can now irrigate things well, and eat nutritious food."

"Finally we can put ICT theory into practice"

Groupe Scholaire Munyiginya in Munyiginya Sector in Rwamagana opened in 1945 and now consists of a primary school with 23 classes, eight of which are for O-level students, and six classes for A-level students. We interviewed the headmaster, Twagirimana, Jean Claude, during the Covid-19 pandemic when there were no students at the school

Twagirimana is more than happy to explain the benefits of having electricity at school. "We used to teach just the theory of ICT because we didn't have a laptop or electricity. One day, the Rwanda Education Board (REB) gave us some computers. We kept them in the storeroom because we had no electricity. After a while, REB came and took them all back because we were not using them. That made me really sad because I had hoped we would soon get connected to the electricity. There had been lots of rumours since 2010 that the electricity would come. We had to wait another eight vears. Then, finally, we heard from our local leaders that we were going to be connected. The process was not easy. I didn't know the land registration number of our plot, and that number was needed to get electricity. I asked for support from the Sector and



District offices, and they managed to help us. We were connected to the grid in 2018. It is a great relief to have electricity. We immediately bought a big printer. At the end of 2018, we got 100 laptops for the secondary school, and in early 2019, we received 222 computers as part of the

government's 'One Laptop Per Child' programme. Our ICT classes are now really practical, not just theoretical classes." The headmaster vividly remembers the time before the electricity came: "When I started in my post here, I asked the school secretary to draft up a recommendation letter for a teacher When it was brought to me to sign. I saw it was handwritten... Of course, what could I expect! But I didn't feel comfortable about it. We had to print and do all our photocopying in Rwamagana Town. That cost us between 400.000 and 500,000 RWF each term. We used to print only a few copies of the Senior 6. Senior 3. and Primary 6 exams because those are the most important national exams. The teachers had to write the questions for the other exams on the blackboard. There were also security problems at the school. People used to come and steal desks and break them up to use as firewood"

"With electricity, our work became much easier at school." Twagirimana explains. "We bought two projectors. We can now



project information at the Parent-Teacher Committee meetings, like details of the budget and our school action plan. We bought three printers, five laptops for teachers, four tablets and one Samsung phone for better communications. We can write up reports on the computers, prepare the exams and print them out easily, and also keep better control over confidential papers. Stealing has now decreased because we have lights around the school."

The advice that I would give other schools is to:

- Budget for the electricity beforehand so that you will be able to make the right investments.
- Put the ICT tools you need like laptops, printers, projectors - in your school action plan and budget.
- Prepare and train up your teachers so they can use computers and know more about ICT.





Stories of Change













"Electricity improves my children's future life prospects"



I wantege, Grace, is the mother of six children. She has lived together with her children and husband in Rukira Sector in Ngoma since 1997. They farm for a living. They grow maize, beans, cassava and bananas. Uwantege: "Our first-born is in his first year in college, three of the other children are in secondary school and the two youngest are in Kindergarten. When they told us we would get electricity, we thought they were lying: we thought it was something impossible because of where we live. But now, here we are! It still took about two years before we finally got it, but even that was faster than we had imagined."

In preparation for getting connected to the grid, our community collected funds so that we could buy the cash power boxes without any money issues. But the electricity company wouldn't accept part- payments for the cash power boxes. We now pay for the boxes in instalments when we buy our electricity. Each household that saved money in our group has got it back. And everyone was given two units of electricity free of charge as a promotion.

After we got connected, we finished installing the internal wiring and light switches in our house.

Before we got the electricity, it was so dark at our place at night" Uwantege continues "It was scary to walk around at night, or even to go outside the house. We were using oil lamps at that time, and they caused an awful smell in the house. I was always worried about my house catching fire.

After some time, I stopped using oil lamps, and we bought torches instead. But torch batteries are expensive. We had two phones in our house, and we paid at least 400 RWF a week to charge them, and 1,600 RWF a week for batteries for our radio and the torches. We used one bottle of petrol costing 900 RWF for filling the lamps, which lasted about three weeks. Nowadays, we use two units of electricity every three weeks which costs us 250 RWF per unit – so 500 RWF altogether.





I don't worry anymore about setting my house on fire. The two oldest children have smartphones with an Internet connection, and we also managed to buy a laptop for our son who just started at college."

When asked what the major benefit has been having electricity for her household, Uwantege has to think first for a while, as she sees many advantages. "Thanks to electricity, there is no difference any more between day and night" she starts to reply "night-time does not stop us doing what we want to do any more. We used to rush home to cook before it got dark, now we can cook at any time in the evening. Sometimes I wake up very early, and I can start sorting out and preparing seeds for planting. Electricity has also reduced theft in our neighbourhood because now there



is light everywhere. I remember one night, people stole ten of our chickens, but nobody noticed anything in the dark. That kind of thing cannot happen these days. But I think that what I am most grateful for is that my children can all read and study in the evenings after school. That will benefit their school exam results and grades and improve their prospects in life."

My advice to REG, and other people: "I would have liked it better if REG had taken the money our group had saved for cash power boxes, even though it was not the full amount then. That would have saved us having to pay back the cost of the cash power boxes over so many years."

"Electricity opens our minds for innovation"

posiyani runs a milling machine business in Rukira Sector in Ngoma. He is also a farmer: he grows maize, beans, rice and bananas, and rears cows and pigs. He has four children.

In 2012, he was the first in the area at that time to start operating a milling machine connected to a generator. Posiyani reported: "This was challenging, as all the machinery was in the same room. If you filled the generator with petrol and got some petrol on your hands, and then you had to lift up a bag of flour, the petrol would spoil the flour. Or the smoke from the generator would spread over the flour, turning it all black. If that happened, I had to reimburse my client."

machine to mill all the different grains, some flour from one client would get mixed up with flour from the previous client. So, someone bringing maize to be ground would risk taking away flour with some sorghum or cassava flour mixed up in it.

Posiyani: "One day, when I heard during the Umuganda meeting that we were going to be connected to the electricity grid, I realised this was an opportunity to innovate my business. I started to make plans and when the electricity arrived,



I bought three new electrical appliances for 2 million RWF: a mill for maize, a mill for sorghum and a separate sheller which removes the outer shells from seeds before they are milled. I used my savings to buy those machines. Later, I added a third mill costing 350,000 RWF, for groundnuts and cassava. This may seem a big investment, but it is worth it. I used

to pay around 40,000 RWF per month for petrol. I now pay around the same amount for the electricity to run my four machines which together have a much bigger capacity. I paid for my cash power box straightaway, so I don't have instalments to pay back on my electricity bills. The number of customers has more than doubled, and they bring all their grain to



me to mill. The quality of my flour is high because I use separate mills for separate products. My customers are also happy because they don't have to travel far to get their grain harvest milled." Posivani has one employee operating his milling machines. They do not have specific working hours because clients come at different times during the day. Posiyani adds: "an added advantage of the shelling machine is that it provides me with shells which I use to feed my cows. This has increased their milk production considerably and adds to my income. Really, electricity has opened my mind. I still see many opportunities, not only for myself, but also for others. I just helped a friend to also start a mill, and now it is operating well."



"I can work late, until 9pm because the lights are on everywhere."

melyne Mukeshimana is a young and Centhusiastic business woman Her shop, called 'Ineza', is in Ngoma District, in Nyagatovu villlage on a road where everyone can see and find it easily.

She sells clothes, shoes, food and drinks. She also has a canteen inside the shop where customers can have tea and soft drinks. She is a married woman with four children She started the business long time ago

hasic needs such as Mutuelle de Sante health insurance, and school fees.

Before the electricity came, the family used to close the shop at 8 pm. Few customers came in the evenings as the lighting was poor. They were using oil lamps, torches and candles.

After that incident, Emelyne's husband bought a solar panel which powered three light bulbs. This helped them a bit in the shop, but in other rooms and outside they still used torches.

"The local authorities kept on telling us that the electricity was coming. Finally, we saw people measuring and putting up the poles for electricity. We thought it would still take another long time, but almost immediately they started to connect us to the grid."

Since then, Emelyne's business has improved a lot.

"I now open as early as 5 am to serve tea to my customers in the mornings, and I work late, until 9 pm. But if anyone wants



when she got an inheritance from her family. She bought two ierry cans of banana juice and 'mandazi'(cupcakes) and sold them, making a profit of 6,000 RWF. People loved them both! So, she continued selling juice and added hot tea as another product.

In 2016, she wanted to 'think big'. She joined a savings group and deposited 500 RWF each week. After a year, it was her turn to get the money. It was less than she had expected. She only got 20,000 RWF, but she was able to use it to expand her business a little

In 2018, Urwego Bank had a programme to lend money to women entrepreneurs. Emelvne applied and got a loan of 100.000 RWF. That allowed her to sell more goods. Her profits rose, and she was able to pay for her family's

anything from my shop, I can serve them because we have lights." she says.

She installed more light bulbs in other rooms and bought a radio, TV and a hair clipper for her children's hair. They used to travel 2 kms to a hair salon, and they would pay 100 RWF for each child's haircut. Now she can cut their hair herself at home.

"Our shop is better now. There are lights everywhere and clients feel safe to come and buy things in the evening."



"Electricity speeds up our work and speeds up development"



back at 5.30 in the afternoon" In Rukira Sector, near Kibungo, they were building classrooms, and Didace got temporary work to do all the welding in that school: specifically, the roofs and doors, "It was my reputation for doing good work that earned me the job. They saw that I was delivering well." explains Munvaneza. He had spent two months welding at the school, and was still paving the rent at the agakiriro. He finally decided to stop working there. "Before we got electricity, we did our welding in Ngoma Town. To do that, I had to pay for electricity and transport. If I made a door, it would cost me 3.000 RWF to transport it back to Kibungo. If clients wanted something, I'd pick up my welding machine and go and work at their place,



so I could use their electricity. In community meetings, we'd hear that the electricity was coming- but we never knew when. Then we saw people measuring things. After four months, they came back again with electricity poles. Then we all bought cash power boxes and we got our connections to the grid. Working in town is the best thing because you meet lots of people, and there are so many more customers. Here in Kibungo. you can get clients, but not as many as you can find in town. Some of the things that clients from here want are doors. hinges, and other fittings. Now that the electricity is here. I earn about 3,000 RWF or more per day. I bought a new welding machine and a sanding machine. During this Covid 19 period I did seven hand-washing machines each day, and each one of them cost 12,000 RWF! It was a big market. With the money I earned from my welding business, I built my own house, and I can pay the two staff that I have now, as well as paying school fees for my two children

My advice to other welders: Be prepared to have the machines ready to start work when electricity comes to your area!"

and taking care of my family.



Stories of Change











"No more wasted beans"



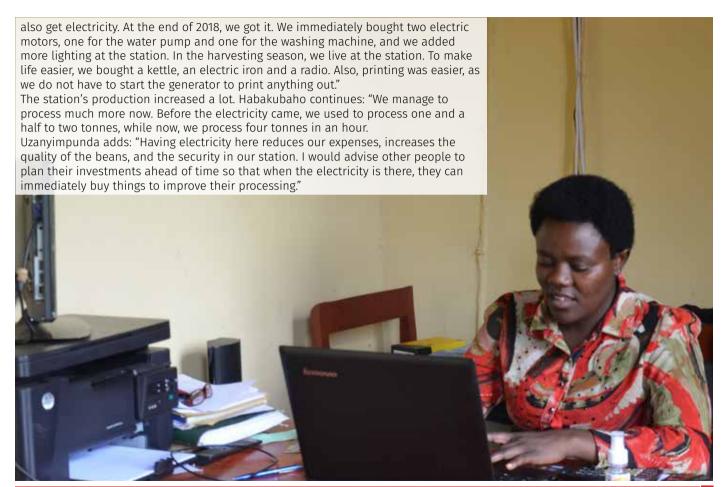
Rwanda Trading Company has a coffee washing station in the Murama valley in Kayonza District. The coffee station is surrounded by many coffee fields. During the coffee harvest season, most of the work is done at night. When coffee is harvested, it needs to be processed within eight hours so that the beans maintain their quality. In the afternoon, the farmer brings the harvested beans to one of eight collection sites.

At the end of the day, a truck brings the

beans to the washing station, and then the workers immediately start to wash the beans. This continues all through the night. Before the station had electricity, they used three generators: one for the light bulbs around the station, and for office equipment, like their printer. A second generator powered the washing machine, and a third generator was for the water pump. The generators for the lights and washing process would work all night; the water pump generator had to work during

the day and the night. The financial costs to run these generators were very high. Uzanvimpunda Claudine, the coffee washing station's accountant, explains more about the costs: "We would buy 20 litres of fuel per day. Transport would cost us 5,000 RWF. The cost of fuel and transport in the harvest season would be approximately 1,700,000 RWF. We realised that the fuel was very expensive so, in 2017, we bought a solar panel which helped us a bit." The manager. Habakubaho Reuben, explains: "In December 2017, I heard from the mayor that the electricity was coming. He told me to make sure our station would





"We can provide our patients with more and better services."

In October 2005, the Karama Health Centre opened with three staff. At that time, it received between 30 and 50 people a day. Evereriste Tuyisenge, assistant manager of the health centre explains the situation: "Before we didn't have anything, no generator, no solar panel for lighting. The staff just had torches. The health centre also had no printer, photocopier, internet connection or computers."

The centre bought a solar panel in 2010. This meant they could install lighting in the building, improve the security and use some laboratory equipment. In 2012, they bought a generator to power a fridge for vaccines, four computers and a steriliser. They paid 400,000 RWF for fuel each month.

Tuyisenge recalls: "Some laboratory appliances and the incubator were left unused because we did not have enough power to get them to work. We could not give the patients the quality of service we wanted to give. For example, a mother would give birth at the Health Centre during the day. But if we saw the baby was coming during the night, we would refer the mother and baby to the district hospital.



It once happened that we ran out of fuel and had to use torches to do a surgical cut and stitches. The patient would see us getting in a panic, screaming and shouting at whoever was closest to us, to bring a torch or some kind of light and, after the baby was finally born, we could not even put it in the incubator."

"When we got connected to the grid, we

were very happy as we could provide our patients with more services. But then we needed more space! We built new rooms and a fence around the Health Centre to improve security. We also bought laboratory appliances, another fridge and some mobile vaccine carriers, as well as four new computers, three printers, a photocopier and two TVs. The TVs are in





the reception, so people can watch them while waiting. We now have a night shift from 17.00 hours to 07.00 in the morning. Our staff numbers have increased to 27, and we can support around 25 to 30 patients staying overnight. These are mainly women who must rest after they have delivered their babies. Patients trust us more now, and they feel secure. Tuyisenge concludes: "Electricity has made our work easier, and we can offer good services. We do not have to refer

so many patients to the District Hospital anymore. We do have a wish for the future though, as the three-phase electrical power was not installed correctly. Now we still use the generator for the steriliser, consuming fuel for around 110,000 RWF every month.

We advise other health centres to budget well to be ready to buy medical appliances when electricity comes to their districts.



"To us, electricity means more savings and progress"

↑ ↑ usabyimana Annemarie and her N husband Gaston live with their two children, who are both in secondary school, and one grandchild, in Rusaro village, Murama Sector in Ngoma District. They make their living from farming. They grow sorghum, maize, coffee, beans and sweet potatoes. Some of what they harvest is sold, and the rest is for the family to eat. They also keep some domestic animals: cows, goats and pigs, and they rent out three small houses which they own. Musabyimana: "It was such a joy to hear the news we were getting electricity! First, the REG staff came to tell us we would soon get electricity and that we could throw away our smelly oil lamps. At that time, they were talking about a solar system. Later, they came back and told us that we were going to be connected to the national grid, and that we had to travel to Kayonza to register our houses and pay 56,000 RWF for a cash power box. Fortunately, they returned again another day to tell us we did not have to register, and that they would advance us the cash power box. This great news made us happy. Only a month after that, they had put up the poles, and we were connected.



We now have to pay for the cash power box every time we buy electricity. Half of each payment is for electricity and half goes to pay for the cash power box." Before they had electricity, Musabyimana's family used oil lamps and

Musabyimana's family used oil lamps and torches. "We paid about 800 RWF a week for batteries for their radio and torches, and another 800 RWF for oil for their

lamps. To get a haircut, we had to travel about one hour to Cyakabare, which is in a different area.

After getting connected to the electricity grid, the family bought a set of hair clippers. They can now re-charge their phones at home and plug in their radio. They also make some money from charging phone batteries for other

people who do not yet have electricity. They ask their customers to pay 50 RWF a time for this service. Musabyimana says: "Electricity has reduced theft in the neighbourhood because there are lights everywhere now." Her husband Gaston adds: "In the past, we were forced to sell part of our harvests to get cash to buy petrol, radio batteries and to get a haircut. Now we can wait until the market is good before we sell our harvest produce." Musabyimana concludes: "My greatest joy now there is electricity, is that my children have much more time to revise their school lessons in the evenings They will do better at school and maybe later in life too!"



"I am planning to add more business activities now we have electricity"

N I tezimana is a businessman in Murama Sector. He runs a shop just opposite the Karama Health Centre. People who visit the Health Centre often stop at his shop as well. Ntezimana also is a farmer. He grows maize, sorghum and beans, and he buys and sells cows. Ntezimana: "We first asked for electricity during the 2012 presidential election campaigns, but we never got any feedback. In 2016, we finally heard that we were going to get connected and, two years later, it finally happened. I was part of the team helping to move and lav the electricity cables. Before the electricity came, Ntezimana used an oil lamp in his shop. The light was poor and people passing by in the evenings could hardly see his shop. Using an oil lamp was also dangerous as the lamp could fall, or be knocked over, and start a fire. Ntezimana: "Before I got electricity, I opened my shop at 7 am and closed at around 8 pm. Now that I have electricity, I open before 6 am and close at around 10 pm. I stay overnight at the shop, it has a room at the back, so now, when people sometimes visit the Health Centre at night, they knock on the shop door and I can go and serve them. I never did this before as I was afraid to open the door at night. But now I have an



outside light, and I can look to see who is at the door before I open it. I get twice as many customers now because most people come to shop in the evenings." The electricity has allowed Nzetimana to cut some of his running costs: he used to buy petrol for about 600 RWF each week. Batteries for his radio cost about 720 RWF every two weeks. Now he pays only 500 RWF per month for electricity, so he saves

3,500 RWF every month.

Ntezimana also provides MTN phone credit to his customers. "When I had to go elsewhere to charge my phone, this was not a profitable business, but now it is." From his profits, Nzetimana expanded his business. He started to sell petrol, umutobe (banana juice) and ubushera (a drink made from sorghum), the latter two being especially popular in the evening



hours. A 20-litre jerry can of petrol brings him 3,000 RWF in profit. When he is preparing umutobe, Nzetimana employs about five people to help him. The electricity allows him to wake up at 4 am, switch on the light and start peeling bananas to make the juice.

Ntezimana: "Electricity has more than doubled my profits. I have expanded my business, theft has been reduced, and I now play music on the radio for my clients all the time. I am planning to add more business activities in future like TV and Mobile Money services."



"From charcoal to electricity"



I abiyaremye has an electrical appliance repair shop in Cyinzove village in Kavonza District, Kabarondo Sector, Here is his story: "I was born in the town of Kabarondo, I started repairing phones there, but without ever being properly trained in it. At a certain moment, I landed in Wawa Rehabilitation Centre for a short time after a fight with a dissatisfied customer In the Wawa Rehabilitation Centre, I got a proper training as a technician. When I came out, I decided to start a business here in Cvinzove, as there was not a single technician in this area. I started doing mobile phone and radio repairs. As there was no electricity. I had to make use of a soldering iron heated by hot charcoal. That is not easy to handle. I remember one day, I was repairing a phone and the screen got burnt. I thought I was sure to be beaten by the owner! However, I managed to repair the screen and returned the phone safely repaired back to the owner. Sometimes I used to visit colleagues in town. That always made me sad as they were doing so much better than me then. They told me to come to work in the city where there was electricity, but I did not do it because in the city I'd have lots of competitors, and my existing clients would have to travel a long distance to find me.

One day, during a community meeting, we were told that electricity was going to come to Cvinzove. But then we still had to wait for another three vears. Finally, one day, we saw people measuring things - then they started to install the poles. We couldn't believe what we were seeing! We were very happy. Our village soon became much livelier and more vibrant

The first thing I did once electricity was installed, was to buy an electric soldering iron. People started to trust me better after that because of my professional tools, and I got more clients. After a while, I had enough money to buy a computer and a fridge. They both generate income for me because I buy movies and sell them on flash drives, and I rent out the fridge to people. I also remove passwords from phones. repair them and charge people's phone batteries for them. I can also repair Mobisol batteries and cash power boxes.





Before the electricity came here, I made around 15,000 RWF per month, but now, sometimes I earn 10,000 RWF per day! I can take care of my family, buy food, pay the rent and pay Mutuelle de Santé. One day, I'm sure, I will build my own house, and that will all be because of the electricity."

Stories of Change













"Faster, better services, improved security and more revenue."



Mukasabato, Evelyne, is the receptionist and lab technician at Munini Health Post in Kirehe District. Munini's health post was built in 2016. It is located near the Mahama Refugee Camp. The health post is supervised and supported by Bukora Health Centre which is located in Nyamugari. Mukasabato: "Before the health post was established here, the community had to go to Nyamugari, but from Munini that is a two-hour walk or a 1,000 RWF ride on a moto. So, the District decided to set up a health post here. While they were building the health post, they expected to get connected to the grid one day, so they included the inside wiring. We have a nurse, a lab technician – receptionist. a security guard and a cleaner. We have around 50 people a day needing treatment Mukasabato started work in the health post in 2017. She recalls: "Before the electricity arrived, we didn't have a computer. We checked the patients' insurance cover by phone, by dialling *909#. It could take a while before you got your answer. We could not work in the dark, so we worked from 7 am until 5 pm. Sometimes, if there were many patients, my phone's battery would run down in the afternoon. If that happened, I had to



stop and ask the remaining patients to come back the next day. Besides that, the microscope we had to carry out analyses worked with a mirror reflecting the daylight. I could not do urine or stool tests in the rainy season when there was not enough light. Doing fewer analyses like those also meant we earned less income for the health post. Late in 2017, the Red Cross came and installed a solar panel to give us light outside, at the front of the health post. This helped a bit to improve security. Sometimes thieves came in the night to steal our drinking water. The local authorities would tell us at community meetings that the electricity was coming, but we did not believe it. However, at

the end of 2018, the electricity company came, installed the poles and wiring and connected us to the grid."

Work at the health post changed a lot after it was connected to the grid. Mukasabato explains: "The District Health Centre gave us a computer, so at the reception I could stop using *909#. I am now able to check online if patients are insured. We also bought an electrical microscope, so I can always run tests now. I can do malaria tests, urine and stool tests, saliva tests, tests for blood sugar and albumin levels (albumin is a protein made by the liver), and on-the-spot

pregnancy tests. Because I can run more

month in revenue. In the past, we only got 100.000 RWF a month. During this Covid 19 period, we ask patients to pay with Mobile Money, so we don't have to touch the money to avoid any transmission of the virus. We now have proper outside and inside lighting. We can work at night when needed, and we can check patient files and order supplies online. Unfortunately, we still have no fridge or printer, but they will come I would really advise health posts that don't vet have electricity, to ask for it right away because it will help them to offer good services to their patients and help them earn more revenue"



"It feels good to wear smartly-ironed clothes at a ceremony!"

natamuriza Dativa, bar owner and Dmother of five children, has lived in Nyamugari in Kirehe since 2002. She is a famer and a husiness woman. She grows different crops such as bananas. beans, maize and cassava, Batamuriza: "life without electricity was - in so many ways- very problematic and dangerous for my family. We used candles and oil lamps for our lighting. It was difficult for my children to review their school lessons. and they were always afraid at night. As a mother. I was always worried that my children would set the house on fire by bumping into the candles or pushing the oil lamp over; they were always playing, running up and down, and being naughty! The smoke from the lamp also affected our eyes. It was bad for our health and lungs." Batamuriza used to cook for the family early in the evenings so that they could eat while it was still daylight, and then they went to sleep early. It was hard to walk around outside the house at night. Because it was so dark in the neighbourhood, there was a lot of theft. Also, ironing the family's clothes with a charcoal iron was a hassle

The customers at Batamuriza's bar used to go home early as there wasn't much fun or amusement. "To make it livelier



and more enjoyable for my customers, I bought a generator to provide light and a TV for entertainment." Despite all her efforts, most customers still went home early because they felt worried about walking home at night in the dark. "My customers liked the TV, but they didn't like the smoke from the generator. They were always complaining about it. Running the generator was costly,

but when I did not run it, some of my customers stayed at home. So, when I heard from our local leaders that we were going to get electricity, I was very happy. Soon after, our community was connected to the grid. During this Corona pandemic, I brought the TV home from the bar, so my children and I now enjoy watching the news and music shows. More importantly,

the children can follow the educational programmes on TV. I can say that since we got electricity, my children's school performance has improved tremendously. We also use other electrical appliances, like a radio - we listen to it from morning to night – and an electric iron. It feels good to wear smartly-ironed clothes at a ceremony!"



"Electricity has enabled me to reach my goal."



ushimirimana, Chantal is the owner of a stationery store in Mushikiri Sector. Her store is located opposite the Sector office. She has put up a big noticeboard to attract customers. Chantal got the idea of starting a stationery store business after Mushikiri was connected to electricity. However, she had been operating in the business world for some time before that. She started in business while she was still at school. She asked her parents to give her some land. Even though her parents did not know what she would do with it, they agreed, and gave her two plots of land. Then, Chantal asked some people to go into partnership with her. They would dig her plot and plant it, and they would share the harvest. The partnership went well. They planted beans and maize for several seasons. When it was time to harvest. she would ask her parents to store the harvest for her. "When I graduated from school. I had seven sacks of beans and four sacks of maize which I sold for a total of 184,000 RWF. I also had some pigs and sold them for 60,000 RWF. With that money, I started to do 'kumama'. I bought crops when the prices were low, stored them and then sold them on when prices were higher. I remember once that I





bought sorghumfor 800,000 RWF and sold it later for 2,000,000 RWF."
In 2010, Chantal was selected by the

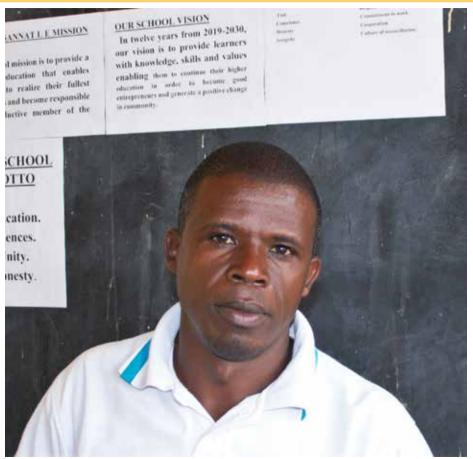
In 2010, Chantal was selected by the Sector to receive training from the organisation, Digital Opportunity Trust Rwanda, on how to use computerbased services, such as printing and photocopying, even though she still had no electricity at that time. "That training influenced me in some important ways" Chantal says. "In 2012, I started offering Mobile Money services because I had to pay to charge my phone. Fortunately, I had a phone with a good battery that kept its power for about eight days. We got electricity in 2018. The moment I heard the news on the local radio. I started to think about business ideas

based on technology. I decided to finally put my DOT training into practice. I started a stationery store with printing and photocopying services. It is located right across the road from the Sector office. I knew there would be a lot of people needing my services there. I started with one printer and one laptop. Within a month, I had bought two more laptops, and within three months I had added two more printers. Now I have five laptops, three printers and two scanners. I offer all Irembo services, I photograph people and print their photos in different sizes. I offer Mobile Money services, and I am now waiting to get approved as an agent for Mobicash and the Bank of Kigali. I also help people to create their own

businesses. When I have a lot of work, I employ two staff, but usually I have just one employee. We work till 10 pm, and I can earn a stable income of about 180,000 RWF each month. Being connected to electricity has enabled me to reach my goal."



"We are now on the same track with others."



roupe Scolaire Paysannat LE is part of **U**a group of schools which all fall under Group Scolaire Paysannat L. The school has a total of 7,120 pupils, of which 3,733 are boys and 3,387 are girls. They attend classes in 67 classrooms, and there are 83 teachers working with them. The school teaches all grades from primary to 'O' level. The school is located next to the Mahama Refugee Camp which was set up for people from Burundi. Most students are from the camp. The teachers are both Burundians and Rwandans Ntamunoza Alexis has been the headmaster of the school since 2018. He explains: "when I started, there was no liveliness in the school, and it was hard to get information from outside because we had no Internet. Sending reports to the District or the Rwanda Education Board was complicated. Our students' school reports were written by hand so there were a lot of errors. Security in and around the school was also a big issue. We have a World Food Program store on site for the refugee camp, and students eat lunch at school. Guarding the food store and the school at night was difficult." The school bought a generator in 2018, but it used 80 litres of fuel a week just

to operate three desktops, a printer

and a photocopier. ICT lessons were a nightmare with only three computers! Exams and tests were written on the blackboard. Only Primary 6 students were given a few printed copies, but only sometimes. "We had to go to Nyakarambi to make photocopies. One time, during the exams period, we spent 900,000 RWF on photocopies. It was really expensive." savs Ntamunoza. "Teachers went to Nyakarambi to type up and photocopy their notes and exams. Sometimes they would be late bringing the exams back to their students, as Nyakarambi is far away. When our 'mother' school, Groupe Scolaire





Paysannat L, got connected to the grid. I went to EDCL Nyakarambi to ask what was required to also get electricity. The parents came on board immediately to raise the money for us to get connected. In less than two weeks, the school got its electricity. When the children saw the electricity poles in place, they asked me "Are we really going to be able to do our revision at the school at night?" During the exam period, some students come to school to do their revision from 5:30 am until 7 pm. This is now possible because we have electric lights. The teachers were also very happy. We bought four laptops and we got another 12 in March 2019 from ADRA, the Adventist Development

and Relief Agency International. Students who used to go to other schools that had electricity, started to come to our school instead. We have 4G internet and we currently spend 20,000 RWF a month on electricity. Our performance has improved. The results of our students in 'O' level exams are better than those from other GS Paysannat schools. In the Primary 6 school year, we are ranked in third place in the District."

"When there is electricity, the journey to development starts - and poverty flies away!"

National Line of the Marie Vianny is the Head of Social Affairs at Mushikiri Sector office in Kirehe. The office moved to a new building in 2007. At first, there was no electricity connected to the new building.

Ntihabose: "It was hard to work from this office as we couldn't provide our services easily and we were often delayed in doing that. We had to go to Nyakarambi, which is nine kms from here, to print various forms, for example, to make birth or celibacy certificates. When our stock of forms ran out, we had to ask people to wait until the next trip to Nyakarambi when we could replenish our stocks. This was disappointing for those people. We often did double the amount of work: we wrote our reports by hand and then travelled to Nyakarambi to type and print them This slowed our work down. In short, it was hard to provide the kind of services that required a computer and electricity. It was also very expensive. Printing one page in a print shop cost 500 RWF. Sometimes we had to ask local. schools to help us with our printing. Every year, we present the key projects that the people in our sector want more



than others to the District Office So. after Nyakarambi got electricity, the people in Mushikiri also asked for it. As a result, the District made their request a priority when making their District plan. Finally, in 2017, it was confirmed that Mushikiri would get electricity and, in fact, it came almost immediately, much guicker than we expected. To me, it was like a miracle! Right away, we could do our work faster and more smoothly - no more long trips to do printing in print shops or schools, no more endless phone calls. With electricity, we now have nine computers, a printer, 4G, WiFi and a finger-print system to record the times we start and end work. We use online systems such as email, the Vision Umurenge Program, and a Monitoring and





Evaluation Information System. Electricity has done so much for our community: the frequency of cases of theft has gone down by 80%, poverty has been reduced as many people have started small businesses. Before, people only thought about farming, but now. we have welders, tailors, supermarkets, beauty salons - and seven bars! We used to have just one single bar in our sector, so some people had to travel three kms to get a cold drink! Also, our teachers had to go to the Nyakarambi SACCO to get their salaries, but now we have our own SACCO here in Mushikiri. In general, the sector's communities are much livelier

because of the light everywhere. You can now find, in many places, small informal markets called ndaburaye (which means, roughly, 'I am about to sleep on an empty stomach.') These markets have popped up in locations where people are exchanging goods. Leaders should encourage people to think about how they can use electricity to start a business. Why? Because getting electricity is one thing, but being productive because you have electricity, is another thing. Electricity is an opportunity for development, it can help to chase poverty away."

"People do not have to go to town any more. They can get everything here!"



N sanzabarashe Jean-Paul is a tailor in Mahama village. He is married with three children. He was born and raised in Gashanda village, in Ngoma. His father was a tailor. He grew up seeing his father tailoring in his workshop, but he didn't learn the trade from his father. He learned tailoring from a tailor in Kibungo long after his father's death. "I realised that it was my passion, and I couldn't escape it," says Nsanzabarashe. He worked for someone else for three years in Ngoma, and then opened his own tailoring workshop in the same town. In 2015, when all the refugees came from Burundi, he heard that there was a lot of work to do near the Mahama Refugee Camp, and tailors in Mahama were making a lot of money. He moved to Mahama to see if he could work from there. He began by working for someone else for a year, but then opened another shop for himself. "Running a tailoring business without electricity was not good at all" says Nsanzabarashe. "I only had a traditional iron, heated by charcoal, and a manual sewing machine. I couldn't make good items of clothing. Because we had no electricity.



we did not have the machines to do proper hemming. So, tailors from Mahama used to go to Nyakarambi for their hemming work. I did too, and I would spend around 10,000 RWF each trip, and that was while I was making only 120,000 RWF a month" he recalls. "Usually I worked during the daylight from 5 am to 6 pm. But if I had a deadline for a garment, I had to use small torches and even the light from my phone to finish the work. At that time, I had no staff at all. The electricity was connected in 2019. We saw people measuring things, digging holes and erecting poles. They also began installing cash power boxes in houses ready to be connected to the electricity supply. "I bought my first electric iron after they installed the cash power box. In March this year, 2020, I also bought an electric sewing machine to copy garments. A few months later, I bought a machine for embroidery work, and in July

2020 a second-hand machine to do proper hemming. I now employ three staff, and I have two students who are paying to learn how to do tailoring from me. Other tailors come to me for hemming. I even brought a tailor from Kigali to my shop to teach us how to make trendy clothes for our customers." He makes 500,000 RWF a month and he can rent a house, pay school fees and for Mutuelle de Santé health insurance for his family. Nsanzabarashe: "Electricity has brought so much progress and development to our area: I can work

whenever I want and need to. I bought those three machines, allowing me to get more customers and make fancy clothes. People do not have to go to town any more. They can get everything here!

To my fellow tailors living in areas where there is no electricity yet, I would say: Stay positive, and hopeful, and save some money to buy new appliances when you do get vour electricity connection."











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