



Renewable Energy for Sustainable Growth (RE4SG) 3rd Edition

Achieving Universal Green Energy Access in Africa



CONFERENCE
REPORT

5th – 6th November 2019

EXECUTIVE SUMMARY

Under the patronage and support of the Government of Rwanda through the Ministry of Infrastructure, Energy Private Developers (EPD) in partnership with World Bank, Open Africa, Shell Foundation and bfz; EPD organized the 3rd Edition of Renewable Energy for Sustainable Growth RE4SG-Conference. Which took place at Kigali Convention Center and Radisson Blue Hotel from 5th to 6th November, 2019.

Following the success of 1st and 2nd Edition. This year's edition, took place under the theme "Achieving Universal Green Energy Access in Africa". Bringing together about 300 participants from across the globe including government officials, private sector, technology developers, investors, civil societies and development partners to discuss ways to scale up and drive forward renewable energy and sharing experiences of renewable energy development from across the globe

On the first day RE4SG-3Rd Edition, topics of discussions included showcasing renewable energy opportunities in Rwanda, achieving universal energy access through solar home system, mini-grid potential and technologies to achieve universal energy access, the role of Hydropower in Rwanda's Energy Mix, woman in energy, and financing renewable energies.

In addition to this year's theme, the conference has gone an extra mile with a new cross-cutting concept of 'E-Mobility'. As urbanization accelerates, cities are at the forefront of changes in energy, mobility and consumption. Across the world, cities are experimenting with ways to improve the quality of air, reduce congestion and provide clean, reliable and affordable energy to their growing populations.

On the second day, the forum took a parallel session including; Re-energizing Agriculture through Solar Power which gather policy makers and private sector in energy and agriculture to discuss the role and experience of solar energy technologies in agriculture sector. The topics included; potential demand for solar powered technologies for agriculture in Rwanda, global survey of solar powered technologies and their applicability in Rwanda, current market size of solar powered technologies in Rwanda and policy and Investment Recommendations.

On the other hand, another forum was Financing Power & Water Projects organized by Open Africa. The topic discussions included; an overview of Africa's power and water requirements over the next 10 years, financing Rwanda immediate power and water needs (lenders perspectives to ensure large-scale bankable projects and mitigate risks), technology & innovation and the role it is playing in driving the utilities sector going forward, power & water sector as an enabler for local content.



Dr. Ivan TWAGIRASHEMA,

Chairman, Energy Private Developers (EPD)

FOREWORD MESSAGE

It has been three years of this exciting journey; It's has not only built a brand, but a strong energy sector platform; the annual Renewable Energy for Sustainable Growth conference has created a plain field for Rwanda's renewable energy market while providing a platform where both local and international investors and sector stakeholders come together to explore the available market opportunities, challenges and possible solutions not only in Rwanda but also in Africa's Energy Market.

On this year's edition under the theme, "Achieving Universal Green Energy Access in Africa". According to Africa Development Bank, "over 640 million Africans have no access to clean energy, corresponding to electricity access rate for African countries at just over 40 percent, the lowest in the world".

Access to energy is crucial not only for domestic use, health and education outcomes, but also for reducing the cost of doing business and for unlocking economic potential and creation of jobs. Africa's energy potential, especially renewable energy, is enormous, yet only a fraction of it is being currently employed.

In this year's edition, we have made an extra-mile by introducing new concepts; 'E-Mobility'. As urbanization accelerates, cities are at the forefront of changes in energy, mobility and consumption. Across the world, cities are experimenting with ways to improve the quality of air, reduce congestion and provide clean, reliable and affordable energy to their growing populations.

The only solution is the shift from traditional fossil fuel combustion engines to electric powered engines. Electric driven cars and moto vehicles powered by batteries, fuel cells or complementing internal combustion engines, offers the most promising technologies to increase overall

efficiency in the transport sector. EPD welcomes such innovations, developers and partners with such innovative ideas to serve our planet earth.

On behalf of EPD, I extend a vote of appreciation to the Government of Rwanda through the ministry of Infrastructure and Rwanda Development Board (RDB) for the effort to enable a conducive business environment for private sector. We thank our main supporters of 3rd Edition; BFZ, Shell Foundation, World Bank, and Open Africa for your contribution in making this event a success. Finally, a special thanks goes to the delegates, members and staff of EPD who worked days and nights to make this event a success.





Eng. UWASE Patricie

Permanent Secretary, Ministry of Infrastructure

OPENING REMARK

In her opening remarks, she aligned with 3rd -Edition's theme, "Achieving Universal Green Energy Access in Africa" showcasing available opportunities to mobilise financing for energy access and affordable Renewable Energy technologies to scale up and drive forward Renewable Energy as a share of the energy generation mix.

She informed delegates that, the current total generation installed capacity is 224.5MW and the share of renewable energy contributes more than 53% of the total electricity generated in the mix with the largest contributor being hydro and solar. The Government of Rwanda will continue to champion to have Renewable Energy as the major share of the generation mix. It is in that regard, through our Energy Sector Strategic Plan and Least Cost Power Development Plan we have set a target to have 60% of our generation mix as powered by Renewable resources by 2030;

On the side of incentives, Rwanda is geared towards promoting investment in the infrastructure sector as stipulated in our investment code, numerous initiatives are being developed in a bid to achieve the above target and one of the initiative that is currently running is the Renewable Energy Fund (REF) that is managed by the Rwanda Development Bank (BRD), which has USD\$50 million fund that is being used to provide low cost debt financing to households and companies through SACCOs, commercial banks and solar companies for purchase of off grid solar home systems (SHS) and development of Renewable Mini-grids.

She concluded her remarks, thanking the organisers, Energy Private Developers (EPD) and the World Bank, the financial support from Open Africa, Shell Foundation, BFZ.



PANEL DISCUSSION 1:

Renewable Energy Status in Rwanda

What role is renewable energy toward achieving of universal access of 2024?



Ron Weiss,
CEO of Rwanda
Energy Group

Rwanda targets to connect 300,000 households annually to off-grid energy solutions to meet the universal access target of 2024. It is anticipated that by 2024, off-grid solutions will contribute up to 48% as grid solution contribute 52% of national electricity connections.

Currently about 51% of Rwanda's household have access to electricity, including 37% connected to the grid while 14% are using off-grid solutions. The country's total installed power capacity is around 221MW. A number of power points under construction are expected to add more than 300MW by 2024.

In order to balance supply and demand, the government of Rwanda has big plans that RDB and are pursuing, that at least we can stimulate demand by 10% as a solution for the region in order to connect with neighboring countries and we are happy to say that we shall achieve this.

On source of funding, there is a fund of USD 50 million from the government of Rwanda targeted for the off grid, it is supposed to cater for 3% and is given to BRD for management. It is forced 4 windows, to be implemented by the private sector; the window through SACCOs to households, the window through banks to SMEs, the window directly to off grid mini grids and the window to solar companies. The funds are easy to access and the interest rates are reasonable

Rwanda is the first African country with such ambitious target and political will for off grid. Next year, if the funding and partnership of the private sector and government succeeds, Rwanda can be the first country with half of the country electrified by off grid solar

Q&A

How conducive is the eco system for the private sector to attract the funds?

We have a strategy to extend the central grid to reach 52% by 2024, with public and private partnership, it is achievable and we are waiting for more efforts from solar companies.



PANEL DISCUSSION 2:

E-mobility:

What is the vision of electronic mobility?

There is a need to engage into E-mobility to help the country to reduce the green gas emissions, transport as the second sector contributing to the green gases emissions in the country. Secondly, we are embracing the E-mobility to meet the country's vision to being pollution-free and have resilient transport.

Challenges in expanding the E-mobility; of course, the production cost and raising capital is still high for the electronic moto cycle taxis, also the availability of charging stations is also low, and we would like to ask for the prices of electricity to be reduced in order to be more affordable.

According to Hubert RUZIBIZA CEO of Fonerwa, In our financing, we have engaged with the private sector, we have a new policy that will guild the transport policy and we are ready to take upon the challenges, funds are available and the government is ready to support the sector. The government of Rwanda has always been aiming at clean and green innovative ideas and I believe that you have the support of the government.

Is private sector adopting E-mobility future? Mr. v BUCHANA from AC Group affirms that, the private is very willing and sees the benefits of E-mobility. for us and the investors we focus on convenience which is cheaper for everyone. On 1st May 2020, we are launching a fully scheduled public transport with a designated lane to tackle the issue of efficiency. We see this as a transition to get to fully clean energy and efficient transport.

On challenges, Belinda KARANGWA representing Volks Wagen asserts that there is a need a need of skilled drivers, electricians and technicians of the electric car, there is high need for the skilled people in the country, the second is the cost of the electric car which is still very high and lastly, the infrastructure; enough charging stations, enough power supply. And the private sector jointly with the policy makers and the government need to work together towards these challenges.

We have workshops and training for the technicians on the ground, I can encourage your students to come for internships in our workshop, this is the beginning and we will be taking in consideration our suggestion.



PANEL DISCUSSION 3:

Achieving universal energy through solar home systems

BBOXX Capital Rwanda Ltd has created jobs for more than 600 people and close to 80% of the employment created is in rural areas, Mr. Justus MUCYO Explains, from our side, we have reached the stage where we have proven the technology and attracted investors, today if Rwanda can neil down the subsidie policy that is good for the industry, then next year in 2020 we do expect to see it hitting up.

According to Sanday KABAREBE CEO of EPD, having an organized private sector is very crucial and working with the government in setting policies I think we shall be able to reach the targets, we need to actually work hard.

Rwanda has worked very well with all the patterns to create a market stimulated, we have been working directly with the government to design a new program that to make many mini grids affordable.



PANEL DISCUSSION 4:

Mini grids and technologies to reach universal energy access

Presentation:

A different approach: Challenges & Opportunities for Micro-Grids in Rwanda

The benefits of off grids, the government of Rwanda wants 48% of the country to be connected with off grid technologies. why does it make sense for the private sector to be involved?

Some of the challenges:

People are not consuming enough to pay for the large scale construction, it is challenging to serve the population without the money. The funding gap is huge, and to solve this is to bring in high scale funding, through technological innovations from the private sector to get us to universal electrician. The money is willing to come into the sector if the right conditions are met.

In order for the stimulation, we need education advance, the kind of programs to drive the sector, business support, and we need access to capital. We are generating income, thanks to the provision of energy and there is an increase in profitability multiple times.

PANELIST DISCUSSION:

Private sector needed incentive in mini grid development

- We have the guild lines, but as far as technologies like solar are concerned as a sector to develop, there is need for reduce the period of processes of getting approvals and need for incentives from the government in partnership with the sector in order to succeed in this market.”
- In 2015, RURA came up with a simplified framework in order to accelerate the targets of the government in supporting the mini grid sector. RURA did the assessment to see the challenges of the sector, currently, there is lack of standards for mini grids and not enough supply for the consumers. So, it was released that the number of mini grids were lacking basic incentives. Strategies were discussed and hopefully the gap will be filled starting from next year.”
- At EDCL: “We make sure that whoever is doing these min grids is doing a profitable business and the government of Rwanda is trying to contribute in the role of this program. We believe that the available initiatives in collaboration with different partners, depending on the business plans from developers, we are going to see the contribution to make in making this sector sustainable”. Felix Gakuba from Managing director of EDCL asserts.

What can be done to increase access to funds?

- A suggestion, a portion of funding from the banks should be given as incentives to help raise investment and help bring new investment in the sector in order to unlock the funding.

Q&A

What are the regulations to enhance the growth in the market?

There is a need to get a right business models and the right ways to operate in order to scale up these products. There is an need to maximize technical standards, revising procedures and we increase the markets.



PANEL DISCUSSION 5:

The Role of Hydropower in Rwanda's Energy Mix

Presentation:

The upcoming decade for Rwanda's Hydropower Market

Hydro power is a very important resource of energy in this country and it needs to be very well maintained. Many companies have come together to see the market, invest their money and see the development process is done. There are 25 small and medium hydro power projects in Rwanda, all thanks to the developers, and there are still other 26 projects still in process in the next 5 years.

Actually there are 40-50 hydro power projects, which shows that there is a greater market potential available, there is an additional 60 or 70 MW that can be developed into Rwanda, so let's watch the space between 2025 and 2050 to see that we can move from 50 to 100 hydro power project, and Rwanda can be a leading example in Africa

Qn: What are the key operational challenges of small hydropower?

"Some of the challenges are; the locations for the feasibility studies, access to technologies for the projects and lack of local expertise that makes the projects very expensive, there is also a challenge of lack of enough local financiers on the market"

Qn: Is climate change impacting the hydropower market? How do we mitigate against these risks? When climate is positive, it attracts investments for hydro power and high production, and when climate negative in dry seasons, there should be policies to protect hydro's as much as environment. It also impacts the generation. Studies are being done to apply how to tackle the impact of climate change in the near future.

Qn: What are the costs of developing small hydropower and what are the advantages and disadvantages of these technologies?

Each project of hydro power has a different aspect of the cost depending on where it is located and its accessibility, but the average cost is estimated to USD 300,000 to USD 500,000 per Kw.

For the advantages, hydro power is a natural source of power and it is reliable, there are also service providers that lower the cost of developing the projects. On the disadvantages, there are variations in term of costs, raising funds is also a challenge, but there are possibilities develop local projects under better terms.

Qn: What is the future of small hydropower in Rwanda? What opportunities exist for developers in the region?

One of opportunities, the government is always part of the projects from the initial point and there is a lot of available market in the East and Western Africa, hydro energy is also clean, renewable, sustainable and affordable, so it attracts more financiers.

Qn: What are some of the technological innovations taking place and how are they impacting the attractiveness to hydropower projects?

Technology comes in to create content for hydro power to know the data of the available capacity, and to fill the gap in the operation and distribution sector using the available tools, because the future of hydro power is linked to the availability of data of the consumers.

Q&A: Is there any kind of link or competition between hydro and solar energy?

Solar and hydro are rather complimentary, there should be a complimentary design to link them since hydro is not available 365 days a year and solar is not available for 24/7.



PANEL DISCUSSION 6:

Closing the Gender Gap in Rwanda's Energy Sector

Presentation:

WIRE - Women in Rwanda's Energy

Women only make up 20% of staff in the energy sector, and the role of WIRE is to change the perception of feeling like energy is more for men. WIRE works with partners across the sector to advance the career for young girls increase the participation of women in the sector, through technician training programs, gender trainings and programs to match the gaps.

Qn: Why does the gender gap still exist in Rwanda's energy sector?

Since long ago, the energy sector has always been a male oriented sector and to change people's perspective is difficult. Lack of confidence among women, social and culture norms hinder the number of women that engage in energy.

Young girls and women need to come in the sector in order to bring more money home, and there is need for more innovations and diversity in companies. Since diversity research has shown that women make better decisions 70% of the time and make them twice as fast than men.

Qn: What efforts are being made to change this?

First, men should also be the able to talk about gender, there is need to close the division between men and women in involvement in the sector from the top to the bottom.

Doors should be opened to young female professionals that want to dive into the area, support women to jump into this field and encourage those who are new in the industry. It is important to bring women into the business more practically.

Qn: What advice to young women who want to engage in the energy sector?

Young girls should link their subjects to the sector, learn as much as they can, network with people who are already in the field, they should engage in different companies in order to gain the professional experience.

Q&A:

What should be done by the organizations to create an inclusive environment for men and women and create more room for the number of women in the energy sector and what are the tips for other women to join and create their own companies in the energy sector?

There is a need to make women to conceal and feel that they are the same and equal. While, organizations should give more chances to women technician applicants in the sector to show what they can do and get the opportunity.



In his concluding remarks of the 1st day, Mr. Sanday KABAREBE, "I hope we all got an opportunity to network and draw measures forward to transform the energy sector. Our main purpose is to make sure that we keep moving forward. EPD is a single voice for the sector with the same cause of achieving universal energy access. We need strong and more members to join the association to harmonize ideas and work with different stakeholders".

Sanday KABAREBE

CEO of Energy Private Developer



WORLD BANK GROUP

**RE-ENERGIZING
AGRICULTURE THROUGH
SOLAR POWER WORKSHOP**





Jean Claude MUSABYIMANA

PS, Ministry of Agriculture & Animal Resources

OPENING REMARK

In his opening remarks; “We thank our stakeholders, the World Bank and Energy Private Developers EPD for convening such important workshop that has brought together 100 representatives from the government, development partners, Agri-business, energy companies and farmers associations to discuss the energizing agriculture through solar power in Rwanda”.

The mission of ministry of agricultures and animal resources is to initiate, develop and manage suitable programmes of transformation and modernization of the agriculture and livestock sector to ensure food security and to contribute to the national economy. Agriculture sector has consistently contributed to the GDP with the latest figures of 32.7%, the sector has thus proven to be a propeller of national vision of attaining a middle-income status by 2020. The economic growth requires an increase in profit per hector and capture of productivity gains along the value chain raising profit by hector mean increasing agriculture yields and switching to high value agriculture commodities which in turn requires infrastructure including; irrigation, land husbandry, adoption of improved technologies and relevant market information among others.

The fourth agriculture transformation strategy 2018-2024 was launched in June, 2018, since then the strategy has been guiding our planning and interventions. We are working with several stakeholders to implement the four pillars of the strategy, innovation & extension, productivity & resilience, inclusive markets & value addition and enabling environment & responsive institutions. We recognize the many challenges a head of us in implementing the strategy but we are also aware of the available opportunities to support the growth and development of Rwanda’s agriculture sector.

Adoption of solar power in agriculture will reduce the operation cost especially irrigation, post-harvest and livestock value chain especially for milk cooling. Rwanda’s rural small holder farmers

depend on agriculture and livestock to generate income. The sector is using energy in irrigation schemes, post-harvest handling and milk cooling. Energy consumption has increased yet farmers have limited resources to afford bills of electricity. Our fourth strategy estimates that, 100,000ha to be irrigated by 2024 and this is an opportunity to use solar powered irrigation systems. The solar systems have proven to considerably reduce operational costs and increase farmer income and profitability, the advantages are equally found in post-harvest handling and milk conservation.

In achievements, the government of Rwanda through the ministry of agriculture and animal resources is currently subsidizing the solar powered irrigation systems especially under small scale irrigation technology (SSIT) where subsidies of 50% investment cost is provided to farmers. To date 645ha are being irrigated using the solar systems in Eastern Province of Rwanda, another solar power irrigation project which is at the design phase and will cover more than 3,000ha in Kirehe District.

It's worth mentioning that, the promotion of solar power in agriculture would increase ownership of irrigation project, post-harvest facilities and cooling techniques by reducing operational costs. Even though solar powered projects have been presenting challenges regarding expensive backup systems, they still remain an effective and efficient solutions that are significantly reducing operational costs when it comes to energy consumption and maintenance of the equipment with or without a backup system. Despite its high investment costs, a study of solar powered irrigation system in eastern province which is under way has shown a payback period less than five years with a minimum life expectance of 25 years.

Finally re-energizing agriculture through solar power is meeting the following challenges which requires specific attention among others; high initial investment cost, limited specialized solar power companies in Rwanda, limited of strong focused financial institutions in the agriculture sector, limited number of trained personnel in solar power systems in agriculture sector, lack of awareness of the needs in solar energy, small portion of land owned by small holder farmers etc

Our homework today is put our knowledge together and raise awareness of the challenges faced by the farmers and service providers in renewable energy with a specific attention to the solar power in agriculture sector in Rwanda and to identify most effective models that can be adopted in this sector in agribusiness by addressing challenges mentioned above and turn the challenges a success.



Mr. Yasser El-Gamel.

Country Manager of World Bank in Rwanda.

One thing that, no one can dispute is the importance of agriculture sector in Rwanda economy but more importantly the sector employees more than 70% of the population. So, improvement and growth in agriculture don't only contributes to the development of Rwanda but also contributes to poverty reduction, it is one of the direct channels through which poverty is reduced. A sector with a huge potential

It's over a year now, since Rwanda has adopted its fourth strategy for the sector and it is taking a sector in a different direction basically going to another level by commercializing the sector and increasing the private sector participation and we must admit that it is not an easy shift in a context in a small land holdings in Rwanda. While Rwanda is among few countries where cooperatives have worked so this can be possible in implementing the strategy.

Secondly, we are talking about the convergence of two sectors, agriculture and energy sector. Rwanda's achievement in energy sector is globally recognized, its one of the countries that have achieved the fastest access growth in the last 10 years and that achievement has increased the ambitions and expectations in Rwanda, for example a universal energy access target by 2024 and the biggest part of the target will be achieved through renewable energy in particular solar energy.

At World Bank we have been really very proud that we have partnered with the government of Rwanda over the last two decades in these two main sectors, our support has expanded in advisory, services, and financial support. In agriculture sector we have initially worked together in institutional development like cooperatives, increasing yields, expanding arable land, expanding the irrigated land considering the weather partners. So, it's a journey we have started with the government of Rwanda for two decades ago and we are very happy with achievement but we are also aware the challenges that lies a head and we are very ready to continue to support.

Regarding the conducted study, we should look at streamlining the needs. Rwanda is in a very good position, because the always prides itself as the proof of concept and the land where a lot of initiatives have been adopted, like use of drones in social sector but there are other examples. So, this should be the beginning to the streamlining process and World Bank is looking forward for discussions and support that it can offer.

Brainstorming Session

Challenges and opportunities for mainstreaming solar technologies in agriculture

Group discussion 1:



Ways of making awareness of the solar service to the agricultural business. There are 3 market segments, there are farmers, companies who sales technologies and the third, is the government that is going to set up the policy for the technology dissemination and work as the partners in terms of resource mobilization.

There is need to educate the farmers on solar system through different platforms and encourage competition among them, this will help to increase their production in order to meet the market.

Once the companies know that they have opportunities for business, they will look for farmers to work with through workshops and the help of provision of necessary finances. For this to be reached, there is need for the government to have the back for both the farmers and the companies.

Group discussion 2:



It is not easy for individuals to get the bank loans, so there is a need to make groups (cooperatives) which is much easier to get the loan and help them to pay in installments. A cooperative is also given a reduction in the interest on loans. There is also a need for support from the government and international financiers that eases finances.

There should also be workshops for all the stakeholders, like the end users, banker and all agencies to know how the government is driving this segment of business, and individuals like the bank and the solution providers provide their selling proposals and their program of solution providing.

Group discuss 3:

On the challenges of the use of the technology; there is a lack of qualified personnel most especially in rural areas and a lack of local capacity building. The awareness of the government incentives for the end users and the distributors is needed to get them to know about the technology.

Financing new technologies on the market and cultural knowledge to design is also needed. There is also a small number of market and a need to discuss new solutions.

Panel discussion:

About the recommendations

Irrigation needs a lot of energy and sometimes farmers are not able to afford the cost of fuel or electricity to pump the water for irrigation, USAID provide farmers solar systems to pump water from lakes or rivers and take it to farm by gravity and it has been a very successful.

There are very many complete examples that shows, solar energy irrigation system is working, when the sunshine is enough the farmers use the solar energy and in the wet season they can shift to the national grid.

Solar energy can also be used for the post-harvest technology, there is a willingness by the government to invest in this program and it is an entry point for the solar system to help the farmers. There is an upcoming center of excellence under RAB to help in developing partnership with other players and small holder technology to support farmers.

It is encouraging to see these kinds of workshops among stakeholders to discuss the energy and agriculture in contribution to our future in terms of food security and climate change.

Financing Power & Water Projects

**Overview of Rwanda's energy sector;
Mr. Robert NYAMVUMBA**

Achieving Universal access and increase share of Zero carbon energy generation. Rwanda plans up to 2024 to 2030 under sustainable energy development goals under the vision 2050. This is Rwanda path towards economic development under the current national strategy for transformation by 2024.

The target is to achieve the universal access by 2024 and on transmission system it requires to build high voltage up to low voltage distribution network targeting to 1491Km by 2024. One of the areas of the sector the government has been keen on to perform with the support of development partners is on grid lose reduction where it has been supported by JICA, European Union, World Bank and Africa Development Bank where they have supported the government in upgrading transmission systems, distribution network for old infrastructure.

Some of the challenges of developing Africa's power and water requirements in the next decade. What is useful now is to look at what type of the mechanism to use by the private sector to close the infrastructural gaps.

Financing Rwanda's immediate power and water requirements over the next decade.

Estimating the last year's situation, about 300 million dollars that was deployed into renewable energy, a lot has been done from the generation side and it is a common theme in East Africa, more countries are getting involved in the tendering of the sector.

RURA in Rwanda since 2001, the role is to provide a conducive environment for the private investors by reviewing agreements between them and the government of Rwanda and we suppose the private investors for their partnership.

It is a project by project analysis, the economic viability of a project is crucial, the risks and returns involved. We strongly believe that having a progressive environment, a regulator and a banking environment is some of the key points to enable a project to be long term viable.

The most important thing to do is to focus on enabling environment, our main focus is increasing the number of electricity connection supply onto the grid, we work with private investors and developers, now there is a lot of projects and we know how to do this, and we are focused on Rwanda and East Africa."

Approach from a development perspective, there is significant opportunities across the sector, the Kigali water supply project is a leading example, the environment was correct and RDB was a leading entity in the project, with the professional and international advice. The fundamental part of project success is its long-term economic value, and it is the partnership between the sector, the government, the investors and other stakeholders.

Q&A:

Does lender have the same interested in water it is in energy? For many African countries, it is lack of industry, that is key for developing the industries. Water is always a little more sensitive than power and there is always a resistance to private sectors coming to the water sector, and when people start seeing the benefits in having access to much quality water that point will change. More importantly, sectors suffer increasingly tariffs for water and there is more willingness in starting to revise this and development projects in the water systems."

PPP Spotlight in Rwanda. How do you make PPPs work for effective water supply?

Working with the government, there is a vision for PPP. There is need to establish a framework, a policy, authority, responsibility and decision making in order for any investor to come in.

PPP require a lot of planning, and affordability of the project in order to excel. The capacity building is also needed for the sector to understand the project. Some time to think outside the box and make sure that it is successful before the life cycle of 25 years.

Rwanda's upcoming power & water sector

AA brief on developing project in Rwanda, there grants from African Development Bank, from water aid and world bank to develop projects. There is loan scheme of about \$400 million from African Development Bank for development of more than 20 projects that will help the government to meet the 2024 demand.

Today there are more than 25 developers working on off grid projects in mostly the North, the South and the Western parts of Rwanda. The big goal is to reach 100% electrification in Rwanda by 2024. The majority of the power projects were initially developed by the government and the experience was about 4 million dollars per MW.

There are about 25 of operational IBP projects in Rwanda, and other 26 projects to come next. To make these projects work, there is need for viability gap financing in the early stages of development and there is a need to attract investor to make this bankable.

Today, there is a non-renewable share of 56% and renewable share of 44%, and it is expected to increase to 54% by 2024. There is an ongoing project to be completed in the end of 2023, it is expected to reach 556 MW by 2024.

In the generation sector we do not have much opportunities compared to projects ongoing, the priorities are much more focused on enforcement of power transition capabilities and interconnecting with neighboring countries in order to reach 100% access to electricity by 2024, as we are at 52% today.

Local talent and training opportunities created by planning landmark projects. The project took us 4-5years to materialize, now we are going to enjoy it because we have it at hand. We believe that this project belongs to Rwanda, it is Metito's project yes, but it is in partnership with Rwanda, so Rwanda has to do it, and it should be the most effective project.

Key Takeaway

The 3rd Edition of **Renewable Energy for Sustainable Growth RE4SG - Conference**. Held on 5th to 6th November, 2019, at Kigali Convention Center under the theme **“Achieving Universal Green Energy Access in Africa”** was a success and had the following key takeaways;

- » It's an ambitious target, Rwanda has set to achieve universal energy access by 2024 where 48% will be off-grid, as grid solution contribute 52% of national electricity connections. Currently about 51% of Rwanda's household have access to electricity, including 37% connected to the grid while 14% are using off-grid solutions.
- » Rwanda has broken the barrier on the political will, through Rwanda Development Bank (BRD), the government has set USD 50 million to fund off grid project, it is accessible by the private sector and the interest rates is very reasonable.
- » Transport being the second sector contributing to the green gases emissions, there is an urgent need to invest more in E-mobility in order to reduce the green gas emissions. Although the concept is new and has some challenges like shortage of required skills and technologies, the collaboration between the government, development partners and private sector can turn this dream into a reality.
- » Although the women in energy sector is at 20%, their role in the sector remains vital, women have approved to be good decision makers by 70% better than men. Therefore, there is a need for all stakeholders to come together to reduce the gender gap existing in energy sector.
- » Rwanda's rural small holder farmers depend on agriculture and livestock to generate income. Therefore, adoption of solar power in agriculture will reduce the operation cost especially irrigation, post-harvest and livestock value chain especially for milk cooling. According to ministry of agriculture and animal resources, 100,000HA needs to be irrigated by 2024 and this is an opportunity for private sector to invest in solar powered irrigation systems.
- » Rwanda is on track towards achieving universal energy access and is steadily increasing share of Zero carbon energy generation by creating a conducive business environment for investors especially in renewable energies. This is affirmed in Rwanda plans from 2024 to 2030 under sustainable energy development goals under the vision 2050.



OUR PARTNERS



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