

Federal Ministry for Economic Affairs and Climate Action



Sector analysis Rwanda Market opportunities for commercial and industrial PV solar systems

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Facilitator



The Project Development Programme (PDP) assists local commercial and industrial firms to access solar from reputable German firms

- The PDP, implemented by the Deutsche Gesellschaft f
 ür Internationale Zusammenarbeit (GIZ) GmbH, in the framework of the German Energy Solutions Initiative of the German Federal Ministry for Economic Affairs and Climate Action (BMWK), promotes climate-friendly energy solutions in selected partner countries in sub-Saharan Africa, Southeast and South Asia and the Middle East.
- Companies from emerging and developing countries are brought together with experienced providers of climate-friendly energy solutions from Germany.
- In Rwanda, the PDP helps to connect local C&I firms with German solar firms

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1. Introduction to Rwanda



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Source: World Atlas, 2022



- Rwanda is peaceful and investor friendly
- Annual GDP growth of 7.2%

- Rwanda's leading economic sectors include; energy, agriculture, financial services, trade, and hospitality
- Rwanda currently ranks the second most favorable country to do business in Sub-Saharan Africa

2.1. Rwanda's Energy Sector Key Players

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2.2. Rwanda's Energy Sector Key Policies and Regulations

Key Policies and Regulations	Description			
	 To establish a simplified regulatory framework to expedite licensing for rural and isolated electrification projects. 			
Regulation Governing the Simplified Licensing Framework for Rural Electrification in Rwanda	 This regulation is inferred to establish a maximum installation capacity for isolated grids/systems of 50kW peak including captive solar PV projects. 			
	- There is a draft regulation for captive solar PV which will potentially have specifics re peak installed capacity (the new regulation has 500kWp as the maximum)			
Electricity Tariffs	Electricity end user tariffs are adjusted on quarterly basis.			
Electricity Quality of Service Regulations Ensures that any Licensee meets an adequate level of quality and reliable service.				
Rwanda Energy Policy	Set of laws, regulations, strategic directions and guiding principles that Rwandan institutions and partners shall adopt and adhere to during project implementation.			

Source: Author's own compilation, INENSUS GmbH, 2022







2.3. Rwanda's Energy Sector Electricity tariffs special customers

Special customers

Category	Consumption block (kWh/month)	RWF(EUR)/kWh (VAT exclusive)
Non Desidential	[0-100]	227 (0.22)
Non-Residential	>100	255 (0.25)
Telecom Towers	All	201 (0.20)
Hotels	All	157 (0.15)
Health Facilities	All	186 (0.18)
Broadcasters	All	192 (0.19)
Commercial Data Centers	All	179 (0.17)

C&I projects are most costcompetitive for non-residential, hotels, health facilities, and small industry

Industrial customers

Category	Energy charge RWF(EUR)/kWh
Small	134 (0.13)
Medium	103 (0.10)
Large	94 (0.09)

Source: REG, 2020

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3.1. Captive solar systems implemented in Rwanda

Sector	No. Of Projects	Capacity (kWp)		
Agriculture	2	3,310		
Service	10	483.85		
Education, Research & Training	5	315		
Hospitality	4	156.5		
Manufacturing	1	50		
Health	2	30		
Total	24	~4.34 MWp		

The majority of captive solar systems installed are in the service sector and the education sector

Source: Author's own compilation, INENSUS GmbH, 2022





3.2. Options available for captive solar projects in Rwanda



Source: Authors own drawing, INENSUS GmbH, 2022







3.3. How to develop a captive solar project in Rwanda

- Register with RDB
- Obtain Investment Certificate
 from RDB
- Register for taxes with RRA
- Obtain work permits
- Obtain licenses and other requirements from relevant sector government bodies

Register with relevant government institutions

Identify potential leads and design systems

- Study the key policies in the energy sector related to captive solar
- Identify clients
- Perform energy assessments, design systems and sign contract with the client

- If system is below 50kW, install system
- For systems above 50kW, obtain a generation license through RURA and then install and commission system.

Register captive systems or get a license

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3.4. Incentive Regulation for captive solar PV

- The Regulator issues single licenses that cover the production, distribution, and trade of energy.
- Projects less than 50kWp are exempt from license and EIA requirements.

A number of non-fiscal and fiscal incentives is available for registered entities including;

- Tax exemptions (including VAT on equipment importation) for solar equipment
- Free profits, capital and asset repatriation
- Capital gains are exempt for any registered investor
- 50% first-year accelerated depreciation rate in key priority sectors, including energy
- 15% preferential corporate income tax rate for investments in energy
- Full online business and investment registration which reduces in-person expenses
- A one-stop shop offering migration, notarial services, etc.

Durchführe



3.5. Fees and Timelines for Licensing Captive Solar Projects in Rwanda

Capacity	Fees	Requirements	Timeline
Small Isolated grid (50KW – 100KW)	Zero fees	-1 Application letter addressed to the Director General of RUR	Λ
Medium size Isolated grid (100KW- 1,000KW)	2,000 USD	 Application letter addressed to the Director General of Nork Filled Application form from RURA Domestic company registration certificate from RDB 	30-60 Days
Small power distribution	1,000 USD	 District Authorization approving planned activities Environmental Impact Assessment (where applicable) 	

Source: RURA, 2019

Durchführer





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3.6. Local capacity to support project implementation in Uganda

No.	Name of Company	Ownership Status	Model
1	East African Power	Foreign	Project Developer
2	Sawa Energy	Foreign	Project Developer
3	MunyaxEco	Local	Contractor
4	Centennial Generating Co.	Foreign	Project Developer
5	Great Lakes Energy	Foreign	Contractor
6	Clean Energy Technologies (CET)	Local	Contractor
7	MeshPower	Foreign	Contractor
8	Renerg	Local	Contractor
9	ARC Power	Foreign	Project Developer

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Energy Private Developers Association (EPD) is the umbrella association for local solar PV companies in Rwanda

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Source: Authors own compilation, INENSUS GmbH, 2022





4.1. Entities contacted and visited during the Sector Analysis in Rwanda

No	Sector/ association	Interviews	sResponsiveness	Preferred Payment	Time of operation	Power demand (kW)
1	Health facilities	3	Good	Lease and PPA	24hrs/ 7days a week	300-500
2	Tea factories	1	Good	Lease and PPA	8hrs/ 7days a week*	200-500
3	Coffee factories	2	Good	Lease and PPA	8hrs/ 6 days a week**	150 – 500
4	Hospitality (Hotels)	5	Good	Lease, and PPA	24hrs/ 7days a week	150 – 2000
5	Apartments/Hotels	2	Good	Lease and PPA	24hrs/ 7days a week	50 - 200
6	Agro-food processing	1	Good	Lease and PPA	24hrs/ 7days a week	1000-3000
6	Education (universities)	3	Moderate	Lease and PPA	8hrs/ 5 days a week	100 -500
7	Commercial Building/Malls	5	Good	Lease, and PPA	18hrs/ 7 days a week	150 - 2000
8	Manufacturing	5	Moderate	Lease, and PPA	24hrs/ 7days a week	400 – 2000
9	Energy Private Developers Association	1	Good	Not applicable	Not applicable	Not applicable
10	Financial institutions	2	Moderate	Not applicable	Not applicable	Not applicable
12	Solar C&I Companies	4	Good	Not applicable	Not applicable	Not applicable
13	Existing Solar C&I customers	2	Good	Lease and PPA	8hrs/ 7 days	50 - 250

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4.2. Factors for rating the potential of deploying captive solar in Rwanda

Number of companies within a sector		Maturity of sector			Competitiveness of the typical LCOE of captive vs tariff from grid		
Push for green ene	h for green energy		eness of es		Presence of captive systems in the sector		
	Load Profile		Average E	Ele	ctricity Bill		







4.3. Ranking entities interviewed – High Potential

Overall Potential	Sector	Typical customer tariff category (grid tariff)	1. Number of potential off- takers (approximate)	2. Maturity of sector	3. Competitiveness of tariff vs LCOE	4. Responsive- ness	5. Push for green energy	6. Presence of captive systems in sector	7. Load profile	8. Average electricity bill
High	Commercial Buildings/Malls	Non- residential	20+	Growing	High	High	Medium	4	Good	High
	Tea factories	Small/medium industry	18+	Mature	Medium	High	Medium	1	Good	Medium
	Coffee factories	Small/medium industry	30+	Mature	Medium	High	Medium	0	Medium	Medium
	Hospitality (Hotels)	Hotels	35+	Growing	High	High	High	0	Medium	Medium







4.4. High potential customers for captive solar



Commercial buildings/malls

Highest electricity tariff of all offtakers, using large quantities of electricity Main obstacle is deployable roof space



Tea factories

Highly energy intensive process, strong industry due to exports However tariff is comparatively low



Coffee factories

Power intensive and high levels of production in Rwanda Mature market, stable revenues



Hospitality

Tourism one of the most important sectors in Rwanda Solarising is one of main objectives for attracting tourists





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4.5. Medium and low potential sectors

Medium potential

- Health
- Education/Research
- Horticulture
- Telecom/Data Centres
- Breweries

Low potential

• Manufacturing (cement, plastic etc)







4.6. Average rating of companies by potential



Source: Authors own drawing, INENSUS GmbH, 2022



4.7. Challenges and opportunities for captive solar in Rwanda









4.8. Recommendations for Captive Solar Business for German Companies

- 1. Reach out to the RDB to register solar captive business
- 2. Have a team in Rwanda or work very closely with local partners for project implementation.
- 3. Prepare presentations/pitches with case studies of existing projects that can be used for showcasing.
- 4. Reach out to the Private Sector Federation and MINICOM and get exposed to different associations. Join the Energy Private Developer's Association.
- 5. Include financing packages in your offer to offtakers
- 6. Speed up on-boarding potential projects, as there are several competitors on the market already.
- 7. Strategize by approaching several leads and bundling projects in order to achieve scale to overcome the 50kWp regulation barrier



5.1. Free Service offered to C&I customers by PDP



5.2. PDP Examples of successful project development



Copperbelt Energy Corporation, Zambia 1 MWp



Swissport Kenya Limited, Kenya 110 kWp



Emergent cold, Vietnam 308 kWp



Star Aire, Thailand 1 MWp







Please feel free to get in touch!

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