



Eastern Africa Alliance  
On Carbon Markets And  
Climate Finance

# CARBON MARKET

PROFILE  RWANDA



## 1. Introduction

### Role of carbon markets in Rwanda's NDC

- Rwanda's updated NDC commits to reduce greenhouse gas emissions by 38% through unconditional and conditional measures in agriculture, energy, waste, and industrial processes and product use; and will drive adaptation across eight sectors: water, agriculture, and forestry, human settlement, health, transport, mining, and cross-sectional;
- Rwanda aims to reduce 4.6 million tCO<sub>2</sub>e in 2030 against business as usual (BAU) emissions of 12.1 million tCO<sub>2</sub>e in 2030. 1.9 million tCO<sub>2</sub>e will be reduced through domestically supported measures and policies, while 2.7 million tCO<sub>2</sub>e are subject to the provision of international support (Republic of Rwanda, 2020);
- To deliver on these goals, the government has pledged to raise USD 11 billion (5.7 billion for mitigation and 5.3 billion for adaptation measures) for full implementation of the NDC. Rwanda is committed to mobilize domestic financial resources of around USD 4.1 billion while the remaining USD 6.9 billion is required from the international community;
- In order to achieve its conditional target, Rwanda intends to use different climate finance sources including international market mechanisms and cooperative approaches under Article 6 of the Paris Agreement, where appropriate, building upon the experience of the CDM;

- Rwanda's NDC builds on the Green Growth and Climate Resilience Strategy (GGCRS) which sets out Rwanda's priorities on climate change and how these measures will be mainstreamed within economic planning. The strategy was launched in 2011 and aims to transform Rwanda into a developed climate-resilient, low-carbon economy by 2050.

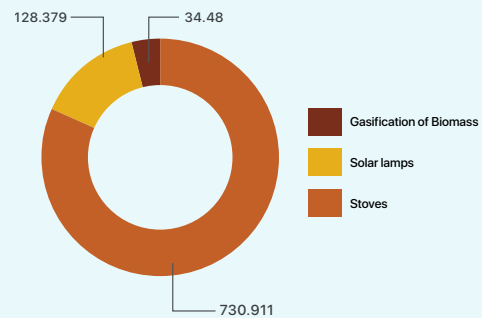
### Rwanda's Carbon Market Portfolio – key insights

- As of August 2022, over 1.6 million carbon credits have been issued in Rwanda from the Clean Development Mechanism (CDM). Rwanda hosts 4 CDM projects and 12 Programme of Activities (PoAs)<sup>1</sup> with 56 component project activities (CPAs);
- Gold Standard is the only active voluntary carbon standard, in terms of credit issuances in Rwanda, with a dominant improved cook stoves market share. Gold Standard lists 85 VCM activities that have issued over 3.1 million credits;
- Rwanda has been engaging on Article 6 piloting by being the second country to engage with the World Bank Carbon Initiative for Development's Standardized Crediting Framework, which aims at participating in Art.6.2 cooperative approaches.
- Rwanda may boost its Article 6 activity portfolio significantly through CDM transition, given the considerable portfolio..

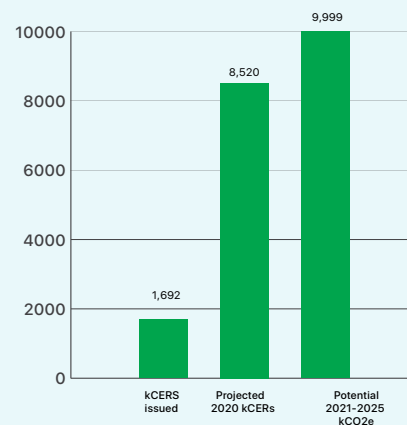
## 2. CDM portfolio and performance

- Rwanda hosts 4 CDM single project activities (1 lighting, 2 solar water disinfection, 1 solar lamp) and 12 PoAs (8 energy efficient stoves (improved cook stoves), 2 hybrid renewable, 1 solar PV, and 1 water purification) with a total of 56 CPAs.
- Rwanda has issued CDM letters of approval for 14 PoAs in total.
- Improved cookstoves remain dominant in Rwanda, with 93% of total CER issuances (1,581.44 kCERs). Yet, other project types have also successfully issued more limited CER volumes, with efficient solar lighting accounting for 4% (64.32 kCERs) and solar PV at 3% of total CER issuances (45.93kCERs).
- Total mitigation potential by 2025 is estimated to reach up 18 million tCO<sub>2</sub>e based on the current CDM pipeline, indicating a particularly high relevance of CDM transition for Rwanda.

CDM subsector issuance (kCERs)



Projected CDM issuances



### Volume of CER issuance and potential of currently registered CDM activities by sector

Activity Type	Sub-sector	No. of PA	No. of PoA	No. of CPA	kCERs issued	Projected 2020 ktCO <sub>2</sub> e	Mitigation Potential between 2021-2025 ktCO <sub>2</sub> e
<b>Overall</b>		4	12	56	1,692	8,520	9,999
<b>EE-Service</b>	Water purification		1	1	-	90	68
<b>EE Households</b>	Stoves		8	48	1,581	7,430	9,436
	Lighting	1			64	239	
	Solar lamps	1				389	97
<b>Solar</b>	Solar water disinfection	2				55	3
	Solar PV		1	1	46	61	50
<b>Hybrid renewables</b>	Hydro dam		2	6		256	345

\*deregistered

## CDM transition potential

- Rwanda hosts few registered single projects, and a strong PoA portfolio with many CPAs. The carbon credit issuance potential could be increased further if registered PoAs can be transitioned to Article 6 and new CPAs can be included. Moreover, the potential for scaling up and expanding the portfolio to additional technologies could be investigated further, focusing on NDC priority sectors;
- Most of Rwanda's CDM activities may be eligible for transition, provided UNFCCC rules remain as in current draft documents. Once the Article 6.4 Supervisory Body has made available the transition process, Rwanda will need to establish criteria and an approval procedure for activity transition aligned with UNFCCC rules. At the same, there is significant flexibility for host countries to determine how CDM activities may contribute to their NDC;
 

All 4 CDM projects (2 solar water disinfection, 1 solar lamps and 1 lighting) were registered before 2012. 9 PoAs were registered post 2012 with the latest CPA inclusion occurred in November 2020;
- Only 1 CDM project (lighting) has issued credits (64,320 CERs) with the end of first crediting period in May 2020. 2 CDM projects (solar water purification) have crediting periods until June 2021 and 1 the other remaining CDM project (solar lamps) until December 2022. These were all fixed crediting period;
- 47 registered CPAs have a renewable crediting period of 7 years, 9 CPAs have a fixed 10 years crediting period;
- The CDM has 1,635 pre 2020 vintage credit issuances from 1 project activity and 23 CPAs; and no post 2020 vintage issuances yet.

## 3. Voluntary carbon market portfolio and performance

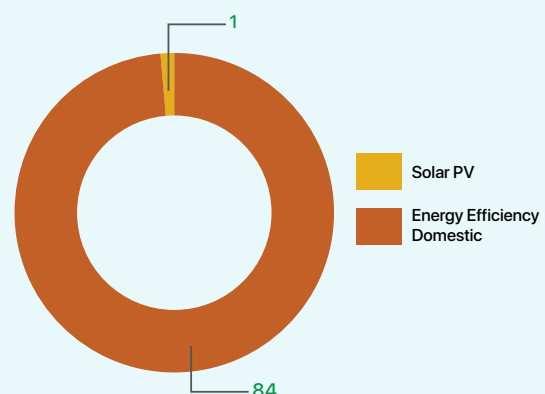
Rwanda has 85 VCM activities that have issued over 3.1 million carbon credits. This is 12% increase (9 new VPA activities) from 2020

### Gold Standard (GS)

- Hosts 84 GS activities (83 VPAs in 6 GS programmes and 1 standalone project)
- 77 GS activities have issued over 2.4 million VERs; and 736,582 CERs from 7 activities
- The registered GS activities mainly focus on energy efficient cookstove projects, while 1 project falls under solar PV.
- GS has 2,272,913 pre-2020 vintage credit issuances from 84 activities; and a total of 148,289 post-2020 vintage credit issuances from 37 activities.

### VERRA (VCS)

- One registered project in the improved cook stoves sector with 500,000 VCU's issued which are all post 2020 vintages.



## Showcase Activity

The **Gigawatt Global Programme of Activities** (CDM Ref No: 10202) is the only registered large-scale CDM PoA in Rwanda with 1 registered CPA. The PoA involves the displacement of fossil fuel-based power generation sources in Rwanda, by an 8.5MW grid connected solar PV power plant, located on the elevated slopes of Eastern province, approximately 50 km from Kigali, which has also seen Rwanda's electricity generation capacity increase by 6%. The sale of carbon credits supports the sustainability of the Agahozo-Shalom Youth Village, a youth orphanage home, which hosts the power plant.



## 4. Article 6 readiness and piloting

- The World Bank Carbon Initiative for Development (Ci-Dev) piloted the Standardized Crediting Framework with one pilot activity on a registered CDM PoA. Ci-Dev signed an emissions reduction purchase agreement (ERPA) with Inyenyeri Social Benefit Company, FPC, for the purchase of up to 1 million certified emission reductions (CERs) to be generated through end 2023 (Ci-Dev 2022). The Sustainable Fuelwood and Micro-gasification Cooking Solutions for rural and urban Households PoA (Ref. no. PoA 10440) has registered 2 CPAs in Rwanda with 42,963 CERs issued. Inyenyeri aims to distribute about 345,000 improved cook stoves to approximately 188,000 Rwandan families.
- Rwanda's newly updated NDC indicates Rwanda's strong interest to participate in international carbon market mechanisms under Article 6 of the Paris Agreement for reaching its NDC targets.
- Several development partners and capacity building stakeholders have already been supporting Rwanda on carbon market readiness, including the Eastern Africa Alliance, GIZ Global Carbon Markets project, the World Bank Carbon Initiative for Development (Ci-Dev), Global Green Growth Institute (GGGI) as well as UNDP

### CORSIA Potential

- Rwanda has 37 CPAs (31 stoves, 6 hydro) and additional Gold Standard activities that are eligible for supplying carbon credits to airlines under the CORSIA mechanism.
- Rwanda Air is participating in CORSIA's pilot phase (2021-2023) (Verifavia n.d.) and may thus emerge as one of the first sources of domestic carbon credit demand



Source: RwandaAir

## References

Carbon Africa (2016): CDM registration of the Gigawatt Global Programme of Activities, <http://www.carbonafrica.co.ke/cdm-registration-of-the-gigawatt-global-programme-of-activities/> (accessed October 2022)

Ci- Dev (2022): Brochure: The Carbon Initiative for Development, [https://www.ci-dev.org/sites/cidev/files/2022-03/Ci\\_Dev\\_Brochure\\_General\\_Updated%202022\\_Senegal%2C%20Rwanda%2C%20Rwanda%20Inactive\\_0.pdf](https://www.ci-dev.org/sites/cidev/files/2022-03/Ci_Dev_Brochure_General_Updated%202022_Senegal%2C%20Rwanda%2C%20Rwanda%20Inactive_0.pdf) (accessed January 2023)

Gold Standard (2022): Impact Registry, all projects, <https://registry.goldstandard.org/projects> (accessed August 2022)

Republic of Rwanda (2020): Updated Nationally Determined Contribution, May 2020, [https://www.ndcs.undp.org/content/dam/LECB/docs/pubs-re-](https://www.ndcs.undp.org/content/dam/LECB/docs/pubs-reports/undp-ndcsp-rwanda-ndc2-2020.pdf?download)

[ports/undp-ndcsp-rwanda-ndc2-2020.pdf?](https://www.ndcs.undp.org/content/dam/LECB/docs/pubs-reports/undp-ndcsp-rwanda-ndc2-2020.pdf?download) download accessed October 2022)

UNEP CCC (2022): CDM pipeline overview, downloaded from <http://www.cdmpipeline.org/> (accessed August 2022)

UNEP CCC (2022b): Article 6 pipeline overview, downloaded from <http://www.cdmpipeline.org/> (accessed August 2022)

Verifavia (n.d.): Which States are participating in CORSIA, <https://www.verifavia.com/green-house-gas-verification/fq-which-states-are-participating-in-corsia-250.php> (accessed September 2022)

VERRA (2022): VERRA all projects, downloaded from <https://registry.verra.org/app/search/VCS> (accessed August 2022)

## 6. Key assumptions

- Data referring to the CDM (projects and programmes) has been taken from the UNEP CCC CDM project and PoA pipelines as of August 2022. To remain conservative, we only include registered activities. We did not assess data quality regarding whether a project is still active, as UNEP is the commonly recognized database drawing directly on UNFCCC Secretariat data.
- While there is a high degree of uncertainty regarding the issuance potential of individual activities, these are difficult to assess and will be affected by future political decisions. Only PoAs which have an included component project activity (CPA) in the profiled country have been counted.
- While UNEP CCC captures estimated accumulated emissions until 2025 based on transparently available CDM activity design documents (PDD; PoA-DD, it is clear that meeting these estimations is subject to political decisions and therefore theoretical.
- Any future mitigation potential is expressed in kilotons of carbon dioxide equivalent (ktCO<sub>2</sub>e = 1000 tCO<sub>2</sub>e) in order not to prejudge the type of certification that post-2020 mitigation outcomes may be using.
- Voluntary carbon standard data has been taken from the official databases of the respective standards. Verified Carbon Standard data is as of August 2022. Data on Gold Standard (GS) activities have been obtained from the GS registry while Plan Vivo data was obtained directly from the standard in August 2022.
- Parties agreed at COP26 that projects will be able to transition from the Clean Development Mechanism to the new Article 6.4 mechanism. A limited number of Certified Emission Reductions (CERs) could be used towards countries' NDCs, noting that the projects will not be able to receive issuances for post-2020 emission reductions, unless they transition to the new Art.6.4 mechanism. Vintages issuances post-2020 will require corresponding adjustments.





**Published By:** The Eastern Africa Alliance on Carbon Markets and Climate Finance. The Eastern Africa Alliance on Carbon Markets and Climate Finance is a coalition of seven member states. The Alliance is focused on bringing member states together with a common goal of delivering an understanding of carbon markets and climate finance.

**Authors:** Stephan Hoch, Peris Waweru (Perspectives Climate Group), Tim Cowman, Tom Owino, Diana Imbugwa (Climate Impact Partners). This country profile has been prepared in the context of the project “Climate Finance Innovators – [Linking carbon markets with climate finance in Africa.](#)”

This study is part of a project under the International Climate Initiative (IKI). The Federal Ministry for Economic Affairs and Climate Action (BMWK) supports this initiative.