

Biochar2024



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North American investment opportunities in Africa

**Chaiwe Mushauko-Sanderse,
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Introduction

- CaDev is a Zambian social enterprise focused on unlocking innovation and building local capacities in climate-resilient agriculture, water & sanitation, climate action
- Chaiwe (founder & CEO, Natural Resource Expert-WASH, Biochar), Marnix (Director, Economist-Agriculture, Mining)
- Partnering with Advanced Resilient Biocarbon, a US-based company focused on turning waste into revenue (biochar, circular mining)
- Marshall Mermell (CEO), Yvonne Harlan (President)



Opportunities for biochar applications in Africa

Rising market demand

Africa's high-growth sectors: **Agriculture, Mining , Construction**

- **Agriculture:** improve yields while moving away from chemical fertilizer; 1/3 of Africa's 930 million hectares of arable land has acid soils
- **Mining:** ESG, transition to circular mining (extract minerals from waste, absorb heavy metals)
- **Construction:** look for alternative raw materials in production of building materials, tiles and others



Opportunities for biochar applications in Africa (2)

Realizing the Triple Bottom Line: Profit, People, Planet

- **Water and Sanitation sector:** water and wastewater treatment to ensure access to clean water for all (SDG-6) to eradicate diarrhoeal diseases such as cholera e.g Zambia in 2023-2024 has had over 17,000 cases and 800 deaths in 3months.
- **Energy sector:** (SDG-7) ensure access to affordable, reliable, sustainable and modern energy for all by scaling small-scale power plants and clean cookstoves at the local level to ensure access to clean energy for 600 million Africans who are off-grid and dependent on charcoal and firewood for cooking.
- **Agriculture sector:** (SDG-2) Zero hunger, ensure access to affordable, reliable, sustainable soil amendments and organic fertilisers to displace the extensive use of inorganic fertilizers that are costing Africa millions of dollars and in the long term resulting in lower yields due to soil degradation.



Opportunities for biochar applications in Africa (3)

Supply of feedstock

- Wide variety, availability and accessibility of large volumes of agricultural, municipal and faecal waste

Price of biochar

- Sales prices range from \$30 up to \$230 per MT



Biochar production in Africa



Circular Mining with Biochar

- Mining contributes between 5 to 7 percent of global GHG emissions; typically contaminates land from mine tailings, and often uses vast amounts of water which is then filled with metalloids such as arsenic and toxic chemicals.
- The mining sector is hard-to-abate: it is not expected to cut emissions as quickly as the transition is happening with renewable energy production.
- Projected demand growth for critical metals, in some cases growing threefold by 2030, creates a huge economic incentive for recovering and marketing the materials from mine tailings through circular mining.
- Circular mining methods: on-site pyrolysis, mineral harvesting from tailings, filtering of water for recycling and conversion of syngas into electricity.



Biochar production in Africa – stakeholders driving the industry

- US government funding green interventions that off-set carbon emissions (e.g. USAID Alternatives to Charcoal)
- African Union's Great Green Wall project (e.g Advanced Resilient Biocarbon meeting at White House with Director for Global Food Security and Director for Climate Security both of the US Government National Security Council on Biochar Agro-Forestry.
- European Union promoting a circular economy through the European Green Deal (policy, funding, skills and trade)
- Multinational Companies aiming to reach their global emission targets (e.g. Olam Coffee in Zambia)



Biochar production in Africa – stakeholders driving the industry (2)

- Local agri-tech start-ups and SMEs, often funded by seed capital, applying innovative technologies to their country context
- Non-governmental organisations providing training at the community level for small-scale production
- Research institutes such as Cornell University investigating the potential of feedstocks, soil potential and biochar use



Institutional triggers for scaling

- Bilateral agreements between African countries and countries wishing to offset their emissions (ref. Article 6.4, Paris Agreement) e.g Ghana recently signed agreements with Switzerland and Singapore, Kenya soon to follow
- National biochar policies are in the making (e.g. Cameroon now has a policy in place enabled by Net Zero's operations in the country)
- Large government-subsidized fertilizer programmes targeting millions of smallholder farmers that can be converted to biochar-promoting support programmes Zambia has a large FISP (Farmers Input Support Program). Supplying inorganic fertilizer to all small-scale farmers nationwide.
- The Africa Biochar Partnership as a vehicle to promote collaboration among biochar players interested in Africa. A platform for networking, standards development, research, investment opportunities etc.

