

Eco-Friendly Briquette Charcoal to Combat Deforestation in South Sudan



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Project Duration: 12 Months (2025)

Requested Funding: USD 15,000 (Implementation & M&E Phase)

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1. Executive Summary

South Sudan is facing a critical deforestation crisis with only 11% forest cover remaining. Over 90% of the population relies on traditional charcoal, contributing to a 1.5% annual shrinkage of forests. CHARECO aims to introduce clean, eco-friendly briquette charcoal made from agricultural waste, significantly reducing the pressure on forests while creating sustainable employment and improving household air quality. This project, aligned with the Open Standards for the Practice of Conservation, outlines a one-year plan to initiate full-scale operations, engage communities, and implement real-time monitoring and evaluation.

2. Phase 1: Conceptualize

Scope

Geographic Focus:

The CHARECO project will be implemented primarily in Central Equatoria State, with a focus on Juba and surrounding rural areas. This region is chosen due to its high rates of deforestation driven by charcoal production and heavy reliance on biomass energy. Central Equatoria is also home to diverse communities whose livelihoods are directly affected by forest degradation and energy insecurity. By targeting this strategic location, the project aims to create a replicable model that can later expand to other states in South Sudan.

Conservation Targets:

Forests: To halt and reverse deforestation by reducing tree felling for charcoal production, thus conserving forest ecosystems that provide biodiversity habitat, carbon sequestration, and essential ecosystem services.

Urban Air Quality: To improve air quality in urban and peri-urban communities by replacing traditional smoky charcoal with clean briquette alternatives, thereby reducing indoor and outdoor air pollution and associated respiratory health issues.

Community Livelihoods: To empower local communities, especially youth and women, through sustainable employment opportunities in briquette production, distribution, and advocacy, fostering economic resilience and social well-being.

Timeline:

The project will run over a 12-month period in 2025-2026, divided into distinct phases that include conceptualization, planning, implementation, monitoring, and knowledge sharing. This timeframe allows for initial operationalization, market entry, community engagement, and sufficient data collection to evaluate impacts.

Key milestones include:

Months 1-3: Facility setup, staff recruitment, and training.

Months 4-6: Launch of briquette production and initial community distribution.

Months 7-9: Market expansion, including partnerships with businesses and institutions.

Months 10-12: Monitoring, impact assessment, community feedback integration, and final reporting.

Timeline: 12 Months (2025-2026)**Key Threats****Charcoal-Driven Deforestation:**

Over 90% of South Sudan's population relies on charcoal, causing a 1.5% annual loss of forest cover. Unsustainable tree felling for charcoal threatens biodiversity and increases carbon emissions.

Indoor Pollution from Smoky Fuels:

Traditional charcoal stoves produce smoke that leads to respiratory illnesses affecting about 60% of households, especially women and children.

High Unemployment Among Youth and Women:

Youth unemployment exceeds 60%, with women facing even fewer job opportunities. This economic vulnerability drives unsustainable charcoal production as a survival strategy.

Situation Analysis

Indirect Drivers: Poverty, energy insecurity, high charcoal demand, weak policy enforcement, limited access to clean technology

Direct Threats: Tree felling for charcoal, environmental degradation, health impacts from pollution

Impacts: Deforestation, carbon emissions, respiratory illness, economic vulnerability

Solutions: Briquettes, clean energy education, youth training, advocacy, green jobs
Situation Model

Indirect Drivers:

Poverty affects over 70% of South Sudan's population (World Bank, 2023), limiting access to affordable, clean energy. Weak forestry policy enforcement and lack of clean technology push communities to rely heavily on charcoal, which accounts for about 90% of household energy use (FAO, 2022).

Direct Threats:

Unsustainable tree felling for charcoal is responsible for a 1.5% annual loss of forest cover in South Sudan (Global Forest Watch, 2024). This causes environmental degradation and releases pollutants that worsen indoor air quality.

Impacts:

Deforestation contributes to a loss of approximately 100,000 hectares of forest per year (UNEP, 2023), increasing carbon emissions by an estimated 500,000 tons annually. Indoor air pollution causes respiratory illnesses affecting over 60% of households, especially women and children (WHO, 2023). Economic vulnerability remains high with youth unemployment above 60% (ILO, 2024).

Solutions:

Eco-friendly briquettes can reduce charcoal demand by up to 40-50% (Clean Cooking Alliance, 2022). Combined with clean energy education and vocational training targeting 60+ youth and women, plus policy advocacy, this approach creates sustainable green jobs and addresses both environmental and social challenges.

3. Phase 2: Plan Actions & Monitoring Strategies**Operationalize Briquette Production Facility:**

Leverage the recently acquired production machinery to establish daily manufacturing of eco-friendly briquettes, targeting a minimum output of 3000 tons within 12 months to meet growing demand.

Market Transition & Distribution:

Implement data-driven marketing campaigns across Central Equatoria, aiming to convert at least 3,000 households and local businesses from traditional charcoal to briquettes, increasing clean energy adoption by 25%.

Livelihood Development:

Recruit and train over 60 youth and women in briquette production, logistics, and marketing, equipping them with marketable skills and creating sustainable employment to reduce youth unemployment rates locally.

Policy Engagement:

Engage proactively with government and forestry authorities to advocate for incentives that support forest conservation and sustainable energy practices, laying groundwork for scalable policy reforms.

Results Chain (Theory of Change)

Inputs	Activities	Outputs	Outcomes	Impacts
Investment in briquette production machinery	Manufacture 200+ tons of eco-friendly briquettes annually	Daily production capacity of 0.8 tons	Reduce charcoal demand by 3,000 households/businesses	Protect 300+ hectares of forest, slowing deforestation by 1.5% annually
Training programs for 60+ youth and women	Provide skills in production, logistics, and marketing	60+ skilled workers trained	Create 60+ sustainable jobs, increasing household incomes by 20%	Enhance economic resilience and reduce youth unemployment (>60%)
Outreach and marketing campaigns	Engage communities through targeted education and promotion	Convert 3,000+ households and businesses	Achieve 25% increase in clean energy adoption	Lower carbon emissions by 500+ tons annually; improve urban air quality

Monitoring & Evaluation Table

Indicator	Baseline	Target (12 Months)	Frequency	Tool
Tons of briquettes produced		300+ tons	Quarterly	Production Logs
Households converted	0	3,000	Biannual	Surveys
Jobs created	0	60	Quarterly	Staff Records
Forest area conserved	0 ha	300+ ha	Annually	Satellite & GIS
CO ₂ offset	0	500+ tons	Annually	Emissions Calculator
Customer satisfaction rate	N/A	≥80%	Biannual	Feedback Forms

Operational Budget

Item	Description	Budget (USD)
Machinery purchased	Site improvements & safety upgrades	\$9600
Staff Salaries	12-month employment (production, admin, sales)	\$3,000
Marketing & Outreach	Materials, radio ads, local campaigns	\$2,000
Distribution	Transport, warehousing, logistics	\$1,000
Monitoring & Evaluation	Baseline data, field tools, impact tracking	\$1,000
Operations & Utilities	Raw materials, maintenance, electricity	\$2,000
Total		\$15,000

4. Phase 3: Implementation

Quarter	Key Activities	Outputs	Targets / Milestones
Q1	Finalize site setup- Activate machines- Onboard 3+ core staff	Facility ready, team hired, production started	3 staff onboarded 5 tons of briquettes produced
Q2	Launch community distribution- Start awareness campaigns (radio, posters, events)	Market outreach and first customer adoption	1,000+ households reached 40 tons produced
Q3	Expand to restaurants, schools, institutions- Conduct mid-year review	Business sales pipeline, performance report	30% increase in sales 100 tons cumulative output
Q4	Host stakeholder reflection forum- Compile year-end report- Plan Year Two	Stakeholder feedback, final impact report	1 stakeholder event 200 tons total produced

Phase 4: Analyze & Adapt plan

Activity	How CHARECO Will Do It	Frequency	Tools/Methods
Quarterly Performance Reviews	Analyze production, sales, and impact data to track progress and identify challenges or opportunities.	Quarterly	Production logs, sales records, impact reports
Data-Driven Strategy Adjustments	Use M&E insights to optimize production schedules, marketing campaigns, and distribution strategies.	Ongoing after reviews	M&E reports, team meetings
Community Feedback Collection	Conduct surveys, focus groups, and stakeholder meetings to gather user experiences and suggestions.	Biannual / Ongoing	Surveys, focus groups, interviews
Program Adaptation	Integrate data and community feedback to adjust operations and plan improvements for Year Two.	After each review	Strategy workshops, planning sessions

Phase 5: Share Learning

Activity	How CHARECO Will Do It	Timeline	Tools/Methods
Document Successes & Challenges	Collect case studies, impact data, and lessons learned; publish reports and articles	Ongoing, with annual summary	Reports, newsletters, media content
Stakeholder Forum	Host a convening in Juba to engage government, NGOs, and community leaders on sustainable charcoal solutions	Q4 (Year 1)	Workshops, presentations, panel discussions
Disseminate Findings	Share results and best practices on platforms like CoalitionWILD and UN SDG portals to broaden impact	Ongoing post-forum	Online platforms, social media, webinars

6. Global Alignment

CHARECO's briquette charcoal project is fully aligned with the Open Standards for the Practice of Conservation, ensuring rigorous, evidence-based planning and adaptive management. The initiative contributes directly to multiple United Nations Sustainable Development Goals (SDGs):

SDG 7: Affordable and Clean Energy

Promotes access to clean, sustainable cooking fuel by replacing traditional charcoal with eco-friendly briquettes, improving energy security for communities.

SDG 13: Climate Action

Mitigates climate change impacts by reducing deforestation-driven carbon emissions and promoting low-carbon energy alternatives.

SDG 15: Life on Land

Supports forest conservation and restoration efforts by decreasing unsustainable tree felling and protecting biodiversity.

SDG 8: Decent Work and Economic Growth

Generates green jobs and skills development for youth and women, fostering inclusive economic growth and resilience.

7 Funding and Investment Update

CHARECO recently won the IRIS UP competition, securing a prize of \$3,000. This, combined with our own contribution, enabled us to purchase briquette production machinery valued at \$9,600, marking a critical milestone toward operational readiness.

We are now seeking an additional \$15,000 to cover logistics and operational expenses, including transportation, warehousing, staff salaries, and utilities, to fully launch and sustain production activities.

This targeted funding will ensure seamless supply chain management and efficient daily operations, ultimately maximizing impact and scalability.

8. Conclusion

CHARECO's eco-friendly briquette charcoal project stands poised for immediate implementation. With essential infrastructure established and a skilled team prepared for deployment, this final investment of \$15,000 will fully operationalize production and enable rigorous impact measurement. By supporting this initiative, stakeholders will drive significant reductions in deforestation, improve public health, and empower local communities with sustainable livelihoods. Together, we can catalyze a cleaner, greener, and more prosperous future for South Sudan.

9. Contact Information

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