

Key findings about Cashew by-products in 8 African countries



Benin, Burkina Faso, Côte d'Ivoire, Ghana, Guinea-Bissau, Kenya, Mozambique, Tanzania



Current situation

- Currently, a weak value addition
- Consumption of shells for own thermal energy: 5-25%
- 1.4 million Mt RCN produced → 10% processed → 100,000 Mt of shells
- Only 25,000 Mt shells are valorized, by 14 factories: **3 out of 4 cashew shells go to waste!**



Potential in 1 Mt RCN:

- **125 USD** value addition
- **900 kWh** energy
- **500 kg CO₂eq** savings

Key Performance Indicators for cashew shells:



1. The **economic value**: There is potentially a value addition of 170 M USD with a rough estimated net profit for the businesses of 39 M USD.



2. The positive **energy balance**, considering the (electrical) energy consumed in relation to the (electrical) energy produced on basis of valorization of the cashew by-products. The valorization of the cashew shells can contribute to a positive energy balance that varies from 211,081 MWh to 1,975 GWh.



3. The **carbon balance**, based on direct carbon emissions are considered due to energy consumption, in relation to substituted conventional energy, contributing to reduce and mitigate carbon emissions on national level. The valorization of the cashew shells can contribute to a positive carbon balance that varies from 58,560 to 548,135 tCO₂eq.

Calculate your by-product potential with the

CashuCalculator

<https://cashucalculator.away4africa.nl/>

By-product technologies:



Most efficient strategy requiring significant and sustainable supply of shells

- **CNSL extraction** in combination with **Power generation from direct combustion** of de-oiled shell cake
- Alternatively, **gasification of the shells**, with charcoal and electricity as final products
- Specific **opportunities** that were found and confirmed during this study were the local use for **CNSL** as a **substitute for conventional fuels (DDO/LFO)**, and sale of **shell cake** to other industries (fuel)

Small scale technologies and solutions: carbonization of shells

- The **H2CP (High Calorific Cashew Pyrolizer)**, where pyrolysis gas is directly used for thermal energy. Shells are fed into the pyrolizer, and undertake a thermal decomposition thus releasing a combustible gas. The Pyrolizer is used as source of heat for steam generation in the boiler.
- Via a **charcoal retort**, shells are pyrolyzed and carbonized shells are obtained
- Alternatively, de-oiled shells are fuel for boilers, and shells can be composted

Want to know more?

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