

# GEM system: Parboiling equipment for rice

Reduce milling losses, enhance nutritional and organoleptic quality

The technology improves rice parboiling with a new design, replacing traditional methods prone to emissions. Tailored for small to medium-scale processors, it enhances efficiency and product quality, reducing steaming time and improving grain quality significantly.



AfricaRice

Africa Rice Center  
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Technology from

ProPAS

Commodities

Rice

Sustainable Development Goals



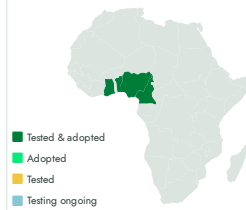
Categories

Transformation, Equipment,  
Agrifood processing

Best used with

- [Advanced rice varieties for Africa >](#)
- [High yield rice varieties for Africa >](#)
- [RiceAdvice digital support >](#)

Tested/adopted in



Where it can be used

This technology can be used in the colored agro-ecological zones.



This technology is **TAAT1 validated**.

Scaling readiness: idea maturity: 9/9; level of use: 9/9

Cost: \$\$\$ **5000 USD**

Equipment

**0.64 USD**

firewood per 100kg of rice

ROI: \$\$\$ **70 %**

Internal rate of return for a GEM parboiling system



Open source / open access

## Problem

Traditional, Old-Fashioned Parboiling Methods are:

- Inefficiency and high labor requirements
- Excessive losses during dehulling
- Degradation of nutritional value
- Inferior sensory qualities

## Solution

- Reduces steaming time to 20-25 minutes, minimizing emissions exposure.
- Improves grain translucency, reduces chalkiness, and boosts nutritional value.
- Provides low glycemic index, increased fiber, and higher vitamin B availability.
- Allows longer storage as rice flour, aiding food security.
- Made from simple, locally available materials, easily scalable in remote areas.

## Key points to design your business plan

This technology is beneficial for three main groups: manufacturers, resellers, and end users (farmers).

Target wholesale distributors, development projects, and government agencies.

Costs vary; main expense is USD 500 for gasification stove installation.

GEM technology reduces firewood expenses from USD 1.83 to USD 0.64 per 100 kilograms of rice.

Gender assessment

Climate impact



GEM system

<https://e-catalogs.taatafrica.org/com/technologies/gem-system-parboiling-equipment-for-rice>

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