

# GEM system: Parboiling and flour production 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



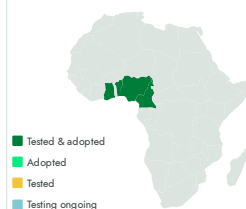
Categories

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**.

9-9



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

Gender assessment **4**

Climate impact **4**

## Problem

- High milling losses.
- Decreased nutritional quality of the rice.
- Undesirable texture, aroma, and appearance of the rice.
- Significant time and effort required for the process.

## 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 program

The GEM parboiling technology:

- Improves rice quality, energy efficiency, and reduces hazardous emissions in traditional processes.
- It boosts women's income by USD 73 per tonne of paddy, cuts poverty by 26%, and supports SDGs on nutrition, energy efficiency, and women's economic empowerment.
- And, part of the Rice Technology Toolkit of TAAT, it enhances rice value chains and is ideal for development programs promoting food security, rural livelihoods, and sustainability.

Cost: \$\$\$ **500 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



GEM system

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

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