

## FEASIBILITY STUDY REPORT

**Project Title:** Design, Construction and Commercialization of Rice Threshing Machine

This Feasibility Study evaluates the viability of designing, constructing, and commercializing a locally fabricated rice threshing machine under AMTDI (NASENI). The project addresses post-harvest inefficiencies among small and medium-scale rice farmers by providing a durable, efficient, and affordable mechanized solution.

The rice thresher achieves 93% efficiency and a throughput of 550 kg/hr (4.4 tons/day). With a total project investment of ₦68,872,652 and an annual capacity of 250 units, each sold at ₦1,200,000, the project will generate ₦300 million in annual revenue, achieving 38% ROI and a 12-month breakeven period.

The machine comprises a rotary drum, blower, and sieving unit powered by a 4.0 kW diesel engine. Fabricated from locally sourced materials (mild steel, bearings, shafts), it is durable, simple to maintain, and suited for Nigerian field conditions.

Production will occur in AMTDI's /Grant workshop, using lathes, milling, and welding machines with testing and calibration tools. The project will employ two COREN-certified engineers, five technicians, and support staff. Expected lifespan: 7–10 years.

Nigeria produces over 5.4 million tons of rice annually, yet post-harvest losses exceed 15% due to manual threshing. Imported threshers (~~₦3–~~₦5 million) are unaffordable for most farmers, leaving a market gap. Each locally produced unit will cost ₦950,000 to manufacture and sell for ₦1,200,000, yielding ₦250,000 profit (~21% margin). Producing 250 units yearly yields ₦300 million in revenue and ₦62.5 million in gross profit. The ₦68.87 million budget covers equipment, labour, and marketing. Cumulative profit is projected to exceed ₦120 million by Year 3.

### Implementation Plan and Risk Analysis

Timeline (12 months):

- |                                  |            |
|----------------------------------|------------|
| 1. Facility setup & procurement  | (3 months) |
| 2. Design refinement & prototype | (2 months) |
| 3. Production & quality control  | (4 months) |
| 4. Marketing & distribution      | (2 months) |
| 5. Evaluation & scaling          | (1 month)  |

### Risks & Mitigation:

1. **Material cost fluctuation:** Bulk procurement & supplier contracts
2. **Technical issues:** Preventive maintenance, QC
3. **Competition:** Focus on affordability & AMTDI brand credibility
4. **Policy delays:** Alignment with NASENI programs

### Conclusion

The Design and Construction of a Rice Threshing Machine under AMTDI is technically feasible, economically profitable, and socially impactful. It supports local manufacturing, enhances productivity, and strengthens Nigeria's agricultural mechanization drive.

**Recommendation:** The project is ready for immediate funding and implementation, with AMTDI providing institutional oversight and technical assurance.