

# Solar bubble drier: Inflatable solar dryer for crop drying

Low-cost hygienic drying technology for high-quality products



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Transforming African Agriculture

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The ISD (Solar Bubble Dryer) is a mobile system that uses solar energy to dry freshly harvested cassava roots in a protected environment. It operates by converting sunlight into heat through a solar-collecting tunnel, speeding up the drying process. A photovoltaic system powers a blower to circulate air, inflate the tunnel, and remove moisture. The system also allows mixing of the product...

This technology is **pre-validated**. Scaling readiness: idea maturity 9/9; level of use 9/9

Gender assessment 4

Climate impact 6 1

## Problem

- Fresh cassava roots deteriorate quickly after harvest, leading to substantial post-harvest losses.
- Traditional open-air drying methods expose cassava to weather, insects, dust, and animals, reducing product quality.
- High moisture content makes transporting fresh cassava costly, highlighting the need for drying near harvest sites.
- Delayed processing degrades the purity and functionality of cassava starch.

## Solution

- Faster drying in a protected environment improves cassava quality.
- Mobile design allows drying near harvest sites, reducing transport costs and post-harvest losses.
- Solar-powered, self-sustained, and does not rely on fuel or electricity.
- Protects cassava from rain, dust, insects, and pests, ensuring cleaner, higher-quality output.
- Reduces post-harvest losses, typically between 28% and 42%, through efficient drying.

## Key points to design your project

The Solar Bubble Dryer (ISD) is a sustainable, mobile technology that uses solar energy to dry crops efficiently, reducing post-harvest losses and enhancing food quality. It supports food security and climate goals by minimizing waste and avoiding fuel-based drying methods.

To implement ISD technology, consider:

- **Cost:** Initial investment is around USD1,800 per unit.
- **Supply Chain:** Identify suppliers and account for transportation and import costs.
- **Training:** Provide hands-on training on usage and maintenance.
- **Communication:** Use materials like brochures and videos to raise awareness.
- **Preparation:** Teach pre-drying methods to optimize results.

This approach can enhance project outcomes and benefit farmers by promoting eco-friendly, efficient drying methods.

Commodities  
Maize, Rice, Cassava, Leguminous

Sustainable Development Goals

Categories  
Prevention & storage, Equipment, Post-harvest handling, Agrifood processing

Tested/adopted in

Legend:  
■ Tested & adopted  
■ Adopted  
■ Tested

Where it can be used

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

Target groups  
Farmers, Sellers

<b>Cost: \$ \$</b> <b>1,800 USD</b> Initial investment		<b>ROI: \$ \$</b> <b>7 - 180 %</b> Benefit for Cassava	
<b>90 - 145 kg of cassava per 35 day cycle</b> Drying Capacity	<b>10 years</b> Lifespan	<b>10,957 - 29,604 USD</b> Operating Costs	<b>IP</b> No formal IP rights



### Solar bubble drier

<https://e-catalogs.taatafrica.org/gov/technologies/solar-bubble-drier-inflatable-solar-dryer-for-crop-drying>

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