LEAP-RE

Long-Term Joint EU-AU Research and Innovation Partnership on Renewable Energy

SunGari Solar Thermal Technologies

A modern solar cooking solution for African staples

SunGari

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SunGari Solar Thermal Technologies

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LEAP-RE project „SunGari“

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Cassava

www.leap-re.eu/sungari

Example: **Cassava** processing with solar energy: 3 technologies

SunGari Thermal Technologies :

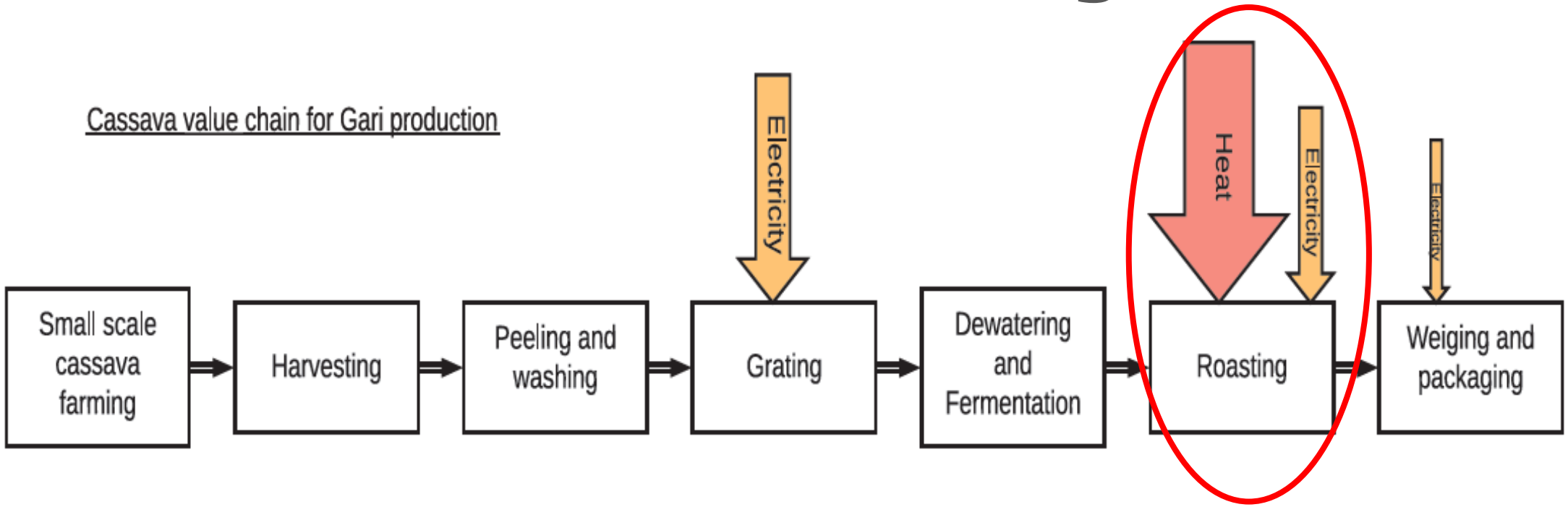


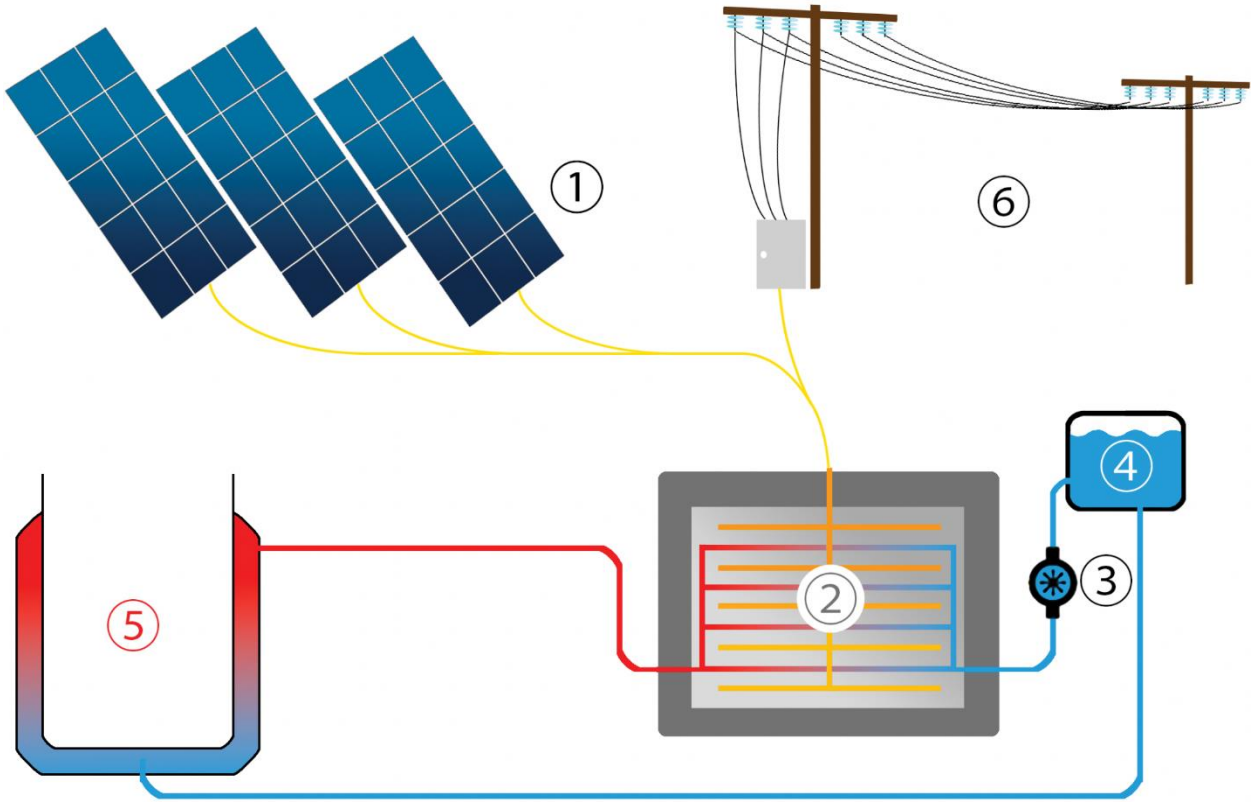
Figure 1: Cassava value chain for Gari production.

3 solar thermal options for producing Gari with solar energy are tested in the framework of the project:

1) **Gari roasting pan heated directly by photovoltaic electricity**
2) **Processing vessel for Gari heated with low pressure steam generated by photovoltaic electricity**
3) **Processing vessel for Gari heated with low pressure steam generated by solar concentrators**

1) roasting pan heated directly by photovoltaic electricity

2) Processing vessel for Gari heated with low pressure steam generated by photovoltaic electricity



① Photovoltaic Panels

photovoltaic panels convert sunlight into electricity.

② PVsteamCube

A thermally insulated metal block (iron or aluminum) is heated through integrated electrical heating elements up to 400°C. A grid of stainless-steel pipes forms the integrated heat exchanger. Cold water is pumped into the pipes and turns into steam.
Steam is generated on demand at any time.
All materials are 100% recyclable, do not contain toxic chemicals and maintain their value.

③ Water Pump

The pump pushes water into the PVsteamCube to generate the required amounts of steam. Steam is the heat exchange medium for Gari roasting. The pump is manually regulated to the desired level of steam production, thus controlling the Gari roasting process.

④ condensate tank

The steam system forms a closed loop. It contains only a small amount of water, which is returned into the condensate tank after condensing at the processing vessel. From there is it forwarded again into the PVsteamCube as necessary.

⑤ Gari Processing vessel

The Gari processing vessel is double-walled, the steam only enters the jacket. It is equipped with vacuum breaker and safety valve. The incoming steam condensates inside the jacket of the double-walled vessel, transfers the heat and thereby heats up the pot. The condensed runs down and exits the vessel in form of warm water, which is returned to the condensate tank (④).

⑥ Electricity Grid (optional)

The system can be connected to the electric grid, in order to allow charging the PVSteamCube under adverse solar conditions.

3) Processing vessel for Gari heated with low pressure steam generated by solar concentrators

www.simply-solar.de