• Milk marketing is an important income source, and most of the milk is boiled using firewood.

Benefits of solar milk pasteurisation
• Makes milk safe for human consumption
• Prolongs the shelf life of milk and hence improve market-ability and generate income in ASALs.
• Use of solar energy in milk processing saves on environmental degradation in the arid areas.
Milk marketing is an important income earning opportunity for people in the arid and semi arid lands (ASALs) of Kenya. To minimize losses along the marketing chain, traders boil milk using firewood, especially when transport to the market is unavailable. This places intense pressure on woody resources on the fragile environment. Firewood is also scarce and expensive in ASALs. The abundant solar energy in ASALs can be used to pasteurise milk. The solar milk pasteuriser consists of a flat-plate water heating solar collector and a stainless steel cylindrical milk vat. Water in the solar collector is directly heated by the sun; the hot water produced is used for pasteurising milk.

**Materials required for fabrication**
- Flat-plate solar collector
- Stainless steel cylindrical tank
- Connecting pipes and valves
- Insulating material (fiberglass, cotton wool, saw dust, etc)
- The above materials can be locally obtained from local hardware shops. The pasteuriser can be fabricated locally by jua kali artisans

**Installing the pasteuriser**
- Tilt the solar collector at 10-15° from the horizontal, facing the equator.
- To avoid the use of a pump, position the solar collector at least 150 mm lower than the milk tank.

**Milk pasteurisation requirements:**
- Good quality milk to be pasteurised
- Piece of clean sterile (boiled) cotton cloth

**Procedure:**
- Pasteurisation should be done between 10 am and 4 pm when there is adequate solar radiation.
- Sieve milk using the cotton cloth
- Fill the system with water in the morning
- Pour the sieved milk in the milk vat
- Water in the solar collector is directly heated by the sun;
- The hot water produced is used for pasteurising milk in the milk vat.
- Circulation of hot water from the collector to the jacketed milk vat continues as long as the sun is shining.
- Let the milk heat to 63°C and hold for 30 minutes or 85°C (when it starts to foam) and hold for 5 seconds.

**Recommended application**
- Recommended for producers and milk traders in arid pastoral areas.
- These areas do not have access to grid electricity but have plenty of solar radiation.