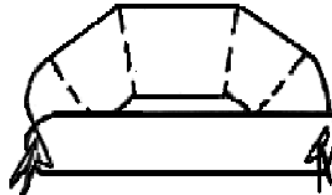


# HOW TO USE Integrated Sustainable Solar Cooking (ISSC)

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*Adapt new cooking habits by cooking in:*

*2 Solar CookKits*



*1 Heat retention basket*



*1 Rocket stove*



*1 Mirt*



**You have to pay for solar cookers and fuel saving stoves BUT .....**

- After a short time you can save and earn money; every month after that you can earn more money by using only very little firewood;
- You will save a lot of time every day by collecting much less firewood;
- Your and your baby's health will improve by using this 'New Cooking' causing no (CookKit, Heat Retention Basket) or hardly any smoke (Rocket and Mirt).
- You will save your environment;.....

## CONTENTS

1. HOW TO USE THE SOLAR COOKIT .....	3
1.1. CookKit set.....	3
1.2. The start.....	4
1.3. Cooking speed .....	5
1.4. Cooking hours .....	6
1.5. Folding instructions.....	7
2. HOW TO USE THE HEAT RETENTION BASKET or THERMAL BOX.....	8
2.1. What you need .....	8
2.2. How to use a heat-retention basket? .....	8
2.3. To earn money by saving wood.....	9
2.4. To buy a basket.....	9
2.5. How to make an heat retention basket.....	9
2.6. To start up small business.....	10
3. HOW TO USE THE WAPI.....	11
3.1. What is a WAPI? .....	11
3.2. What do you need to pasteurize water?.....	11
3.3. How to pasteurize water with the solar CookKit.....	12
3.4. How hot does a CookKit get? .....	13
4. NEW COOKING for 6 persons household.....	13
4.1. Bright sky, sun soon high at the sky .....	13
4.2. Partly cloudy with long periods of sun.....	14
4.3. Mainly cloudy with very short periods of sun.....	14
4.4. Rainy days / rainy season.....	14
SAVING WOOD / FIRE WOOD .....	15
COST PRICES / WOOD SAVING in Birrs.....	15
Title????????????? .....	15
HOW MUCH MONEY CAN I SAVE / EARN ?.....	15

**Solar Cooking Foundation** The Netherlands (SCN) , Prof.van Reeslaan 11, Blaricum  
Tel: 0031 35 5312018; [info@solarcooking.nl](mailto:info@solarcooking.nl); [www.solarcooking.nl](http://www.solarcooking.nl)

**KoZon Foundation**, The Netherlands, Bennekom [www.Kozon.org](http://www.Kozon.org)

**Solar Cookers International**, Sacramento USA.  
[www.solarcookers.org](http://www.solarcookers.org) ; [www.solarcooking.wikia.com](http://www.solarcooking.wikia.com)

# 1. HOW TO USE THE SOLAR COOKIT

The **Solar Cookit** cooks good meals, stews, meat, fish, vegetables, eggs, everything but stir-fry. Is safe for children, is convenient and stores flat.

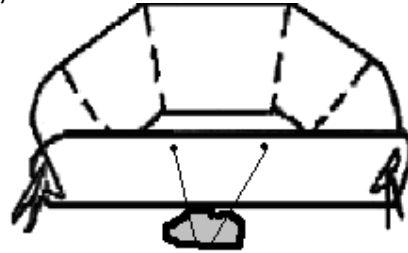
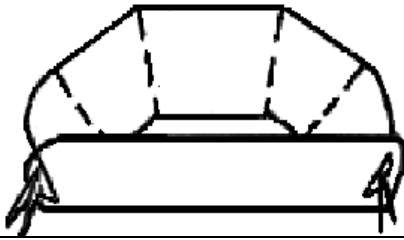
## 1.1. Cookit set

To cook and pasteurise water in the Solar Cookit you need:

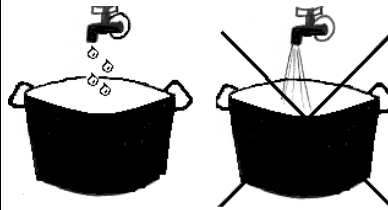
	<ul style="list-style-type: none"> <li>• Reflecting panel</li> <li>• 2 clothes pegs</li> </ul>
	<ul style="list-style-type: none"> <li>• Heat-resistant plastic bag</li> <li>• two strings</li> <li>• one potstand</li> <li>• lightweight 4 litre black pan (or painted black) with lid (or a jar)</li> </ul>
	<ul style="list-style-type: none"> <li>• WAPI (Water pasteurisation Indicator).</li> <li>• black painted 3½ litre water kettle</li> </ul>
	<ul style="list-style-type: none"> <li>• rubber band</li> </ul>
	<ul style="list-style-type: none"> <li>• cotton bag</li> </ul>

## 1.2. The start

To set up the COOKIT, lay it flat with shiny side up. Fold front round part. Fold back part and pull ends forward to fit into slots in front. Close with clothes pegs left and right. On windy days, place rocks in the outer corners. If extremely windy, tie it down with a heavy stone as well.



Put FOOD into BLACK PAN with lid



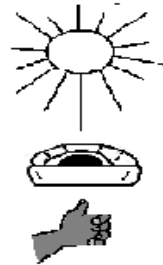
Add NO water to fresh vegetables and meats. For most other food, add the usual amount of water. If it turns out too dry or too moist, next time add more or less water. (When making sauces add more water)

Put the pan on the POTSTAND (wood or stone) into heat-resistant plastic bag to hold air all around and under pan.

Close the bag with a string, not too tight so that air can escape.



- Place the COOKIT into a sunny spot out of the wind.
- Orient shiny side toward the sun in the morning.
- Adjust front panel with the clothes pegs so that there is a small shadow under it (higher midday, lower early and late in the day).
- While putting the pan into or taking it out of the CookIt, stay in front of the COOKIT to create a shadow, avoiding glare in your eyes.

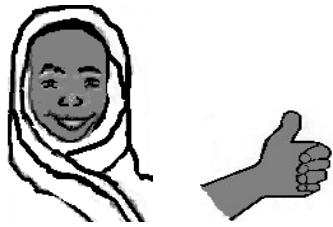


After cooking:


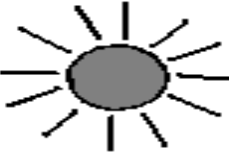




- Turn plastic bag inside-out and use clothes pegs to hang it up to dry.
- Fold up the COOKIT.
- Put in cotton bag and hang up on a nail inside the house.



### 1.3. Cooking speed





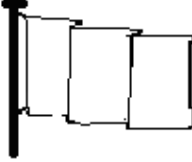


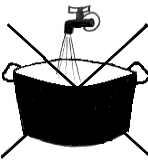
**OK**

Sun high in the sky	
No clouds	
No wind	
4 litre lightweight pan, painted black	
Small pieces	
Little or no water added	



**NOT OK**

To cook under any of these conditions you may need to preheat food on a fuel-saving stove before putting it in the Cookit to finish OR partly cook it in the Cookit, then quickly finish it on a fuel-saving stove or in a heat-retention basket.

	Sun low in the sky
	Partly cloudy
	Very windy
	White or shiny Large, heavy pot
	Large quantity Large pieces
	A lot of water

## 1.4. Cooking hours

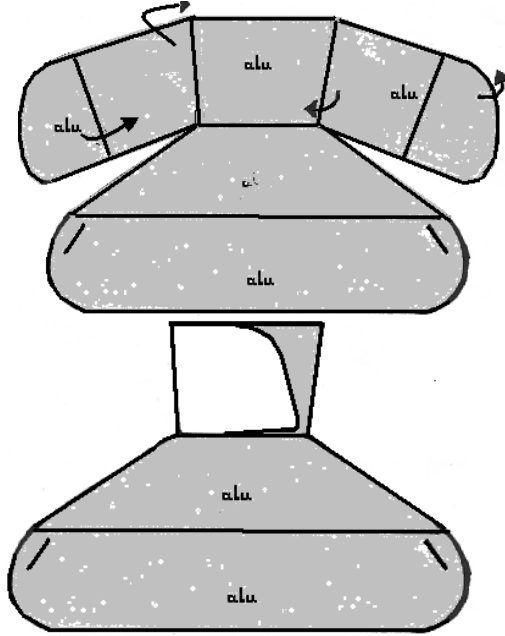


- Start early, allow several hours
- Use a heat-retention basket every day to keep your food warm, or to continue the cooking (rice, porridge, sauces, beans, meat).

Approximate cooking times for 4 pounds (2 kilos) of food on a sunny day:

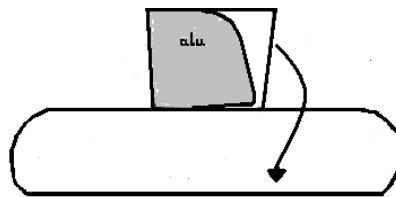
<p><b>EASY TO COOK</b></p> <p>Eggs Rice</p> <p>Fish Chicken</p> <p>Porridge, sauces, baby food, bread, cakes</p> <p>Vegetables (above ground)</p>		<p><b>1 – 2 hours</b></p>
<p>Potatoes</p> <p>Vegetables (roots)</p> <p>Some beans, lentils (soaked)</p> <p>Most meats</p>		<p><b>3 – 4 hours</b></p>
<p><b>HARDEST TO COOK</b></p> <p>Pieces of beef</p> <p>Most dried beans</p> <p>Soup and stew</p>		<p><b>5 – 8 hours</b></p>

## 1.5. Folding instructions

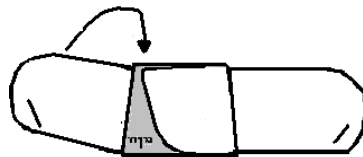


Small left part forward  
Whole left part backward  
Small right part backward  
Whole right part forward

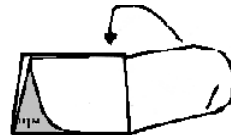
Close big part forward



Close small part towards big part



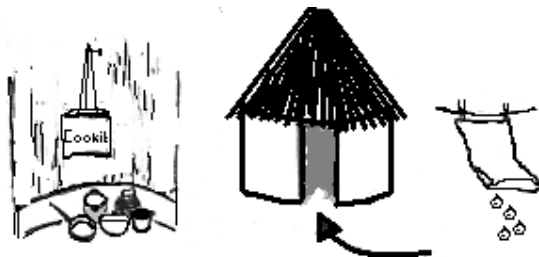
Fold left wing backward



Fold right wing backward



Put rubber band around thfolded  
Cookit  
Put Cookit in cotton bag



Hang cotton bag in dry place

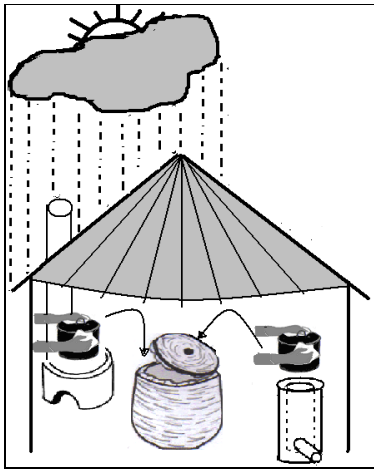
## 2. HOW TO USE HEAT RETENTION BASKET or THERMAL BOX



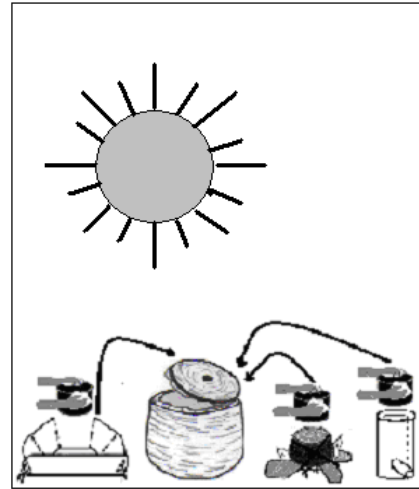
- The heat retention basket or thermal box is a very useful cooking appliance and is of special importance in saving wood as fuel for daily cooking.
- The heat retention basket or thermal box keeps cooked food warm for 3 hours or lets the cooking process proceed by putting the pan with food into a well-insulated basket or box.

### 2.1. What you need

Depending on the size of the pan needed, adapt the size of the basket or box. For a 10-litre pan a very large basket or box is needed. For a small saucepan, you can use a smaller basket or a shopping basket insulated with woollen rags or pillows.



Cloudy or rainy weather



Sun high in the sky

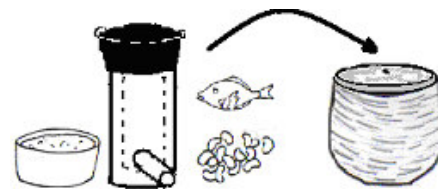
- Reduce cooking time in solar cooker or fuel-saving stove or 3-stone fire by putting pan/kettle in basket.
- Then you can use the solar Cookit for other food or water/milk
- Use the insulated basket ALWAYS and EVERY DAY.

### 2.2. How to use a heat-retention basket?

- *Use a heat-retention basket for all food and pasteurised milk:*  
Cook food in solar Cookit (or solar box), take pan out when the food is ready and keep it warm in the basket / box for 3 hours.
- *Use the basket for rice, some easy beans, fish, baby porridge, etc.:*  
Cook for a very short time on Rocket stove or in Cookit, put the pan with food in basket / box. The cooking process continues in the basket / box. The food will be delicious.



keeps food warm for 3 hours


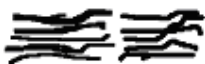


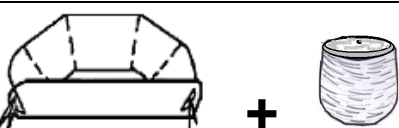
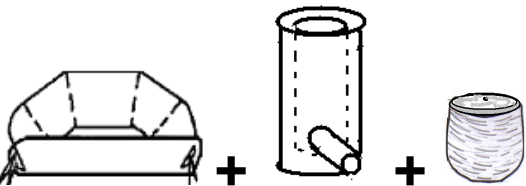



beans, fish, porridge cook very short and continue in basket.



### 2.3. To earn money by saving wood

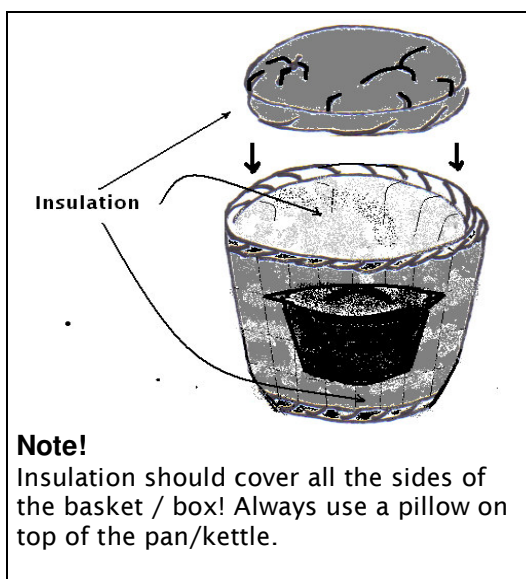
You earn money by using a basket / box in combination with a solar cooker or a fuel-saving stove.

Cookers	Pieces of wood	
		
		
		<b>0</b>
		<b>2</b>

### 2.4. To buy a basket

Most of the time plain baskets are for sale in the local market, traditionally made by local basket experts. One has to consider whether the size of locally manufactured baskets is convenient for the pans. Use the same pan for the CookKit as for the basket: 4-litre pan.

### 2.5. How to make an heat retention basket.



- **Layers of woolen cloth or a blanket**, with a pillow at the bottom and on top. Put the pan inside and place the pillow on top.
- Locally available **grass, banana leaves, straw, chicken feathers**, etc.
- Combination of **sponge, black plastic, grass, old newspapers**.
- In a box, use enough straw / grass to cover the pan on all 6 sides / all around

## 2.6. To start up small business



Women can start up small businesses by manufacturing the insulation and sell the heat-retention baskets in the local market. Women are often very creative and skilled to do this!

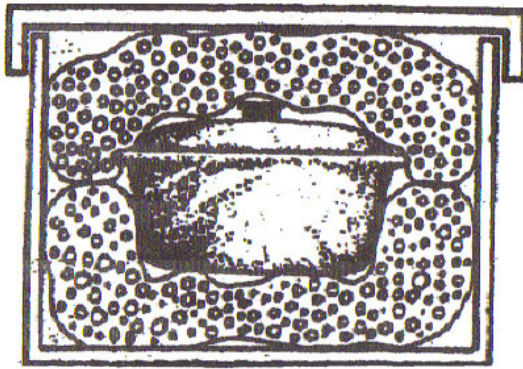
This is an **Income-generating activity**.



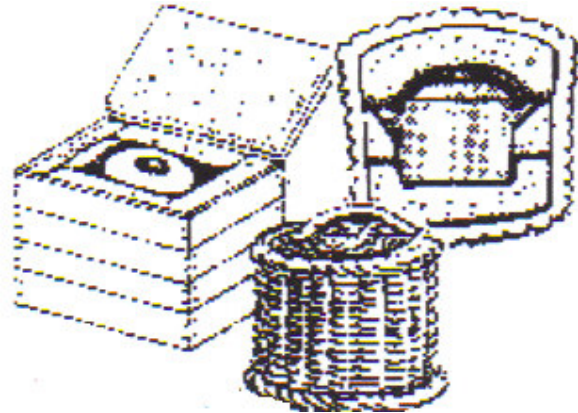
Basket KoZon ([www.kozon.org](http://www.kozon.org))



Basket KoZon



Box filled with grass



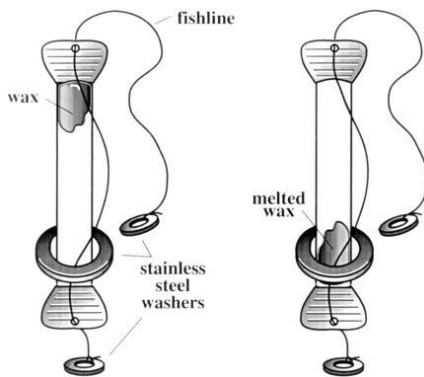
### 3. HOW TO USE THE WAPI

Safe drinking water and baby care



#### 3.1. What is a WAPI?

A **Water Pasteurisation Indicator (WAPI)** is a simple thermometer that indicates when water has reached pasteurisation temperature and is safe to drink. Pasteurisation destroys all microorganisms that cause diseases from drinking contaminated water and milk.

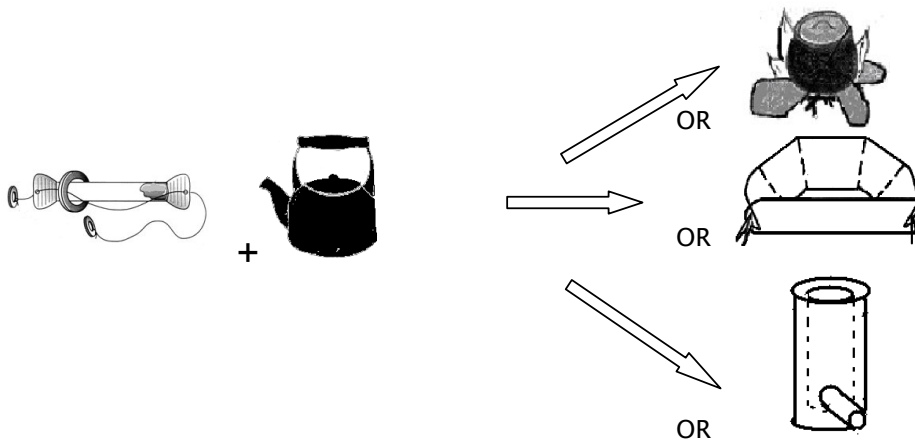


A small plastic tube contains wax that melts when water or milk is heated enough to be pasteurised (65°C/149°F). This saves much fuel by eliminating the need to boil water or milk to ensure that the pasteurisation temperature has been reached. The WAPI has a stainless steel washer around it to keep it at the bottom of the water kettle. Since top water temperatures are often 2-5°C hotter than bottom water temperatures, lower WAPI placement helps to further insure that pasteurisation conditions have been achieved.

#### 3.2. What do you need to pasteurize water?


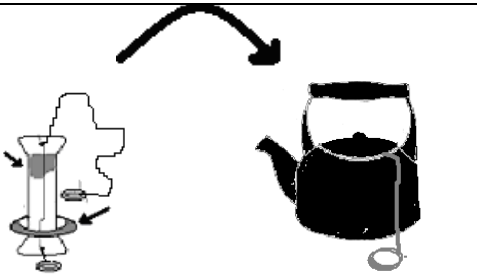
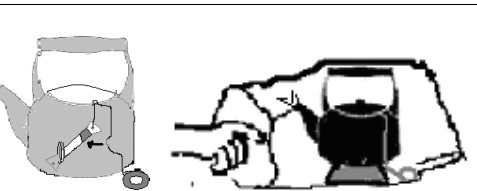
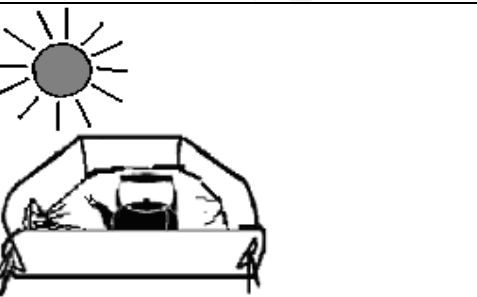
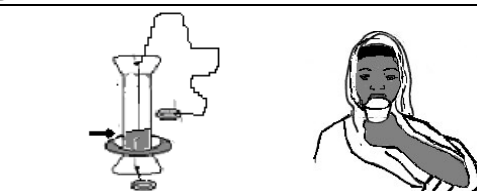
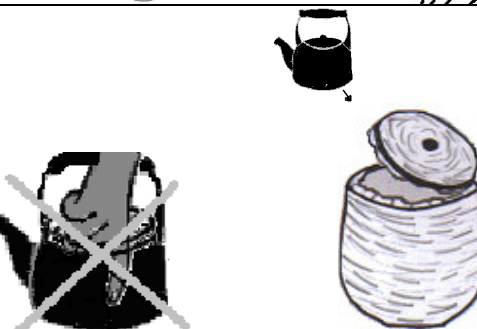
To pasteurise water you need:

- a **WAPI**,
- a **black painted water kettle** (or black painted bottle or jar),
- a **CookKit** (or fuel-saving stove, or 3 stone fire)

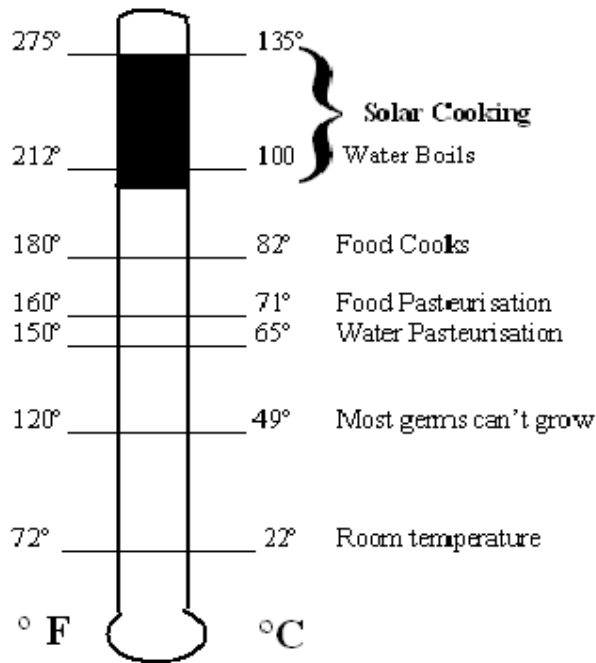


### 3.3. How to pasteurize water with the solar Cookit

If the water is perhaps contaminated it can be made safe to drink by heating it in a Cookit. A simple WAPI tells you for sure if it is safe.

<p>Put water in a black painted water kettle Put a small piece of paper into the spout to avoid that too much condensation escapes.</p>	
<p>Put WAPI in the water with wax up, washer down the end of the string down</p>	
<p>Put the lid on the water kettle and put it on the pot stand inside a heat-resistant plastic bag so that there is air under and around the kettle.</p>	
<p>Put the Cookit in the sun. Close the bag with a string, not too tight so that the air can escape.</p>	
<p>When the wax has melted and run down to the washer, the water is pasteurised and safe for drinking.</p>	
<p>Keep pasteurised water covered until used. Don't let fingers or unclean objects touch clean water. Don't pour the safe water into another vessel. Keep the water warm by putting the water kettle into the heat-retention basket.</p>	
<p>After each use, pull the WAPI string to the other end, so that the wax is again at the top and the washer at the bottom.</p>	

### 3.4. How hot does a CookIt get?



**Note:**

**Food safety:** Pasteurisation temperatures kill germs and parasites that cause illness if eaten.  
**Water safety :** To be safe, water only needs to be heated to 150 degrees F° (65 C°). To know if water has been heated enough either use a water pasteurisation indicator (WAPI) or otherwise observe it boiling at 212 F° (100C°).

### 4. NEW COOKING for 6 persons household

New cooking means :



#### 4.1. Bright sky, sun soon high at the sky

*Food for breakfast*

Use your solar cooked food of the day before Or cook your food on a FSS<sup>1</sup> Rocket stove

*Food for lunch*

Start 8.00 or 8.30 am, cooking with CookIt;

If you leave your house very early, put the CookIt with food in a spot where the sun will shine, protect the CookIt by putting it on a low roof or put branches around it to stop goats from eating the cardboard.

<sup>1</sup> Fuel Saving Stove

After 1 ½ hours put pan with Rice / baby food / vegetables / sauce in the Heat retention basket;

At the same time start another pan with food or water in the water kettle in the Cookit;  
If needed bake injerra on FSS Mirt.

To make traditional coffee you need some charcoal for Lakech

At noon your food will be ready

#### *Food evening meal*

During the day put food in the Cookit After 4.00 pm the sun is less powerful

Keep food warm or continue cooking process in Heat retention basket

If you want to eat and your food is not ready yet, cook it for a short time shortly on the Rocket stove to finish your cooking.

### **4.2. Partly cloudy with long periods of sun**

#### *Food for breakfast*

Eat solar cooked food of the day before

Or cook your food on a FSS Rocket stove

#### *Food for Lunch*

Start 8.00 or 8.30 am, cooking with Cookit; the cooking process takes more time.

If food is not ready at 12.00 am finish cooking on FSS Rocket stove

If needed bake injerra on FSS Mirt

Put water in water kettle to make safe (drinking) water for you and your baby

#### *Food for evening meal*

Put pan with food in the Cookit; cooking process takes more time

If food is not ready finish cooking on FSS Rocket stove

### **4.3. Mainly cloudy with very short periods of sun**

#### *Food for breakfast*

As described above

#### *Food for lunch*

Prepare food on Rocket stove and put pan with food in Heat retention basket to continue cooking process.

If needed bake injerra on Mirt

Watch the sky if there are longer sunny periods; if so, change to the Cookit and basket to cook the food.

#### *Food for evening meal*

Cook your food in the Rocket stove and use the basket as much as possible.

### **4.4. Rainy days / rainy season**

#### *Food for breakfast*

Prepare food on Rocket stove

#### *Food for lunch*

Prepare food on Rocket stove; shorten cooking time and reduce firewood by using Heat retention basket.

Pasteurise water on Rocket stove; keep water warm in Heat retention basket; always observe the sky if the sun is shining; if so put the pan or kettle in the Cookit.

#### *Food for evening meal*

Prepare food on Rocket stove and Mirt and reduce fire wood by using Basket.

## SAVING WOOD / FIRE WOOD

Cooking with power of the sun	→ saving fire wood
Saving fire wood	→ saving money
Saving time by less collecting	→ earning money

## COST PRICES in Birrs

Insulated Retention Basket	Birr 45
Solar CookKit + pan / WAPI	Birr 175
FSS Rocket stove	Birr 110
FSS Mirt	Birr 60
	-----
Total	Birr 390
Solar Box	Birr 375
Solar food dryer	Birr 350

## HOW MUCH MONEY CAN I SAVE / EARN ?

6 persons use 6 kg per day x 7 days = 42 kg x 52 week = **2184 kg wood per year**  
Price per kg firewood 1 ½ birr x 6 persons = 9 birr per day  
9 birr x 6 persons x 1 week = 378 birr x 52 weeks = **19.656 birr for firewood per year**

Using Solar Cookers and Fuel Saving Stoves **reduction of 65% firewood.**  
65% van 2184 kg wood = **763 kg needed per year**  
Firewood costs: **11.445 birr per year.**

→ **Saving money: 19.656 birr - 11.445 birr = 8.211 birr per year**

***Per month: 68 birr per month, meaning that after 6 months you start earning money.***

After using Solar CookKit, Heat retention basket, Rocket stove and Mirt 6 months you start saving money

First year: 8.211 birr - 390 birr for ISC/WP cookers = 7821 birr

Second year: .....etc



**Solar Cooking Foundation** The Netherlands, Prof.van Reeslaan 11, Blaricum,  
The Netherlands.  
Tel: 0031 35 5312018; [info@solarcooking.nl](mailto:info@solarcooking.nl); [www.solarcooking.nl](http://www.solarcooking.nl)



**KoZon Foundation**, The Netherlands, Bennekom [www.kozon.org](http://www.kozon.org)

**Solar Cookers International**, Sacramento USA. [www.solarcookers.org](http://www.solarcookers.org) [www.solarcooking.wikia.com](http://www.solarcooking.wikia.com)

### **Design:**

**Solar Cooking Foundation The Netherlands (SCN)**

Jacomine Immink

Clara Thomas

[www.solarcooking.nl](http://www.solarcooking.nl) ; [info@solarcooking.nl](mailto:info@solarcooking.nl)

Lianne Faili, translation

Changes to photos, drawings and text to be made in consultation with SCN