

**Observed Cooking Sequences** from a 3 person household that uses only firewood for cooking on a self constructed one pot hole + 10 litre water heater in the peri-rural town of **Imogiri in Bantul District**

Household does not use LPG although daughter and son in law living in a compartment of the house have an LPG stove.

The stove used by the household for cooking has a concrete stove top with one pothole supported by brick and mortar walls; there is a second pothole at the back end of the stove which has a +/- 12 litre sheet metal water heater with a lid permanently build into the stove. This source of heated water is used for bathing and washing up, not for drinking.

The stove has no chimney and there are no holes in the roof or elevated window to allow smoke to escape from the kitchen which is about 2 meters wide and about 4.5 meters long. The tiled roof is about 3.5 meters above the kitchen floor. There is a door to the outside and a second door to the daughter's part of the house. There is a third door – which is always kept closed -leading into the sitting area where visitors are entertained, men meet and talk, and the family eats together.

Imogiri town is well forested and is close to a hilly area not well suited to rice growing and other forms of agriculture. It is rich in biomass resources. Much of the charcoal sold in Yogyakarta comes from this part of Bantul District. There are many places where householders can gather windfall limbs and branches within the neighbourhood.

The family's estimated firewood usage:

25 to 35 kgs per week (average: 30 kgs per week). Using one purchased bundle of good firewood (teak, mahogany, or acacia) a week (60 to 70 cm long x 30 to 40 cm in diameter). If the firewood is purchased locally it costs +/- 15 000 Rp (\$1.50).

Family size:

3 adult members. The weekly per person rate of firewood consumption is 3 persons x 7 days = 21 person days; 30 kgs of firewood per week divided by 21 person days ~ 1.5 kgs of firewood per person per day.

The head of the household said that during the rainy season they collect one bundle and buy three bundles in a month; during the dry season, the household collects 3 bundles and purchases 1 bundle.

The normal daily cooking and stove work schedule is to prepare the main meal of the day starting at 5:00 AM and finishing around 7:00 AM; a second meal is prepared starting about 4:00 PM and finishing by 5:00 PM. Therefore members of the household spend +/- 3 hours a day in the kitchen performing stove work.

The following cooking and stove work sequences were observed by CE Cook on the 19<sup>th</sup> and 20<sup>th</sup> March 2013.

- 5:18 - the stove is lit by the male head of the house using small sticks, slivers of bamboo, paper and chopped pieces of dried hard wood about 2.5 cm square in thickness (finger sized); he is about 70 years old and is responsible for splitting the wood with a small ax
- he put a large kettle holding +/- 3 litres of water over the primary pothole
  - the fire produces a significant amount of smoke but not enough to affect the eyes and throat of a person sitting at ground level on a low stool
  - during these 18 minutes he is actively feeding and stoking the fire in the stove
- 5:36- water in kettle begins to boil (18 minutes)
- he pours the boiling water into a big thermos (+/- 35 cm tall and 15 cm in diameter) and a smaller thermos. The extra water is poured into a smaller thermos. This water is used for tea and drinking during the day.
- 5:39 old man finishes filling the hot water thermoses
- 5:40- old lady start cooking two large cups of rice plus 4 equally large cups of water in a small pot (less than 20cm in diameter and about 18cm in height) with a lid.
- 5:45- water and rice in small pot begins to boil
- she removes the lid and stirs the rice from time to time with a paddle
- 5:49- pot of rice and water are now boiling vigorously
- she removes the pot from the stove and replaces the lid
  - for the previous 9 minutes, she has been forcing the fire by adjusting the sticks and firewood pieces every minute to maximize the power of the fire inside the stoves relatively small combustion chamber (approximately of 20x20x20cms = 8000 cubic cm)
  - at the same time she puts 1 ½ to 2 litres of additional water in the bottom pot of a double pot rice steaming called a Soblok in Bahassa and puts the soblok on the stove to get the new water boiling
- 5:55- the Soblok begins boiling
- she uses the wooden paddle to scoop the partially cooked rice from the smaller pot into the upper steaming chamber of the Soblok
  - from this moment she intensifies her management of the fire and makes small adjustment every minute by pushing sticks and pieces of firewood further inside the combustion chamber and changing their positions slightly
- 6:00 she continues to push the fire
- 6:13- the fire in the stove continues at a high power and the water in the Soblok is boiling vigorously
- at this point she stops feeding the fire and concentrates on fine chopping veggie and preparing the ingredients for Oseng Oseng (stir fried veggies) composed of Solam leaves, chillies, red and white shallots, and palm sugar

- 6:21- she removes the Soblok from the stove, opens the lid, smells and then tastes the rice to make sure it is properly cooked
- the fire level in the stove has begun to die down to glowing coals and half burned pieces of firewood
  - she arranges the coals and unburned bits and pieces, adds small new sticks and pieces of firewood and then blows on the coals through a bamboo tube (+/-30 cm long x 2.5cm thick) to immediately 'reflame' the fire in the stove
- 6:25- puts a small wok (+/- 25cm in diameter) filled with about 200 ml of vegetable oil in the bottom on the stove to begin heating the oil
- she now forces the fire by selecting larger pieces of good firewood (acacia) with higher heating value and slowly works them into the combustion chamber
- 6:30- oil is now beginning to bubble and boil in the small wok
- she uses the boiling oil to deep fry tasty rice chips (Lampeng Gendab?); she put two or three of the round chips into the boiling oil for about 30 seconds only, turning them over and pushing them down into the hot oil and then putting the crisp fried chips into a bowl ; then she puts another three or four chips into the hot oil and fried them. She completes frying 15 or so rice chips (the chips absorb most of the 200ml of oil)
- 6:38- completes the cooking task of deep frying rice chips in very hot boiling oil
- it is worth noting that the only time the cook coughed during the entire cooking cycle was when she was deep frying the rice chips and the air was full of fumes coming from the boiling oil
  - now the fire is allowed to die down again
  - she puts chopped greens into the remaining hot oil and stirs them around with a paddle
  - she adjusts the fire by pushing the coals and unburned bits and pieces from the front of the stove , but she does not add new firewood
- 6:40- adds chopped shallots
- adds chillies and seasoning after crushing and grinding in the stone mortar and pestle
  - stirs vigorously
  - then adds salt
  - adjusts sticks and firewood already in the fire; does not add new firewood and sticks
- 6:42- adds water
- adds additional water to the Oseng Oseng mixture
  - adds sauce (Kecap – a sweet soy sauce)
  - adds MSG (Bombumasak)
- 6:44- fire retains a medium power level
- she adjusts the fire to increase the heat level (turns up the power for a third time) with the objective of boiling off the excess moisture in the Oseng Oseng

- 6:49/50-tastes the Oseng Oseng and adjusts the fire (when I asked what is she tasting for my translator explained that she is wants to get the right balance between sweetness and hotness)
- 6:51- Oseng Oseng is done cooking
- 6:53- about 1 digit of oil is added to the small wok to fry the first egg
- 6:56 rearranges the remaining coals and unburned sticks and pieces of firewood to maximize the heat produced by the remaining biomass in the combustion chamber
- 6:58- repeat: rearranges the remaining coals and unburned sticks and pieces of firewood to maximize the heat produced by the remaining biomass in the combustion chamber
- 7:00- begin frying second egg  
- adds more oil and salt to the small wok
- 7:02- begins frying third egg
- 7:04- begins frying fourth egg  
- the cook has timed the fuel metering of the stove perfectly
- 7:06- begin frying fifth egg
- 7:08- cooking finished and burn cycle almost completed
- 7:10- big kettle is placed over the dying embers of the stove to utilize the heat retained in the body of the stove and in the glowing embers of wood  
- this kettle is only partially filled with water and it will not boil but the water in it will be warmed  
- firewood is placed along the sides of the stove to use the retained heat to help dry it