Women empowerment

Energy at household level
The main source of energy source at house cooking is fuel wood which constitutes one of the major causes. ATTS could introduce technologies such as:

1. Improved stoves
2. Solar cooker
3. Biogas

Food processing
Since women will be assisted in home garden activities, food processing would include beside drying other methods such as making jams, marmalades and syrup. Surplus milk could be processed for cheese and ghee.

Women leadership
Women leadership could be strengthened through workshops, the purpose is to empower the role of women in natural resources management and enforce their role in conflict resolutions.

Technology to be adopted in home garden plantation

The Bioreclamation of Degraded Lands (BDL)
The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a non-profit, non-political organization that does innovative agricultural research and capacity building for sustainable development with a wide array of partners across the globe. ICRISAT’s mission is to help empower 644 million poor people to overcome hunger, poverty and a degraded environment in the dry tropics through better agriculture. ICRISAT belongs to the Alliance of Centers of the Consultative Group on International Agricultural Research (CGIAR).

The BDL is an innovative production system of horticulture crops that provides solutions to a range of critical constraints affecting the livelihood of the rural population of the Sudano Sahel. Because of its simplicity and its many positive attributes the potential for its mass adoption is very high.

The Bio-reclamation of Degraded Lands (BDL) system developed by ICRISAT provides solutions to these constrains. The BDL is an integrated system aimed at increasing food production and income of poor farmers (chiefly women) through the utilization of degraded lands for production of rain fed fruit trees and vegetables.

ICRISAT established a BDL experimental field in 2006 using the water-harvesting technologies and are built to catch and store runoff rainwater. The demi-lune is usually 2 x 3 m in size, but size can vary if necessary. The harvested water is stored in the soil for long periods and is utilized by a tree planted in the 40 x 80 cm ridge left in the center of the open side of the demi-lune to avoid water-logging. Demi-lunes are usually spaced at 5 x 10 m. The area between the demi-lunes is occupied by planting pits known as “zai” holes, which are holes 20 x 20 x 20 cm deep dug in the laterite. About 250 g of compost or manure is placed in the bottom of the zai hole and is covered with a 5 cm layer of soil. Traditional vegetables are planted in the zai holes that are usually spaced at 0.5 x 1.0 m. The zai also collects runoff water. The deeply placed compost in the hole results in extensive root growth allowing the plant to exploit both water and nutrients. In addition, trenches are dug every 20 m down the slope to further harvest runoff water.
Manure is placed in the zaï pits, which are dug between the demi-lunes.

ICRISAT established a BDL experimental field in 2006 using the water-harvesting technologies and *Lawsonia inermis* (henna). Henna leaves are used for cosmetics. A drought tolerant line was introduced from India and is used as live fences since it is not palatable to ruminants.

**Vegetables**

Two traditional leafy vegetables are planted in the BDL system: *Senna obtusifolia* and Roselle (*Hibiscus sabdariffa*). In a recent survey of leafy vegetables in Niger, *Senna obtusifolia* came second (after moringa) and Roselle came fourth in preferences by the rural population. Okra (*Albemochus esculentus*) is a very important component of the diet of Africans. ICRISAT/AVRDC has identified a short duration cultivar from the Birnie N'koni area that is most suitable for production in the zaï holes of the BDL. Unlike the case with cereals and legumes, okra seeds are balanced in both tryptophane and in sulfur-containing amino acids.

Trees are a major component of the BDL. They are much more resilient to droughts and can cope better with dry spells than annual crops. In a 200 m² plot there are two Pomme du Sahel trees and two Moringa stenopetala trees intercropped with traditional vegetables.
A single tree is planted in each demi-lune (half-moon structure). Manure is placed in the zaï pits, which are dug between the demi-lunes.