

2010 Environmental Impact analysis of Neema Crafts Centre:

1) Environmentally sustainable sourced raw materials:

Elephant dung: sourced from outside Ruaha National Park. Two to three piles of elephant dung are required each month for handmade paper making which is negligible when over 40,000 elephants were recorded in the last census and each passes 20-30 movements per day!!

Maize leaves: waste material sourced from market before it is burnt by market stall holders.

Glass: waste glass bottles are delivered to Neema Crafts Centre from several safari lodges and camp-sites as well as by individuals for recycling into glass beads in the Bottles to Beads workshop (B2B). Off-cuts of sheet glass from local glass shops are also collected for this process. These would otherwise be disposed of by burying.

Plastic drinking water bottles: Small bottles are collected (delivered) from local safari lodges, restaurants, camp-sites and individuals for recycling as beaded napkin rings. Larger drinking water bottles are collected from the same sources for distribution to rural communities for use in the SODIS household water treatment process, promoted through Neema Crafts Centre. These bottles were previously disposed of by burning, simply discarding or burying.

Used Engine Oil: The kiln used to fire the ceramics and the recycled glass beads is fired using waste, used engine oil sourced from local garages and other industry and during this year, from the major road construction project. 2 barrels are used each week. This oil would otherwise be disposed of by pouring into pits dug in the ground. These are uncontrolled and have led to pollution of groundwater in several instances as well as the pollution of farming land. We have conducted initial experiments to turn our used cooking oil from the kitchens into **Bio diesel** which could be used to power our kiln as a more environmentally way of powering our kiln. This will produce glycerin as a by product which we plan to use to make liquid soap as a new product line.

Sawdust and Rice Husks: We continued to use these two waste materials to run the stove used to boil the elephant dung and the maize leaves in the early stages of handmade paper making to reduce wood fuel usage.

Used coffee cement, rice and flour sacks: These have been added to our usage of recycled raw materials in the last year. These have been used in the manufacture of a new range of bags which also include rubber recycled from tyres and inner tubes. Currently they are being looked at with a view to incorporating them into other new designs.

Waste paper: Waste paper is collected from a local print works and also delivered to the centre by individuals for pulping and mixing with the cooked maize leaves elephant dung for handmade paper making.

Tea Waste: The sweepings off the floors of the local tea factories (sourced from the Mufindi Tea factory which produces tea for the fair trade brand 'tea direct' and the Traidcraft 'Tanzania' blend) are used in the elephant dung paper making process to dye the waste paper before mixing it with the elephant dung.

Second hand books: Locals are encouraged to donate used novels and other books in a range of languages for resale in the café.

Wood products: All wood used in the workshop to make equipment is selected from types of trees grown specifically for timber. No native or hardwood trees are used. Pine or Eucalyptus are the woods of choice. These are used in the manufacture of equipment for the workshops and disability aids used in conjunction with the physiotherapy department.

2) Other Raw materials:

Café Food is sourced from local producers where possible. This year we have been able to source all café food from sources within 4 hours of Iringa town except salt, tuna and chocolate. We now source our sugar, tea, coffee and herbal teas and honey locally and have a good relationship with the producers. This relationship has been further enhanced this year through running training seminars in household water treatment using the SODIS method to the workers for several of these producers.

3) An Energy Audit has been carried out to see where we are utilising energy in the centre and where savings can be made. As a result a more efficient freezer has been installed. Two solar hot water heaters have been installed, one to supply the kitchen and café and the other for the physiotherapy unit and the disabled shower facility for the workforce. Where possible all radios used by staff members during work hours are being run using Neema Crafts Solar department micro solar panels. Low energy bulbs or strip lights are being used throughout the building.

A plan is in place to measure the time the handmade paper needs to be pulped for to obtain the best product. Currently the audit estimated that the Hollander beater was used for excessive amounts of time and this could be reduced to reduce energy usage, however this would need to be done after assessment by the director and production manager to make sure quality of the paper product will not be affected.

All computers have been set up for maximum power efficiency and eco-buttons are being purchased to further reduce energy wastage in this area.

4.) Water: 4 The new Centre has been built with a 72,000 litre rainwater harvesting system using an underground tank. At the point of this audit taking place the pump is still waiting to be installed to connect this to the buildings' water supply. This will take place as part of the construction of the Neema Crafts Guest House on the top floor of the new Centre.

Drinking water for café and workers is prepared using the SODIS method rather than boiling to reduce energy demands. A water filter has been added to the plumbing of the building to improve the quality of the water available to all parts of the building to decrease the risk from the water supply to workers who drink direct from the taps. Neema Crafts is also actively promoting this method in the community.

5) Workers food is currently cooked using a wood fire. An improved wood burning stove to improve the efficiency of cooking and reduce the amount of fuel needed is now in the process of construction.

6) We are continuing to use only **paper bags** in the café and shop for customers, continuing the policy adopted in 2005. We are also encouraging shop customers to purchase a reusable Neema Crafts Calico bag to carry their purchases in.

7) External Environmental Impact:

Plastic Bottles collected through Neema Crafts Centre have been distributed to families in rural communities together with training in their use to provide clean drinking water using the SODIS method. Preparatory work on this project showed 28% of households boiled their drinking water prior to the introduction of this methodology. SODIS uptake in the project has been fairly constant at 64%. In 2008 480 new households were trained in SODIS and given bottles collected at Neema. This equates to approximately 307 households now having access for free to safe drinking water and an estimated 86 households no longer using wood-fuel or charcoal to boil their drinking water.

All staff at Neema Crafts centre have this year received a follow up seminar on SODIS and have been provided with 6 bottles each to encourage them to use this method at home with their families. It is not known how many are practising this at home.

Micro Solar: Sales of Micro solar this year equate to 201 micro-solar panels and lights. From this figure and follow up of previous sales of micro solar products we can conservatively estimate that 189 households have now reduced their use of kerosene by at least 75% (this equates to an average reduction of 28 litres of kerosene per household per month) and battery usage for radios by at least 50% (94% of panel sold in previous years are used regularly in the household according to a follow up survey). (Two sets of solar lights and panels are currently in use by rural Masai communities to scare off hyenas from their goats at night!).