

# Ecology Walk of Gibb's Farm



## Solar Panel 1

The largest solar panel array in northern Tanzania was installed in 2007 for water heating which replaced the wood fired water heating systems. There are 40 panels. Smaller solar arrays are being installed to replace the remaining wood heater boilers that exist away from the new central solar system. The water from this panel is distributed to guest cottages, kitchen and Dhobi. 100% of grey-water from kitchens, bathtubs, rainwater and laundry is recycled into organic farms and gardens via a reed plant filtration system. This system can be viewed in the Vegetable Farm.

## Carpentry shop & Tree Nursery 2



**Local Craftsmen** - Furniture, textiles, and artwork has been crafted on the Farm by a team of 20 local carpenters, craftsmen, and artists-in-residence. A three-level carpenter guild was established to teach local carpenters fine furniture making and joinery. Once the restoration program is complete, many will continue to work in the Farm wood shops to create furniture for sale through the Farm. Others have returned to the village, raising the over-all skill level of our community.

**A tree nursery** with hundreds of young tree saplings (predominantly native species) are planted on the farm and in the community and private forest reserve to control erosion and reforest the environment. We also celebrate the Earth Day (22nd April) and Earth week to join the worldwide cause.

## Farm Yard 3



**Dairy** - Between 4 to 8 cows are always providing organic milk, from a herd of about 10 to 20 animals. When not milking the animals are maintained in the estate valley called Namnyak and looked after by the resident Maasai who are a part of the African Living Spa program. There are several usage of milk in the kitchen like yogurt, farm cheeses, cream and butter.

**Meat** - Cattle from the Gibb's Farm dairy herd or employee herds are slaughtered from time to time on the farm. They are fed from feed grown on the farm or nearby villages. 100% of kitchen and food waste are either fed to farm pigs or composted. The refuse from cow and pig are also composted.

**Composting** - In the farm we follow the "Heap Composting" which requires a open space and combines the elements of "Holding and Turning". The materials used are bio-degradable kitchen waste, plants and leaves, animal matters etc. It normally takes 3-6 months depending upon the season for the organic matter to decay naturally, and then they are transferred to the vegetable and flower garden for tilling it into the soil.

Margaret and James Gibb concerned themselves with the ecological responsibility of the farm soon after they started to manage it in 1948. Concerned not only as stewards of over 500 acres of land at the time, but for the community and wildlife as well.

Margaret tells the story of her efforts to assist with community health in the early 1950's, sharing simple home remedies with villagers asking for help. Today the Osero Forest staff clinic may be considered as a logical extension of her early sense of responsibility.



## Dhobi Laundry 4

For years Gibb's Farm employed a 'bush laundry' which required wood fire heated water and charcoal heated irons and the open sun to dry the clothes in good weather. During the raining months a tobacco shed was used. The demands for quick guest laundry cleaning required installation of electric dryers. We have priced guest laundry dried by the sun lower to encourage its use.

- Drying - Sun drying for laundry is used, weather permitting. Inside the laundry building a large open-air translucent shelter allows for some drying even during the raining season.
- Hot Water - Water used to be heated by wood, now it is heated by solar power.
- Detergent - Grey water is recycled through the reed system which we are going to see in the vegetable garden, bio-degradable detergents are used.
- Textiles - Many staff uniforms do not require ironing as traditional textiles are used where possible.

---

**Sewage** - Treatment systems installed for all renovated or new facilities utilize bio-digesting septic tanks and French drain leach fields (45 years ago simple leach pits were the norm up until 2004)

**Potable Water** - Bottled water sales are discouraged. The drinking water in the cottage is pumped from two deep wells. It is very pure; however, as a secondary precaution we filter it through a Katadyn Filter before placing it in your water pitcher, including the new ice machine water.

**Building Materials** - Local materials were predominantly used in all new construction. More than 50% of old building materials were used as foundations, doors, shutters, and roofing for new buildings and restoration. Cottages made of stone and sustainable wood that has been boiled in spent motor oil to protect it from insects to limit brick making and old tree growth cutting.

**Lighting** - Windows - 50% of cottage walls are glass allowing for natural illumination. Low energy lightings (CFL- cathode fluorescent lamp, halogen) have replaced incandescent lighting. The idea is to capture as much light during the day as possible to reduce the usage of electricity. Timer switches have also been installed in many areas to save on electricity.

**Ventilation** - Cross ventilation features have been installed in all new construction and restoration. Cottage roof overhang provides shade along with shrub plantings. This is done with a reason to increase the air flow during the day when the sun is hot and also in the evening during the summer months.

## English Herb Garden to Mikahawani Village 5

### ECOLOGY

This term, coined by E. Haeckel in 1866, describes the study of the interrelationships between organisms and their surrounding, outer world; the study of animals and plants in relation to each other and to their habitats. Life forms, including man, are intimately linked with their environment.

Production ecology, or community ecology, is the study of the structure of communities in terms of the throughput of energy and chemical compounds.

Ecology, in everyday use, is linked with environmentalism, or the Green movement, perhaps because most ecological thinking is in favour of preservation of ecological processes, habitats, and species.



## Mikahawani Village

6

- **Sustainable Housing** - For staff housing, sustainable materials have been used with indigenous technology, from sun-dried mud bricks to thatched roofs. The local material helps maintaining an ideal temperature inside the dwellings during the summer months.
- The housing was created as an example for the community to follow as affordable alternatives to tin roofing and concrete intensive construction.

## Osero Forest Clinic

7



- The forest clinic is the first truly integrative medicine model in East Africa and unique in a sense that it serves both visitors and the local community. Health care for all Gibb's Farm employees, both traditional and western, are sponsored by Gibb's Farm as they are clinically integrated through science.
- We use plant sources such as leaves, flowers, roots or barks rather than extracts in the phyto-medicine.
- We offer a variety of treatments customsied to the individual's comfort in consultation with a personal healer.
- We provide ample space and time to integrate the changes experienced on the journey to greater wellness.
- We ensure sustainability in traditional medicine material.

## Vegetable Gardens

8

- **Organic Food:** The food free of artificial chemicals, fertilizers, persticides and insecticides, has traveled to the kitchen on foot without generating monoxide fumes.
- **Fruit and vegetables** - The Gibb's Farm estate supplies 90% of ingredients for our kitchens. 7 acres containing a diverse number of species: 50 vegetables, 13 fruit, and 15 herbs. The supplies are twice a day and the vegetables are picked close to the meal time as possible to retain freshness.
- Mention some of the vegetables, herbs and fruits which the Farm kitchen uses.
- **Coffee** - 30 acres of coffee are organically cultivated. The beans are cleaned and roasted on the estate.
- Mention the role of coffee in the Gibb's Farm estate. Also mention the time of coffee in the Rhythm of the Farm, show the guest the manual coffee machine which we still use today to remove the skin of the berry.
- **Honey** - Over 20 hives are dispersed throughout the estate to augment the honey required by Osero Clinic and the kitchens, the honey bee thrives on the nectar of more than and accumulate in the hives. The honey picking is done mostly in night using the traditional method of smoke to distract the bees.

Our model to the region as a global example of responsible and sustainable operation is based on decades of evolving effort. Today eight floral gardens attract over 250 bird species, seven acres of organic vegetables utilize compost from the kitchens, dairy and pig farms to feed the travelers and staff were all started by the Gibbs.



## Shimu Area

## Refuse Disposal

9

- Gibb's Farm practices the "Avoid, Reuse, Recycle, Disposal" hierarchy approach. For example we avoid purchasing beverages in cans and insist on returnable glass bottles. Building materials are reused in foundations or road maintenance. Because of the poor Tanzanian recycle infrastructure, we are self-reliant on recycling such items as plant materials cycled to compost or pig food, pruned coffee tree limbs to cottage fireplace wood. The Farm is totally self-contained; no refuse is exported to the community dump or water systems. Nonferrous metal scrap recycling is the only material we have found a market for and is the only material that leave the Farm's self-contained system. These efforts are perfected continually with the following categorical results:
- Vegetable Matter to Compost - 100% of kitchen and food waste are either fed to farm pigs or composted for use in the organic gardens. Cottage and kitchen fireplace ashes and pig and cow manure is added to the compost system. Much of the flower and vegetable plant cuttings are also composted.
- Plastic Water Bottles - Most plastic breaks down in ultraviolet sunshine. After a few months the bottles are broken (walked on actually) and buried in a 80 foot pit, specially designed for non-toxic material. Our plan is to replace commercial bottled water sales and to sell reusable potable water containers with complimentary filtered water refills from the Farm's well water system.
- Glass Wine Bottles - Bottles are stored in bulk and donated to various causes in the area for recycling. One such project involves a small NGO in Arusha that melts colored glass for jewelry making by handicap artisans.
- Tin and Metal - Tin cans are flattened, burned and placed in the 80 foot pit. Odd bits of metal are reused in construction or sold for scrap.
- Burn and Bury - Miscellaneous items such as light bulbs & metal spray cans (insect spray), are placed directly into the 80 foot pit. The rest is burned and buried.
- Paper and small plastics - Burned and in some cases added to the compost system. In some cases it is placed in the 80 foot pit. Both sides of office paper is used in most cases.
- Motor oil - Spent motor oil collected and used to prevent insect damage to building cladding. We soak the wood in heated motor oil, or simply apply it by brush.
- Batteries - The torches (flash lights) used by our security utilize rechargeable batteries and are lit by LED bulbs. We have tested a few for the guest cottages, but find them usually removed without payment. Batteries left by travelers, or otherwise used by the Farm are currently placed in a metal drum with the hope that they will someday be able to be disposed of properly. We try to keep them out of the 80 foot pit.



## GARDENS & ESTATE FORESTS

Eight gardens have been restored or established to attract bird and insect life and to provide a natural respite for the rigors of safari. A vast array of tree and bush species are also represented, many indigenous to East Africa. SANAA botanical artist Riziki Kateya has been in residence at various times to catalogue some of the plants, a few unique to Gibb's Farm.

Irrigation - Non potable water comes from three sources: a 50 year old dam built in the Ngorongoro Conservation Area and piped to the vegetable and flower gardens, reed plant filtered grey water, and well water.

