

## SECTION 4: ENERGY



November 2005

### The hidden costs of energy production

Your tourism operation demands a reliable supply of energy to cook food, keep accommodation establishments warm or cool, warm water, provide lighting and run your vehicles.

All conventional methods of energy production have large hidden costs. Power produced from hydroelectric, oil-fired, coal-fired or gas-fired sources is expensive, results in atmospheric pollution and threatens wildlife habitats and human health.

One of the most serious consequences of energy production for human use, is global warming. Studies have shown that most parts of Namibia are likely to become hotter and drier because of global warming, and that weather patterns will generally become more erratic.

Ultimately, best practice in tourism demands the conservative use of these conventional energy sources (including grid power) and a commitment to using solar, wind or other alternative sources that are renewable, non-polluting and environmentally friendly.

Burning a wood fire at a bush lodge or campsite plays an important role in creating 'sense of place' and ambience for visitors to Africa.



However tour operators must remember that burning wood from natural forests can contribute to deforestation and desertification in countries like Namibia.

Although the use of 'dead' wood for firewood is widely practiced it must be remembered that logs found in the veld play an important ecological role – they provide a habitat for numerous species of fungi and insects and, as they decompose, they provide nutrients for the soil. Firewood must therefore be used in moderation.

*All types of energy use have some kind of environmental impact. Each one of us must think carefully about our energy consumption pattern. © M.Goldbeck*

### Drawing up an Energy Management Policy

Every tourism establishment should develop a written Energy Management Policy that aims to utilise energy more efficiently and reduce its use of non-renewable, polluting energy sources.

This policy should include:-

**A Mission or Vision Statement.**

For example: *'The Energy Management Policy of Olumbingi Lodge aims to ensure efficient energy use and the utilisation of renewable, non-polluting energy sources wherever possible'*

**Goals and Strategies** are needed to help you achieve your Vision. For example:

**Goal 1.** *To improve energy efficiency by:- cooking and heating water only with gas or solar systems; converting all refrigeration to solar and gas systems; using low wattage energy efficient lighting ,etc.*

**Goal 2.** *To inform staff and guests of the importance of energy efficiency by:-having signs on display to inform visitors and staff of how energy*

can be saved; etc.

**Recording and monitoring systems.**

In order to help you to improve energy efficiency in your establishment it is important to develop an accurate recording system that measures the per capita energy consumption per bed night.

**A policy of improving energy efficiency makes economic and ecological sense.**

**GOAL:** To encourage the tourism industry to improve its energy efficiency and reduce its dependency on non-renewable, polluting energy sources.

## Ways to improve energy efficiency

If you have grid electricity, install electricity meters in all staff accommodation and take meter readings monthly.

If you work on a generator, Record the fuel consumption and calculate the cost of operation including replacement/depreciation cost.

An acceptable electricity rate per staff member could be calculated in conjunction with the workers committee. This standard amount could be included as part of the basic remuneration package and any usage above that figure should be charged to the staff member at cost price.

To provide an incentive to use less electricity the following system can be adopted: any usage *less* than the standard amount is repaid to the staff member at current supply cost, and any usage *above* that figure is paid by the staff member to the owner again at current supply cost.

### **Water heating**

- Reduce the thermostats of all electric geysers down to a temperature of 55° C;

- Phase in solar water heaters to replace all electric geysers. This can result in large savings in energy as well as expenditure. Good solar water heaters have an integrated electrical back-up for the cold nights or heavily clouded days if necessary;
- Assistance for funding of Solar Water Heating Installations can be obtained through the *Revolving Credit Fund at the Ministry of Mines and Energy*;
- Insulate your hot water supply pipes;
- In large establishments consider installing reticulation pumps to avoid heat losses as guests wait for hot water to arrive in their room;
- Heat exchanger systems in large establishments can use the heat exhausted from fridges and air-conditioning to heat up water. A good electrical-mechanical engineer can advise.

### **Lighting**

- Use only power saving (compact fluorescent) light bulbs. They are

more expensive than ordinary bulbs, but they last much longer and save an enormous amount of power;

- Use daylight switches on all outside lights that must be on at night. These respond to natural light by turning off during the day;
- Use movement activated lights outside as much as possible;
- At night time in parking areas, or other areas not frequently used by guests after midnight, have double circuits installed so that half of the lights can be separately switched off;
- Introduce a checking system whereby unnecessary lights in guest rooms and elsewhere get switched off by staff.



*Lighting is important for ambiance, but lights must be switched off when guests retire for the night*

© Wilderness Safaris



*Although solar systems require substantial capital for the initial purchase, cost savings make them worth-while in the long term. © P. Tarr*

## Ways to improve energy efficiency cont...

### Air Conditioning

- Consider phasing in overhead fans in place of air conditioners within a certain period of time. Fans use far less power and are healthier;
- For large luxury establishments - new air-conditioning systems like VRV also use less energy than old-fashioned split or central systems. Consult an electrical or mechanical engineer about it;
- Evaporative coolers are very successful in Namibia's arid conditions and the modern ones use little water and less energy than conventional air-cons. The backwash water can be used for grey water sanitation or for irrigation. And as it humidifies the air, it is healthier and more comfortable than conventional air-conditioning;
- In new and renovated establishments make use of 'passive' building designs that utilise natural sunlight for warming, and natural airflow for cooling. This includes facing buildings north, using cross-ventilation, and well insulating roofs, etc. (see check list in Section 9). The HRDC researchers, and environmentally conscious architects will be able to provide advice.

### Refrigeration

- Introduce a day use freezer and ensure that the main freezer will only be opened twice a day. This will also help with stock losses;
- Use energy efficient freezers and fridges. These have extra thick walls and hold temperatures better;
- Make sure all door seals are in good condition and that latches function properly;
- When designing new units, make the entrance to the freezer room through the fridge room;
- Place plastic curtains at the door of

walk-in units;

- Use farm style coolers if possible. The HRDC has examples on site. These enhance the cooling effect by dripping water over coal or limestone in the cavity wall of the cooler. Avoid using reservoir water in these coolers because of mosquitoes. Water the charcoal once a day and let the surplus run into a bed with herbs or other kitchen plants;
- Instruct staff to open fridge and freezer doors for as short a time as possible;
- Make sure that fridges in guest rooms are not left running when the room is unoccupied (unless it has food in it for staying guests).

### Cooking

- Cooking with gas instead of electricity is cleaner and more economical. If you use generated power, the cost of using electricity for cooking will be extremely high;
- Use solar cookers for at least some of your cooking for both guests and staff. These cookers are extremely effective for slow roasting meats and vegetables. They provide an interesting talking point for guests, and are an excellent advertisement for eco friendly practices;
- Slow cooking by heating up the food and leaving it to cook in a 'hotbox' or insulated container (even wrapping it in a blanket) is also a healthy, low-energy way of cooking stews, rice etc.

### Camp fires

- Keep outdoor fires small. Invader tree species that are respon-

sible for bush encroachment in Namibia e.g. Sekelbos (*Dichrostachis cinnerya*) and Swarthak (*Acacia mellifera*), are the target of bush clearing projects.

These woods and certain alien invasive species like *Prosopis* should be used as firewood in place of valuable hardwoods like Camelthorn (*Acacia erioloba*), Mopane (*Colophospermum mopane*) or leadwood (*Combretum imberbe*).

The Cheetah Conservation Fund produces "Bushblocks" from invasive bush. These blocks are conveniently shaped for packaging and transporting, and they burn very efficiently. Also, you will have the satisfaction of reducing bush encroached areas as well as improving habitat for wildlife!



Solar cookers work very well under Namibian conditions—they are also a great talking point amongst tourists. © N.Maritz

## Ways to reduce petrol consumption

With rising fuel prices seemingly a fact of life, any business is looking for ways to reduce consumption and thus costs. The following advice is offered:

- In order to rationalise vehicle use, each trip should be authorised by management. Apart from helping you to reduce vehicle fuel consumption costs it will also reduce harmful greenhouse gas emissions – a great ‘green’saving’;
- Alternative transport - always consider whether a donkey cart, a smaller vehicle or a bicycle could be equally effective for certain trips. Motorcycles for staff patrols are more fuel-efficient than using a large vehicle;
- Ensure optimal numbers of guests on

your guided drives and develop more guided walks for your guests;

- Reduce your loads – the more supplies you can source locally, the less fuel you’ll spend on transport in terms of distance and loading;
- Service all vehicles regularly;
- Progressively replace all heavy consumption vehicles with vehicles with lower consumption ratings;
- Reduce low gear driving to a minimum, and
- Fit tachographs onto vehicles operating over long distances.



In some circumstances, staff (and even tourists!) could be transported on a donkey cart. Besides being fun, donkeys are fuel efficient. © N.Maritz.

## Creating awareness regarding energy consumption

In most lodge’s, energy is generated locally (diesel units) or purchased from a supplier (e.g. Nampower). Whatever system you use, energy costs money, so it is in your interests to become more energy efficient. The following advice is offered:

- Involve all staff members with the development of your Energy Management Policy and the setting of all energy consumption targets. This will help to ensure their co-operation and understanding of why you are insisting on certain practices;
- Ensure that your staff understand why energy conservation is important ( a poster could be made) and regularly provide them with feedback regarding goals that have been met etc.;
- Ensure that there are polite notices at the doors of guest rooms requesting

guests to switch-off lights and air conditioners when they leave the room;

- Provide simple information on global warming, deforestation and the need for energy conservation in your guest information booklet, and
- Instruct cleaning staff to switch off lights and turn off air conditioners if the guests did not do so after vacating their rooms.

*The Gobabeb Training and Research Centre in the Namib Naukluft Park, has many features and systems that show how well a combination of alternative energy technology and clever design, can be used to reduce costs and environmental impacts.*

© P.Tarr

