Smart Living Activity Sheets

WASTE ACTIVITY 1: Household hazardous waste audit (page 15)

Go around your house noting down any of the above hazardous materials. Turn to *Practical Steps* on page 24 of the Smart Living Handbook to explore what alternatives you could replace these with when you next go shopping. The garage and kitchen where you store cleaning chemicals is a good place to start.

Hazardous material	Alternative
e.g. drain cleaner	baking soda and white vinegar

WASTE ACTIVITY 2: Household waste audit

Take a week during which you look at the products that you usually throw away and see what products can be recycled or composted. Keep all the recyclable/ compostable products to one side and measure this at the end of the week to determine the volume per type of product. Find your closest recycle centre where these products can be dropped off and see if you can make a compost heap at home.

Waste type	Volume of waste
e.g. tin cans	1,2 kg

ENERGY ACTIVITY 1: Households using mainly electricity (pages 45 – 47)

This exercise will help you understand where you use electricity in your home and where savings could be made.

Step 1: Collecting the data

- In Column 1 of the Table, list the appliances you have in your home.
- In Column 2 note the electricity power (W) of each appliance. Appliance power is usually given on the appliance itself. However, this often indicates maximum power use, which can be much higher than average power use. Refer to the 'Typical Home Appliance Electricity Consumption' table on page 47, which provides estimates for common appliances.
- In Column 3 record (in hours) how long each appliance is used per day (consider differences in weekday and weekend use, summer and winter use, and work out an average for yourself).
  ***Note**: Some appliances switch on intermittently, such as fridges and hot water cylinders. Again, in these instances the table 'Typical Home Appliance Electricity Consumption' may be used to estimate the consumption.*
- If you have more than one of any appliance, such as light bulbs, write this in Column 4.

Step 2: Doing the calculations

- To find out your daily electricity consumption by using this simple formula:
  (Watt x hours used per day)/1000 = daily consumption.
  ***Note**: 1 kilowatt (kW) = 1 000 watt.*
  What you are doing here is multiplying Column 2 by Column 3 and then by Column 4 (more than one appliance). This final figure is then divided by 1 000 in order to convert from watt hours to kilowatt hours. Fill in this total in Column 5.
- To get your monthly consumption figure multiply your total daily figure by 30 days and fill this in Column 6.
- Add up your total kWh usage for all appliances to reach your grand total electricity consumption.

Step 3: Identify priority action areas and potential for savings

Examine your results. Which areas of the home use most electricity? Identifying this and taking simple, effective and cost-saving actions will help you to reduce your electricity consumption.

Household Electric Appliance Audit Sheet					
1	2	3	4	5	6
Appliance	Power use (Watt)	Hours/day in use	Number of appliances	Average kWh per day (Watt x hours x no/1000)	Average kWh per month
e.g. light bulb Incandescent	60W	4 hours	7 lights	60x4x7=1680/1000 =1,68 kWh per day	x30=5,04 kWh/month
Electricity consumption total					

***Note**: Typical mid-income electrified homes use around 774 kWh/month (around R250/month) electricity. The majority of this – up to 60% – is used in heating water in the geyser. Lighting is often the second largest consumer of electricity. Solar Water Heaters and switching to compact fluorescent light bulbs (CFL's) provide opportunities to make a substantial saving in household energy. Page 47 of the Smart Living Handbook provides a list of electricity consumption of typical home appliances, indicating the power use (Watt) and average hours used in a day.*

ENERGY ACTIVITY 2: Households using a mixture of fuels (page 48)

This exercise will look at the amount of money spent on fuel, rather than total energy consumed. Understanding what uses most energy (and money) will help you to identify where you could make savings.

Step 1: Collecting the data

- In Column 1 of the Table, list the fuels you use, such as paraffin, gas, batteries, electricity and wood.
- In Column 2 note the different services for which you use each fuel, such as cooking, lighting, music, heating, fridge or ironing.
- In Column 3 write down how much of each fuel you use in a week.
- In Column 4 write down the price of that fuel for each unit, such as a litre, or kilogram of fuel.

Step 2: Doing the calculations

To find out the cost of each fuel per week and multiply the amount you use (Column 3) by the cost per unit (Column 4). Write down the result in Column 5. If you wish to get a monthly figure, then multiply this again by four weeks.

Step 3: Identify priority action areas and potential for savings

Think about where you spend the most money on fuel every week. Explore this chapter for helpful advice on better energy choices you could be making. Also look at the Safety section at the end of this chapter to see if you can improve your safety in the home.

Household energy cost per week				
1	2	3	4	5
Fuel type	Service	Amount per week (litres, kg, number)	Cost per unit (litres/kg/number)	Fuel cost/week (amount x cost per unit)
Paraffin	Cooking	1 litre	R3,55	R10,60
Total Cost				

ENERGY ACTIVITY 3: Estimate your family's household carbon emissions (page 49)
Different fuels have different carbon dioxide emission levels. Electricity generation from coal in South Africa emits a substantial amount of carbon dioxide as it is derived from the burning of fairly low-grade coal. For a quick estimate of your energy consumption and related carbon emissions follow the steps below. ***Note**: This does not include transport fuel.*

Step 1: Using the audits you have completed, or a record of your electricity and/or fuel bills, fill in the amount of fuel you use each month in Column 1 according to the type of fuel (electricity, LP Gas, paraffin).

Step 2: Multiply this by the ratio provided in Column 2 (e.g. for electricity this is 1,08). This will give you your kilograms of carbon dioxide emitted per month. Write this into Column 3.

Step 3: For your annual carbon dioxide emission, multiply by 12 months (Column 4) and calculate a total for all fuels. To determine your emissions in tonnes instead of kilograms you need to divide the amount by 1000. ***Note**: 1000kg is one tonne*.

Household carbon emissions				
	1	2	3	4
	Amount of fuel	Ratio	Kg CO_2/month	Kg CO_2 /year
If electricity (kWh)		x 1,08 kg CO_2 per kWh		
If LP Gas (kg)		x 3,09 kg CO_2 per kg		
If paraffin (litre)		x 2,58 kg CO_2 per litre		
Total energy related household emission from your home per month and per year in kg				
Total energy related household emission from your home per month and per year in tonnes				

Compare your household's carbon emissions with typical annual CO_2 emissions from Cape Town homes (note that this excludes transport).

Household type	**kg CO_2/month**
Average low-income non-electrified home in Cape Town	146
Average low-income electrified home in Cape Town	193
Average mid-income home in Cape Town	737

ENERGY ACTIVITY 4: Home safety quiz (page 64)

Answer the questions below with a YES or NO.

Electricity	**YES**	**NO**
Electric wires in our home are kept far from any sources of heat, such as fires and stoves or candles.		
All wires are well insulated with no copper wiring exposed.		
Our electric wires do not run under carpets in our home.		
There are never more than three appliances in one plug socket at one time.		
We do not have electrical appliances in our bathroom or near water.		
All members of our household know that they must never pull a plug out from the socket while it is still switched on, or pull on the electric cord.		
All members of our household know that the appliance must be removed from the plug socket (with the socket switched off) before fixing an appliance.		
We always switch off the light before changing a light bulb.		
TOTAL SCORE		

If you answered NO to some of the questions, you need to consider the following actions:

- Move wires away from heat as they could burn and cause a fire.
- Remove cords running under carpets as damaged and exposed wires can start a fire.
- Buy insulation tape and cover any exposed copper wires by winding the tape around the wires a couple of times.
- If you have too many appliances using one socket, pull out some of the plugs and only plug in when you are actually using that appliance. Try and make sure you are never using more than three appliances from one plug at a time.
- Water conducts electricity and using electricity in the bathroom or near water may result in an electric shock.
- Always switch off an appliance before removing a plug from the socket and always switch a light off before replacing the bulb.
- Never put bare wires or fingers into sockets. Touching the wires of an appliance that is still plugged into a socket can give you an electric shock.

Paraffin	YES	NO
Our paraffin stove and lamps are clean and burn clearly.		
Paraffin in our home is stored safely in a cupboard or in a plastic packet on a hook high enough to be out of the reach of children.		
Our paraffin bottles are clearly labelled and not kept in cooldrink or milk bottles that could confuse children.		
We use a funnel (or the top of a cooldrink bottle) and not a cup to pour paraffin into the lamps and stove.		
Our paraffin stove and lamps are always on level, sturdy surfaces and out of the way of children.		
Our paraffin lamps are always covered with a glass lamp shade and never burn with an open flame.		
Our paraffin is kept in a clean container and we never mix it with other fuels, such as meths, oil or petrol.		
TOTAL SCORE		

If you answered NO to some of the questions, you need to consider the following actions:

- Keep your appliances clean at all times. Dirty or faulty appliances will burn with a lot of smoke that can cause asthma, bronchitis, coughing or pneumonia for members of your household.
- Always store paraffin in a safe place out of the reach of children. Containers need to be clearly marked so that children will know not to drink it. Funnels used to pour paraffin into stoves and lamps should be stored with the paraffin. Do not use a mug or cup that someone may drink from by mistake.
- A level and sturdy surface will prevent a stove or lamp from falling over and starting a fire. Also make sure appliances are out of the way of children who may knock them over by accident.
- A large pot on a small stove may also cause a stove to be unstable and fall over causing a fire.
- Making sure the flame in the lamp is protected will prevent fires and burns.
- Always use a clean container for paraffin. Dirty paraffin causes dirty, harmful smoke.
- NEVER be tempted to mix paraffin with any other fuels, such as oil and methylated spirits (meths). Mixing fuels can be very dangerous and cause explosions. Petrol mixed in with paraffin can be particularly dangerous. Sometimes paraffin is accidentally mixed with a bit of petrol that may be left at the bottom of a transport tank. Smell your paraffin to check that it does not have petrol in it. If it has a pinkish colour immediately return it to the place where you bought it and get them to contact their suppliers. Petrol burns even more quickly than paraffin and a mix of the fuels can cause explosions.
- Fuel gel provides a far safer option and should be considered. Although more expensive than paraffin, as it is a gel it cannot be drunk and will not spill, reducing the chances of poisoning and fires.

Candles, coal and wood	YES	NO
Candles in my home stand securely in candlesticks at all times.		
Candles are placed well away from open windows and curtains.		
When we make a fire indoors we have a chimney for the smoke from our fire to travel out of.		
We always use dry wood for fires and/or low-smoke coal.		
When making a fire outdoors we make sure it is well sheltered and that the fire is extinguished before we leave it unattended.		
TOTAL SCORE		

If you answered NO to some of the questions, you need to consider the following actions:

- Buy or make secure candlesticks for burning candles rather than standing them up in their own wax on a plate or directly on the table where they may easily fall over.
- Place candles in safe places. Window sills are bad places for candles as the wind may blow the candles over. The flame may also cause curtains to catch alight.
- Smoke from fires can be very dangerous – many people die every year from indoor air pollution, particularly young children. Always make sure there is a chimney for smoke to travel out of the house. Burn dry wood or make sure you ask for low-smoke coal for your coal dealer.
- Make sure the house is well ventilated if you are using an **mbawula** (coal stove) indoors. Always light the **mbawula** outside and bring it indoors once the coals are red. An upside -down fire – putting the coals at the bottom and paper and wood on top – makes less smoke.
- A shelter will prevent a fire from getting out of control.

Gas	YES	NO
When lighting our gas stove or lamps I always light the match first before turning on the gas.		
Our gas cylinders are stored far from any direct source of heat, such as a fire, lamp, heater or stove.		
We buy our gas from a supplier that has a safety rating.		
We check our gas appliances with our gas dealer if we are worried about them.		
We regularly check the connecting pipes, rubber seals (washers), bottles and appliances for breaks or leaks and replace or fix the appliance when we detect a leak.		
The gas bottle 'key' is kept safely away from children.		
TOTAL SCORE		

If you answered NO to some of the questions, you need to consider the following actions:

- Make sure your gas cylinder and connections are in good condition by checking for leaks and replace or fix immediately if leaks are detected.
- Do not use a gas cylinder that has been involved in a fire. If you are ever uncertain about your cylinder or appliances, check these with your gas dealer before using.
- Always buy gas from a registered supplier with a safety rating. This should be shown on the outside of the supply centre.

WATER ACTIVITY 1: Conduct a mini audit of water use in your home (page 84)

How much water is your household using? Where do you use the most water in your home? Are there areas where you could make water savings? Increase your knowledge and awareness of water use in your home through the exercise below.

Water audit at your home					
1	2	3	4	5	6
Activity	Average litres of water used per activity (litres)	Number of times activity is done each day	Total water used by a person each day (litres)	Number of people in the household	Total household water consumption per day
Example: Wash hands and face	*1.5 litres*	*3 times a day*	*1.5 litres x 3 times a day = 4.5*	*4 people*	*4.5 litres x 4 people = 18*
Wash hands and face	1-3				
Bath	80 – 150				
5-minute shower	80				
Teeth cleaning (tap on)	4				
Toilet flushes	6-21				
Drinking (cup)	0.25				
Washing dishes (hand)	18 single basin 36 double basin				
Dishwasher	17-45				
Washing machine (one 3 kg load)	80				
Hand washing (1 tub load)	40				
Leaking/dripping tap (1 drop/ second each day)	30-60				
Food garden (per m^2 per day)	4				
Cooking (meal for 5 people)	3				
Using the garden hose for an hour	600				

Step 1: Collecting the data

- In Column 1 of the Table, different activities are indicated, with the estimated water consumption indicated in Column 2.
- In Column 3 write down how often these activities are done by each person living in the house.
- In Column 5 write down the number of people in the household per activity. Some people might generally bath, while other shower.

Step 2: Doing the calculations

To find out the estimated amount of water used for each activity per day you need to multiply the amount of water used per activity (Column 2) by the number of times the activity is done each day (Column 3) by the number of people in the household (Column 5). Write down the result in Column 6. If you wish to get a monthly figure, then multiply this again by 30 days.

Step 3: Identify priority action areas and potential for savings

Think about where you use the most water every day. Explore this chapter for helpful advice on better water choices you could be making.

Work out what your consumption breakdown looks like. This will make you see where your biggest areas of water use are and will help you to make choices about where water efficiency improvements can be made in your home. Often as much as 35 percent to 50 percent of household water is used for non-essential purposes, such as watering gardens.

For a more detailed water audit, do the fun and interactive Household Audit Challenge that can be found on www.capetown.gov.za/water

BIODIVERSITY ACTIVITY 1: How biodiversity-friendly are you? (page 110)

Answer YES or NO to the following questions:

Question	Yes	No
Do you always make sure that a burning cigarette is never thrown out of your car window?		
Do you always take your rubble or garden refuse to an established dump and not leave it in the veld?		
Do you always make sure that oil and other chemical products are disposed of in established dumps and not thrown on the veld or into your water drains?		
Do you have a variety of local indigenous plants in your garden and/or neighbourhood?		
Do you have local indigenous birds visiting your garden regularly?		
Do you have lizards, frogs or local indigenous insects such as praying mantis or moths in your garden and/or neighbourhood?		
Have you removed all invasive alien weeds, notably Rooikrans, Port Jackson, Kikuyu, Fountain Grass, Lantana and Chromolaena, from your garden?		
Does your cat have a collar or bell to alert and thus protect local indigenous small animals?		
Do you avoid using harsh pesticides or herbicides on your garden?		
Do you support local initiatives to conserve the natural areas in your area or 'green' your local spaces?		

If you answered YES to three or more of these questions you are on the way to having a healthy amount of 'backyard' biodiversity! If not, there are many suggestions in Practical Steps on page 111 of the Smart Living Handbook will help you get started.