



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

SMART LIVING AUDIT GUIDE FOR EARLY CHILDHOOD DEVELOPMENT CENTRES



Making progress possible. Together.

This Smart Living Audit Guide was developed by the City of Cape Town as part of the Smart Living campaign.

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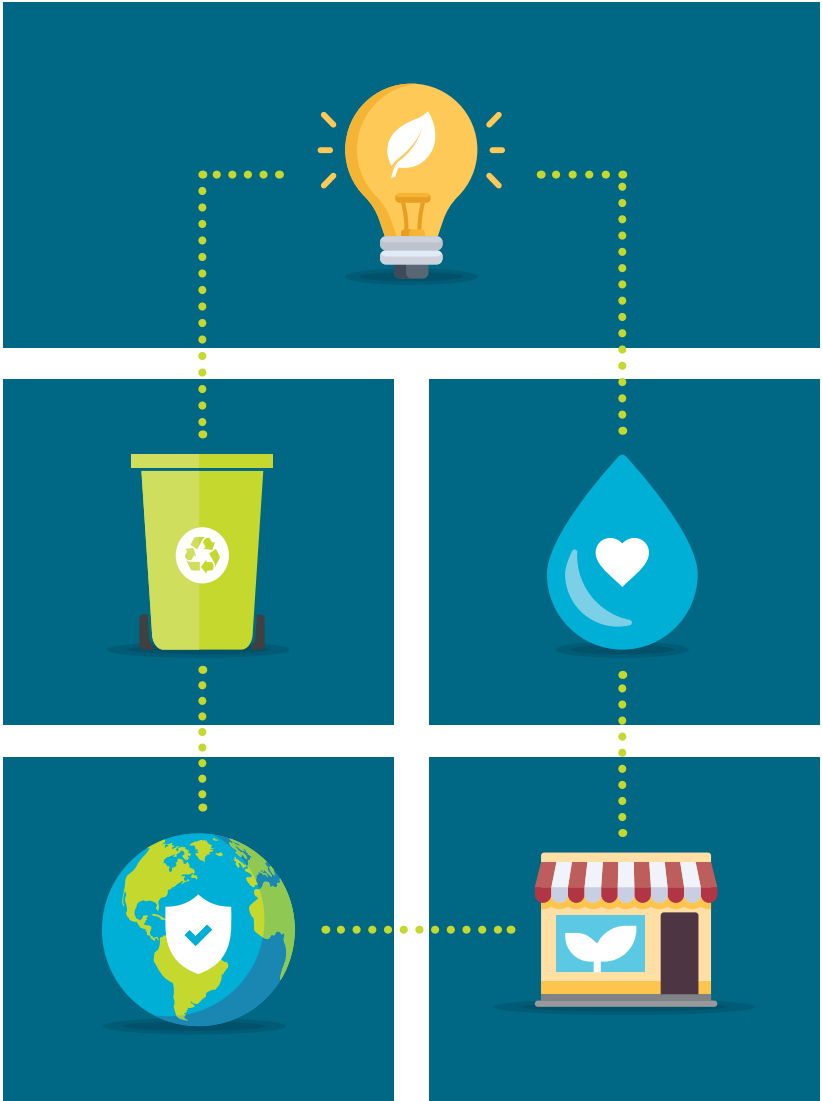
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INTRODUCTION

Welcome to the City of Cape Town's Smart Living Audit Guide for ECD centres.

The aim of this course is to provide ECD centres with the necessary skills to develop their own strategy for implementing an eco-audit. The training outlines why it is important to change habits, mindsets and decision-making processes, as ECD centres could save money and have a positive environmental impact.





ENERGY EFFICIENCY

ECDs are encouraged to save electricity through energy efficiency.

What different **types of appliances** do you have in your ECD centre?

What do you think is the **single item** that uses the most electricity in your ECD centre?

Can you do anything to **reduce your energy consumption**?

TIP: Do you know **how much electricity you use** per month and **what it costs**? Do you know who you need to speak to so that you can find out more about this? This is **valuable information** to have.



Do you know if you have any **energy efficient lights** in your ECD centre?

How do you manage **heating, cooling and ventilation** in your ECD centre?



WASTE REDUCTION

Can you complete the **waste hierarchy** below, with the most important at the top and the least significant at the bottom?

Do you *currently recycle* anything in your ECD centre? If so, **what do you recycle?**

Four horizontal lines for writing answers.

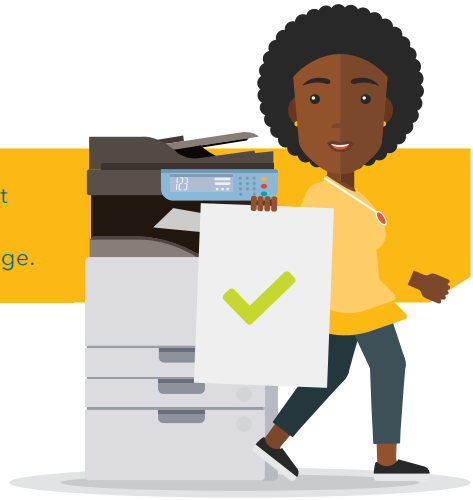
Are there **other things that you could potentially recycle** in and around your ECD centre?

Four horizontal lines for writing answers.

TIP: Check to find out **who** removes your recycling and **where** it goes.



TIP: Set your printers to print **double-sided** by default so that you reduce paper wastage.



Do you have any **e-waste, organic or hazardous waste** in and around your ECD centre?

Can you think of what you need to do in your ECD centre to **reduce waste to landfill**?



WATER CONSERVATION

Staff and learners at ECD centres are encouraged to help save water and use it with care.

What is water used for in your ECD centre? Think of the kitchen, ablutions and outside.

Can you think of any ways in which you could **save water**?



TIP: Check the **size of the cistern** and see what you can do to reduce water being wasted.

TIP: Do you **know how much** water you use per month and what it **costs**? Do you know how to access this information so that you can keep track of it?



Is it practical to do any **rainwater harvesting** or can you implement **greywater harvesting**? Look at the roof structure, downpipes and a suitable place for a rainwater tank.

What contingency plans does your ECD centre have in place if we **have another drought**? What do you need to ensure **that these plans are actionable**?



BIODIVERSITY PROTECTION

Do you have a **vegetable garden**? Do you have a **garden** at your ECD centre? Do you know if they are **indigenous or alien plants**? Do you know who you can speak to about this to learn more?

Chemicals that we use in our ECD centres can have a negative impact on the environmental and local biodiversity. What can you do to encourage the use of more **eco-friendly** cleaning products?

Four horizontal lines for writing answers, with a light orange background.



TIP: **Aloe vera** and **English ivy** are two types of plants that help to **clean the air and reduce toxins**.



SUSTAINABLE PROCUREMENT

Green procurement (also known as eco-procurement) gives preference to products and services that **reduce negative environmental** impacts and focus on sustainability. It also supports the concept of local economic development through the procurement of local goods and services due to reduced transport costs. It is important to consider the whole cycle, from acquisition and performance through to disposal.

What are some of the items in your ECD centre that could change over to "**greener options**"?

TIP: Ask for green. When issuing requests for proposals (RFPs) – be deliberate in asking suppliers to provide you with the most environmentally friendly product, with the highest quality, at the lowest price. You won't get it if you don't ask.



BASICS OF CREATING A SMART ECD CENTRE

As resources become increasingly scarce and energy and water prices continue to rise, resource efficiency is increasingly recognised as a valuable method of reducing running costs and other overheads, which could be used for other items and/or improvements. Such resources are assessed through eco-audits.

An eco-audit – also known as a ‘green’ or ‘environmental audit’ – is a **‘snap shot’ of the environmental resources** being used at a specific **venue** during a specific **time**. They are used as motivation to implement **cleaner production projects**.

Furthermore, an audit is an evaluation of how something is performing. By conducting an eco-audit at your ECD centre, you can determine how your actions, or lack thereof, impact the environment positively or negatively. These audits can also help you determine what you need to do to help our planet and how you can live a more sustainable lifestyle.



FIVE STEPS TO GET STARTED

1

Get buy in: Explain to all the members of the ECD centre what you would like to do in your centre, and why it is important.

2

Do an eco-audit: By doing an eco-audit of your ECD centre, you will get a snapshot of the current situation and gain an understanding of what you need to focus on.

What are the main **things that you will need to check** at your ECD centre when doing the eco-audit?

3

Develop an action plan: Use the eco-audit to develop an action plan for your centre. It should focus on all the important aspects of your centre.

4

Make it happen: Implement your action plan over time - do not try to make all the necessary changes at once, rather have a plan outlining when certain amendments will be made.

What are the **top three things** that you can do in your ECD centre?
Think BIG!

1.

2.

3.

5

Monitor and review: Monitor your progress and report on results. It's a good idea to re-do the eco-audit at a later stage, so that you can compare results and review your targets.

HOW TO DO AN ECO-AUDIT

- 1) **Prepare your strategy.** Work in a small team to define the strategy you will use to collect and analyse data. However, you must ensure that the data collection methods are simple, systematic and fully understood by all the people collecting the data.
- 2) You will need to **interview** staff or other colleagues to get details around usage, frequency or general characteristics of certain appliances like fridges. Surveys are useful tools for measuring less quantitative activities, e.g. how often do you use the photocopier per week?
- 3) The details of the **data should be captured** in a spreadsheet and any **assumptions** that are made should be indicated so that they can be referred to during the analysis. Ensure that specific people in your team are responsible for collecting data; this process needs to be well managed. All the data will be interpreted at the end of the audit process and used to design a Resource Efficiency Management Plan. This plan will be implemented in your home, and should result in long-term savings.
- 4) Provide a **brief description of the venue** including the usage (ECD block, with meetings rooms, etc.), number and type of rooms (for example 10 ECD centres, one kitchen and one boardroom) and an indication of occupancy (i.e. one room used as a storeroom, while the other rooms are used for 220 days per year). Also include a description of the type of building, i.e. a brick building with tiled roof, prefab container or refurbished container.
- 5) Within the venue, you will be required to **identify the key activity areas**. These could include the kitchen, ECD centre, library or other classrooms. This will help when comparing different key activity areas across various venues. As an example, most of the ECD centres could be clustered together during the audit, whereas the kitchen and centre should be kept separate.

- 6) To ensure an accurate audit, it is essential to obtain accurate data. **Utility bills** (municipal accounts) usually include energy and water consumption with associated costs. These are very helpful and should be collected over a period of time (preferably 12–36 months) and averaged.
- 7) You will need to **interpret the information** and provide a summary on the amount of water (kilolitres) and energy (kilowatts) used. Note that an ECD block could have more than one metering point.
- 8) **Policies** referring to the management of, and approach towards, the use of resources need to be considered. Where there are policies in place, they need to be listed as part of your analysis documentation. If possible, you should try to obtain copies of these policies, however, if no written policies exist then transcribe conversations and interviews.
- 9) Make notes of any **awareness-raising or training programmes** that might be in place, e.g. are there any posters up to remind people to switch off lights or close taps?
- 10) **Assumptions** that are made during the audit need to be recorded and be transparent as they give credibility to the process. Assumptions need to be constant throughout the auditing process; your audit team needs to work together to ensure this.
- 11) Once the data has been collected, it needs to be **collated and analysed** to ensure that the right conclusions are reached. These conclusions will then be used to make **recommendations** for the implementation of a Resource Efficiency Management Plan.





ENERGY AUDIT

An energy audit needs to list all the different electrical appliances as well as certain details about them – the type of appliance (i.e. CFL light), amount (i.e. one kettle) and the anticipated power consumption indicated (i.e. 60 watts). You will then need to calculate how many kilowatts per hour (kWh) the appliance uses on a daily and monthly basis.

- To convert from watts to kWh, you divide the consumption by 1000.
- Note that, on average, there are 22 working days per month.

Appliance	Amount	Watts	hours/day	kWh/day	kWh/month
CFL lights	7	60	4	$60 \times 4 \times 7$ $= 1680 / 1000$ $= 1,68 \text{ kWh}$	22 days $= 37 \text{ kWh}$
Kettle	1	1 900	0,3	$1900 \times 0,3 \times 1$ $= 570 / 1000$ $= 0,57 \text{ kWh}$	22 days $= 12,54 \text{ kWh}$
Computer	3	134	5	$134 \times 5 \times 3$ $= 2 010 / 1000$ $= 2,01 \text{ kWh}$	22 days $= 44,22 \text{ kWh}$
Total consumption per month					93,76 kWh

The energy audit can be used to determine where most of the energy is spent and what you need to focus on first to reduce your energy consumption.



WATER AUDIT

A water audit includes all the different water activities as outlined in the table below. You must describe each activity, number of times this activity is performed per day and the water used per household member. Based on these numbers, you can calculate the water usage per day and per month.

Activity	Water per activity	Times of use per day	Water per person	Number of people	Total water per day
Toilet flushing	16 ℓ per flush	2 flushes per day	$16 \times 2 = 32 \text{ ℓ}$ per person	5	160 ℓ
Washing hands	0,5 ℓ per wash	2 washes per day	$0,5 \times 2 = 1 \text{ ℓ}$ per person	5	5 ℓ
Washing dishes	18 ℓ per wash	2 washes per day	$18 \times 2 = 36 \text{ ℓ}$ per person	-	36 ℓ
Total consumption per day					201 ℓ
Total consumption per month					4 422 ℓ



WASTE AUDIT

A waste audit looks at all the items that can be diverted from landfill through recycling, composting or other means.

Recycling	Paper	Cardboard	Plastic	Glass	Total
Per week	4 kg	6 kg	2 kg	1,5 kg	13,5 kg
Total recycling per month					54 kg

Other	Rubbish	Organic	E-waste	Hazardous	Total
Per week	6 kg	3 kg	0,5 kg	1 kg	10,5 kg
Total other waste per month					42 kg

An illustration of a man with dark skin, wearing a yellow shirt and blue pants, sitting on a black ledge. To his right is a large, dark blue speech bubble containing text. Above the man, a white cloud is suspended by a black wire that loops back down to a black electrical plug with two white prongs. The background is a light blue wall with a white baseboard and a brown pillar. The floor is a mix of black and light blue geometric shapes.

THE GREATEST
THREAT TO OUR
PLANET IS THE
BELIEF THAT
SOMEONE ELSE
WILL SAVE IT.

- ROBERT SWAN

HOW TO COMPILE A RESOURCE EFFICIENCY MANAGEMENT PLAN

A Resource Management Efficiency Plan should provide an overview of all the resources that are being used in a facility and how their usage can be optimised. This should include energy and water consumption as well as waste management.

Though determining the installation cost and possible savings on the operational costs, a motivation can be made for funding of projects that will save the centre money in the long run. This retrofit plan should be compiled in such a way that it could be presented when attempting to obtain financial support for the implementation of resource efficient systems.

The eco-audit provides a good baseline and can be used to indicate the “starting point” of certain changes as well as suggestions on how to improve the situation at hand. For example, the replacement of old systems with new technology, such as replacing an electric geyser with a solar water heater. This is often referred to as a “retrofit”.

The plan should outline all the areas within the venue that need to be addressed over the short-, medium- and long-term, attached to an associated budget and loan repayment terms.

It is advisable to use SMART principles to ensure that the plan is specific, measurable, achievable, realistic and timely. For example, if there are incandescent lights being used in your home, they can be replaced with CFLs or, preferably, LEDs. While LED lights might seem to be the most expensive option when buying the bulbs themselves, they are much more efficient in usage, so overall energy costs can be reduced.

The table below indicates the cost for replacing 100 incandescent lights (80 w) that burn five hours daily, with CFLs (18 w) or with LEDs (9 w). The cost to run the light is set at R1,11 per kWh, while the cost per light bulb is indicated below.

Type of light	Cost per light bulb	Light lifespan	Cost per year for light bulb	Cost per year to utilise	Cost for lights per year
Incandescent (80 w)	R20	1 000 hours	R36,50	R162,06	R19 856
CFLs (18 w)	R35	6 000 hours	R10,65	R36,46	R4 711
LED (9 w)	R80	20 000 hours	R7,30	R18,23	R2 553

Note: 1 000 w = 1 kW

The Resource Efficiency Management Plan does not need to be very long or complicated, but should provide enough information to make informed decisions.

TAKING IT FURTHER

Now that you have your **baseline audit** and **Resource Efficiency Management Plan** you can use it to motivate for change. Remember that allocating budget towards implementing efficiency principles will save you money in the long run.

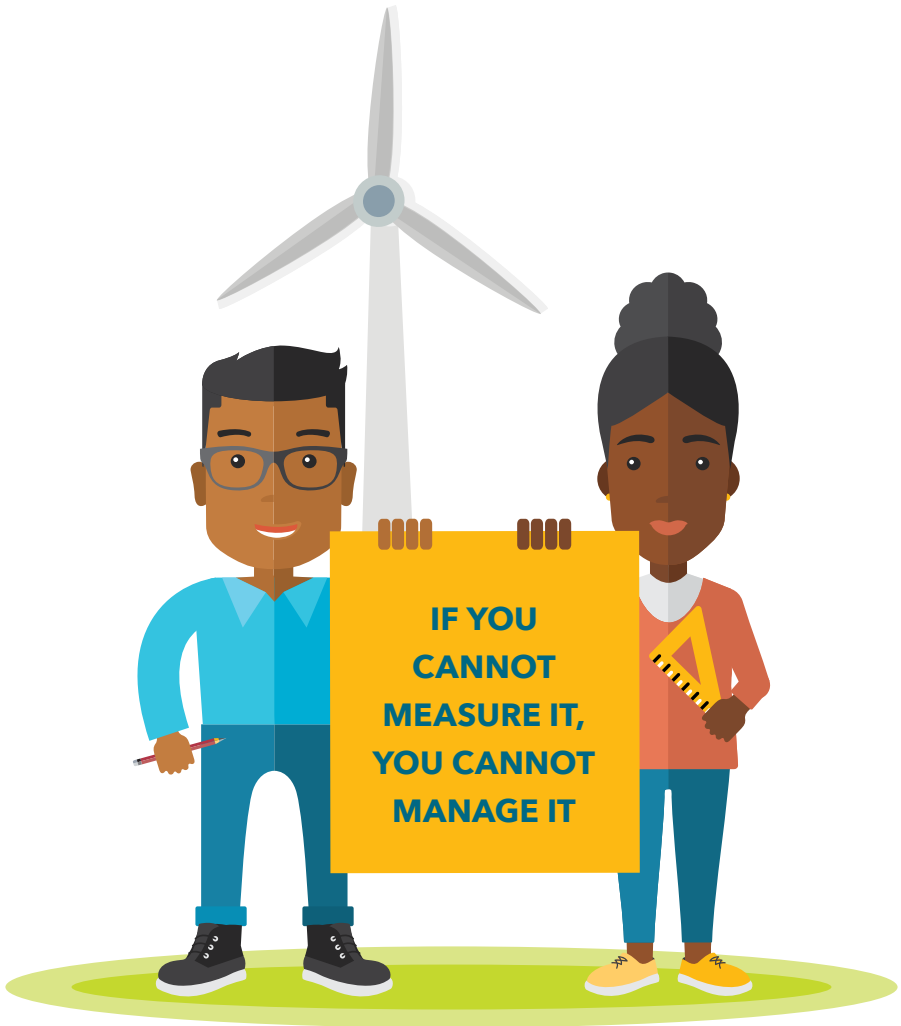
Ensure that you keep track of your consumption of energy (kWh) and water (kilolitres), as well as the rand value associated with energy and water usage. Also check on what you can recycle and how doing so could help reduce your monthly waste management costs.

If you cannot measure it, you cannot manage it, so make sure you continuously monitor your progress.

Consider how you can teach the children about energy, waste and water so that they can help to protect our future.

Good luck!





REFUSE, RE-USE, RECYCLE

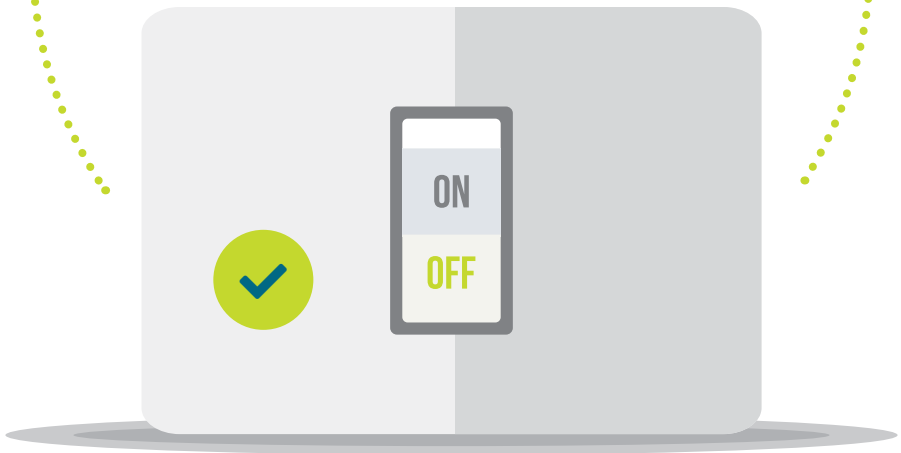
**IDENTIFY THE DIFFERENT
ITEMS YOU CAN RECYCLE:**



Glass, tin cans, plastic, Tetra Pak and paper are all valuable resources that should be recycled.

SWITCH OFF AND SAVE

**REMEMBER TO SWITCH OFF
LIGHTS AND APPLIANCES WHEN
THEY ARE NOT NEEDED.**



You can save electricity and money if you switch off lights and appliances that you do not need to use.

SAVE WATER

**CLOSE OR FIX TAPS
TO HELP SAVE WATER.**



Dripping taps and toilets waste a lot of water.
Find and fix leaking taps and toilets.



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