One of the largest contributors to anthropogenic (human induced) carbon emissions include the use of petroleum, natural gas and coal, which are primary energy sources in South Africa. By reducing the energy consumption related to events, this would also reduce the carbon emissions.

4.3.1 Carbon reduction and offsetting

The best principle is to reduce what one can through mitigation and offset what one is unable to reduce. Thus mitigation is the first consideration and where carbon emissions that cannot be avoided due to the nature of the event, then events should be encouraged to take responsibility and offset these through different mechanisms.

The participants could either do this as part of an awareness raising campaign, or the organisers can do it as part of a marketing campaign. It is, however, essential that the process is well managed and well documented so that a clear and transparent message is sent out about has been done to reduce emissions, what the main contributors to the emissions created were and how these emissions were offset.

Whilst air travel is almost unavoidable in an expansive country such as South Africa and the geographic location of its economic hubs, domestic airlines have initiated programmes to offset their carbon emissions and this appears to be a growing trend.

4.4 Sustainable Energy

Critical to the success of any event is an uninterrupted supply of energy during the event itself.

This requirement is complicated by ongoing pressures on the electricity grid which has experienced severe capacity shortfalls in recent years. Furthermore, the dominant source of electricity supplied by the grid is coal-derived, which is carbon intensive and emits high levels of greenhouse gases. The goal of sustainable energy is thus to minimise the dependence on electricity that is produced in an unsustainable way.

Three main objectives in relation to this goal are to:

- Minimise the consumption of energy;
- Improve the efficiency of use; and
- Maximise the use of renewable energy.

4.4.1 Minimise consumption of energy

The primary methods for minimising the consumption of energy is primarily though green building design, maintenance and behaviour change. Venues should be designed with optimum use of natural light and ventilation so that the need for energy usage is minimised.

Besides the infrastructure it is also important that the venue develops an environmental management policy, which includes aspects such as energy efficiency. Staff awareness and training is essential to get the buy-in and support. Even the best air-conditioning system will not be effective if, for example, the windows are left open.

The retrofitting of Parow Municipal building demonstrated an overall savings of 25% of electricity typically consumed. 11% of this was due to technical interventions (efficient lighting, solar water geysers, timers on hot water geysers) and the greater share was to behaviour change by staff as a result of increased awareness. This means that more than half of the savings in a retrofit building can be related to behaviour change through training.

Sustainable Energy Roadmap

PLAN

1. Develop an energy management plan containing:
   - An energy efficiency plan that addresses the optimalmanagement of lighting and Heating, Ventilation, and Air-Cooling Systems (HVAC).
   - Opportunities for on-site renewable energy sources.
   - Mechanisms for monitoring energy use.

INSTALL

2. Install comprehensive sub-metering systems.

MONITOR

3. Actively monitor energy usage.

RECORD

4. Maintain records of energy usage.

Green Energy Certificates

Private buyers, such as event organisers can purchase Green Energy Certificates (GECs) (which is similar to a REC) from the City of Cape Town. These Green Energy Certificates represent energy produced at the Darling wind farm, which is wheeled over the Eskom grid but managed by the City of Cape Town.

4.4.2 Promoting Energy Efficiency

An energy audit will provide a baseline of the existing energy consumption and where savings could be made. A consumption barometer can display the actual energy usage at any specific time so that staff and visitors are informed.

Whether it is a new building or the retrofitting of an existing building, a variety of technologies could be implemented, such as light movement sensors, or escalators that remain stationary when not in use. Changing to energy efficiency lights and more efficient Heating, Ventilating, and Air Conditioning (HVAC) systems would also reduce energy consumption. The use of light reflectors on light fittings will further brighten rooms and allow for the use of low wattage bulbs, while revolving doors prevent the loss of hot or cold air.

Through specific procurement choices, more energy efficient equipment can be acquired. Energy efficiency performance specifications and labelling for appliances is underway which will assist in the identification and selection of this equipment. Energy efficiency labelling is already in place for fridges.

4.4.3 Maximise the use of renewable energy

The ideal situation is for venues to be energy self-sufficient and produce their own energy requirements although this is not always practical or economical.

Where feasible, energy can be generated on-site through solar energy (photovoltaic cells), biogas generators and solar water heaters. With on-site generation, there is a need to capture the energy, which can be done through batteries. An alternative is to harness the heat from air conditioners or fridges to pre-heat water or under floor heating. With the NERSA approved increases in Eskom generated electricity, these alternatives have a shorter payback period and are becoming financially more viable.

With temporary structures, there is an option for mobile energy supplies, such as solar panels and LED lights in mobile toilets or the use of bio-diesel in generators.

Where renewable energy cannot be produced off-site, event organisers can purchase Renewable Energy Certificates (RECs), which are currently available in South Africa for event organisers or businesses that wish to offset their unavoidable carbon emissions. The purchase of renewable energy certificates is a relatively easy way to gain access to renewable energy without the need for on-site energy generation. Although a certificate is issued, it is important that specific measurements are taken during the event to verify the exact amount of energy consumed.

The benefits of RECs are as follows:

- RECs enable event organisers to procure green electricity without financial investments for on-site electricity generation.
- This is can be done for both permanent and temporary structures.
- RECs give an event's sustainability efforts credit and can be the difference between having a low and high green rating.
- Procuring RECs is the cheapest, most hassle-free way of accessing green electricity because it uses existing technology and infrastructure.
- RECs generate funds for the advancement of existing green energy production.

In summary, through hosting events in a responsible manner, it will contribute positively to reducing carbon emissions created through electricity usage at venues. Simple energy efficiency principles applied to building design combined with innovative technology can made a big impact on carbon emissions associated with events. Where renewable energy cannot be harnessed, the purchase of RECs can make a significant difference to the footprint of an event.

National Tradable Renewable Energy Certificates

Procuring and trading of RECs is recognised by the Department of Energy (DOE) as a credible method of offsetting carbon emissions.

The DOE's South African National Tradable Renewable Energy Certificates Team (SANTRECT) has set up zaREC, a for-profit organisation responsible for issuing RECs in South Africa.

All green energy producers need to register with zaRECs before they trade renewable energy certificates. If they do not, South African RECs will lack uniformity and credibility and event organisers will be discouraged from purchasing them.

4.5 Waste Management

Waste management in relation to events concerns both the design and construction of the venue as well as the waste generated during the event.

In the design and construction of the venue, the main issues are the incorporation of the required waste management infrastructure in the design of the venue or in the retrofitting of a venue and the use of waste materials in the construction of the venue. The focus of this section is the optimal management and minimisation of waste generated during an event.

The objectives are as follows:

- To promote waste reduction prior and during an event;
- To promote waste re-use during an event;
- To promote waste recycling during an event; and
- To promote litter free events.

A fifth objective, which is to maximise the use of waste materials used in the construction of the facility, is discussed in section 1.10

4.5.1 Waste Reduction

Where waste was initially just disposed of, the focus has shifted to waste avoidance and reduction, with treatment and disposal as a last option. Sustainable procurement is an effective way of minimising waste at source and in the sustainable procurement section, the return of used or excess goods, and their packaging, for reuse and recycling is discussed. A similar approach can be adopted in respect of glass, tin, plastic and paper consumables where manufacturers buy back their used packaging or products and reuse and recycle these themselves. Buy-back deals benefit manufacturers, event organisers and the environment alike.

4.5.2 Waste Re-use

Where an option is provided between a disposable item and a re-usable item, it is essential that the re-usable items be supported. In many European countries, it is standard practice to pay a small deposit on a beaker at an event so that it is returned, washed and re-used. Sustainable solutions should be considered for large events in South Africa as part of an event's waste minimization strategy.

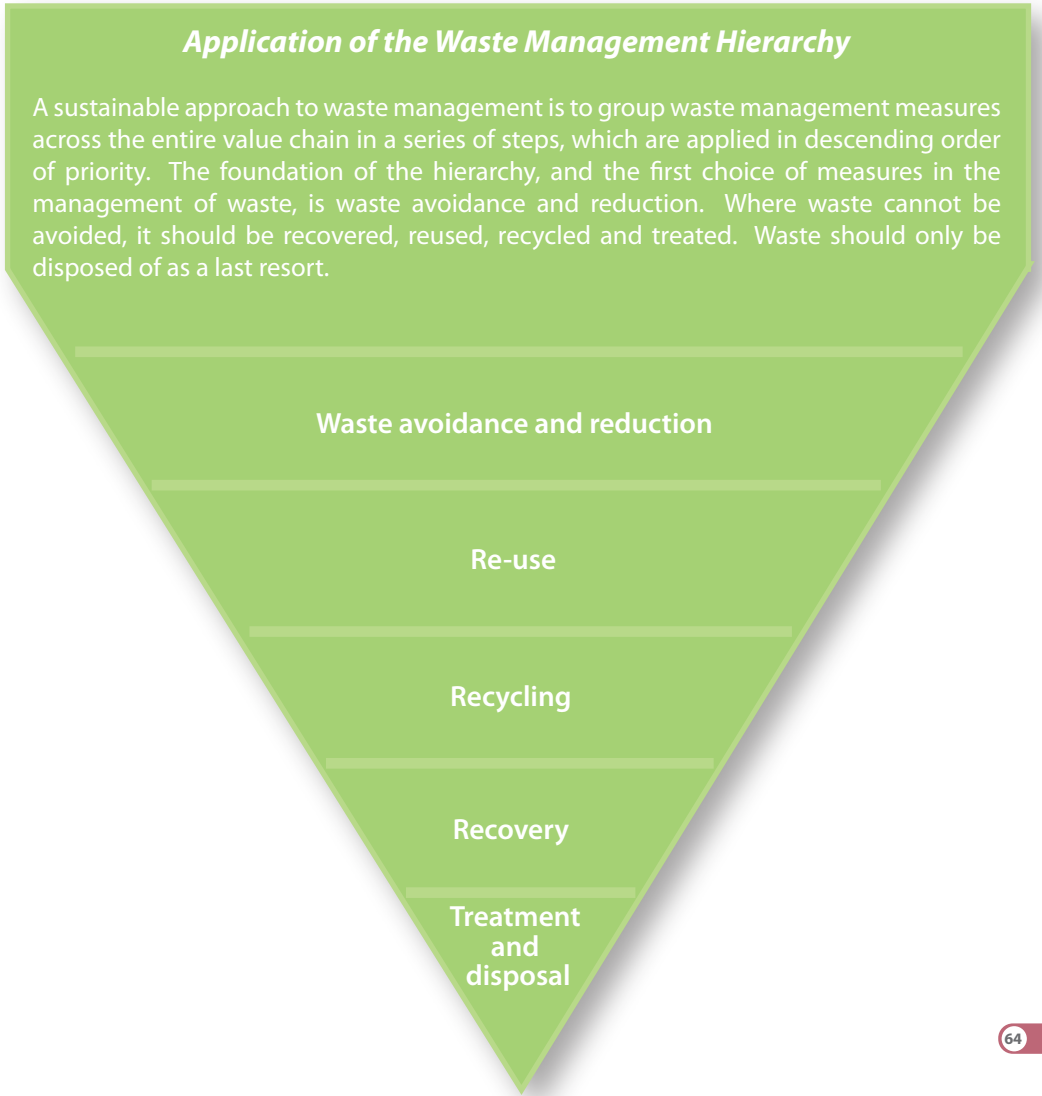
With conferences items such as lanyards and conference bags, procurement criteria should consider the practical re-use of these items. By collecting these items at the end of an event, they can easily be re-used at future events, or donated to community training centres. The durability of the products needs to be considered as part of the procurement criteria to ensure that it is practical to re-use these products.

Unused, excess materials should be kept and either used for future events, sold to other organisations or donated. Letting excess stock become part of the waste cycle is unnecessarily costly and damaging to the environment.

Whilst the focus of reuse and recycling often tends to be on consumables used during an event, there is also a need to look at how venues are constructed and the re-use and recycling of building materials like steel and concrete. This is discussed in greater detail in the section on sustainable procurement.

Application of the Waste Management Hierarchy

A sustainable approach to waste management is to group waste management measures across the entire value chain in a series of steps, which are applied in descending order of priority. The foundation of the hierarchy, and the first choice of measures in the management of waste, is waste avoidance and reduction. Where waste cannot be avoided, it should be recovered, reused, recycled and treated. Waste should only be disposed of as a last resort.



Separation at-source tips

- *Ensure that bins for different types of waste are always placed next to each other.*
- *Ensure that the bins are well marked with clear instruc tions, preferably colour-coded.*
- *Ensure that staff member are informed about the recycling and what the process is.*
- *Ensure that visitors are informed about what is expected from them.*
- *Find out what types of waste can be recycled in your city.*

4.5.3 Waste Recycling

The main types of waste produced during an event can be categorised as follows:

- Plastics, including polystyrene – water and soft drink bottles, bulk packaging material, disposable food containers and disposable eating utensils;
- Paper and cardboard – paper plates or cups, bulk packaging materials and event-specific literature like pamphlets and maps;
- Glass – often from wine, beer and soft drink bottles or from broken glassware;
- Metal – primarily tin and aluminium from soft drink cans;
- Biodegradable waste – unwanted and leftover food; and
- Waste to landfill – chips packets, cigarette butts etc.

Most of these waste types have the potential for recycling. However, they generally go to landfill because the whole waste management process is not handled correctly.

There are a few different ways to implement an effective recycling system depending on the type of event, the infrastructure and the waste management process:

• Separation at source

Waste is separated at the same place where event organisers or participants throw it away, through the provision of separate receptacles i.e. at the point when a useful item becomes waste. This should be done in one of three ways:

A multi-bin system is when different bins for different waste types, such as glass, plastic, tin, paper and non-recyclables are placed next to each other.

A twin-bin system is when two bins are placed next to each other for recyclable (dry) and non-recyclable (wet) items. This is the easiest to implement.

A single-bin system where all the waste is placed in the same container regardless of what it is. This leads to contamination and although waste could be sorted at a later stage to extract the recycalble items they are usually contaminated and sent to landfill. This single-bin system is NOT advised when promoting recycling.

• Back-of-house separation

Waste is not separated at source, but placed in a single bin. The main recyclable items are later removed from the general waste stream for recycling. However, this is a difficult process, and contamination leads to a lower recovery rate when selling recyclable items. This can be avoided through providing separation at source.

• Off-site separation

Waste is neither separated at source nor on-site, but only once it reaches a material recovery facility. This is the least preferred option for recycling as it results in high levels of contamination of potential recyclable materials.

The use of a twin-bin system is advocated as it is a very simple method of ensuring separation at-source intervention which increases the recycling potential significantly and reduces contamination. A multi-bin system can also be effective but requires constant oversight by a trained staff member and its success hinges on continuous education and awareness-raising campaigns.

4.5.4 Letter reduction and removal

Litter is essentially waste that has not been binned and it is a lot more costly and labour intensive to clean litter compared to simply removing waste from litterbins.

Littering is attributed to an inefficient or confusing binning system and poor habits amongst event staff, participants and the surrounding communities of a venue. As in all other areas of sustainability, successful event waste minimisation and management hinges on the responsible behaviour of the people involved.

Venues often only provide bins on their property and not in the vicinity of the venue, which leads to unnecessary littering. Binning stations need to be put inside venues, around the perimeter of venues, in associated car parks and at bus and train stations so that the people involved in an event are never far from a binning station.

Event participants need to be made aware of the environmental importance of binning waste. Posters or audio-visual messaging about litter reduction that is appropriately targeted at the intended target audience can be provided where participants are standing in queues, such as at food points or in rest rooms.

It is important that these messages make people feel as though they are contributing to sustainable waste management practices and negating the effects of climate change every time they bin an item of waste. People will be more inclined to bin their waste if they feel their greening efforts are not in vain but do in fact make a difference. Furthermore, friendly, approachable binning staff can make all the difference in a person's unconscious or conscious decision to approach a binning station and bin their waste or not

The ultimate goal for event organisers must be to avoid creating waste through sustainable procurement or promoting re-usable item and to ensure that the maximum amount of waste is properly disposed and later recycled. There is also a preference to practice separation at-source by supplying an efficient, easy to understand binning system, using either the two or multi-bin system, in and around the venue. Communication and awareness is required to ensure that all affected parties are aware of the bins and know how to use them.

Recycle facility at Johannesburg Zoo

A cigarette dispenser