

REDUCE RE-USE RECYCLE

What is this Action Sheet about?

This Action Sheet is about unmanaged waste – a source of pollution and disease and often one of the worst things about city living. Yet people can often create valuable products from waste, making money and solving the pollution problem at the same time. You can look at waste as a problem to be solved, or you can look at it as a solution waiting to happen! Waste needn't be wasted!

What is the problem with waste?



Unmanaged waste causes pollution and disease. Most city waste is organic matter – left over food, sewage (human waste) and garden waste. This bio-degradable waste is rotted down by micro-organisms into a sticky smelly liquid containing lots of bacteria.

When used batteries and motor oil are left lying around, dangerous chemicals can get mixed into the liquid too. If this horrible stuff gets into the drinking water people can suffer serious illnesses as a result.

Then there is plastic waste, which does not rot down, littering the environment for centuries to come. Plastic bags are a major eyesore in many cities, whilst wildlife and livestock can die from swallowing them or getting tangled up. Safe ways to get rid of waste need to be found for healthy people and environments.

Waste is often literally that – a waste! Because resources are limited it is wise to re-use or recycle as much waste material as possible, or, preferably, to design our lives so we produce as little waste as possible in the first place. This all helps reduce the waste that ends up at the rubbish dump or on the streets.

IT'S A WASTE: The city of Nairobi generates around 1,600 tons of garbage each day, 70% of which is not disposed of at all, and ends up rotting close to its source. (Shelter Forum, 2000).

What's on the rubbish heap?

Types of rubbish in Nairobi, Kenya (Source: JICA 1998)

Foodstuffs	46.46%
Paper	19.18%
Plastic	11.41%
Grass/Wood	8.54%
Textiles	3.25%
Glass	2.95%
Leather	1.15%
Metal	2.61%
Rubber	1.64%
Other	2.85%

How can we change waste problems into waste solutions?

The three rules of waste management are:

- ✓ Reduce
- ✓ Re-use
- ✓ Recycle

REDUCE

Look at what we consume and ask these questions:

1. Could we have manufactured it using *less raw materials*?
2. Did it need to have all that *packaging*?
3. Could it have been designed to make *re-using or recycling the product easier*?

Waste reduction ideas

-  Shop carefully: Buy in bulk to reduce the amount of packaging required; choose returnable or reusable containers
-  Avoid over-packaged products and unnecessarily packaged food, e.g. cling-wrapped vegetables on polystyrene trays
-  Choose durable articles that will last a long time
-  Buy products with a recycled content
-  Use rechargeable batteries where possible, cloth dishtowels and napkins instead of paper ones, and refillable ink pens. Avoid disposable plates, cups and cutlery
-  Store food in the fridge in re-useable, airtight containers, rather than plastic cling film, tinfoil or plastic bags
-  Take your own basket, or re-useable plastic bags, to the supermarket to avoid using new plastic shopping bags each time. Use the supermarket's trolley or basket when selecting items, and use your own bag or basket to carry it home. Ask your supermarket to take back used shopping bags
-  In the office and at school, photocopy on both sides of the paper. See Action Sheet 73: Paper saving for offices for more ideas.

Source: ENVIROFACTS

RE-USE

Whenever possible, re-use a product several times. If you can't use it again, find someone who can.

DON'T LOSE IT! RE-USE IT!

-  Re-use glass bottles or jars for liquids, preserves, even solids – glass bottles are a great place for seeds, beans, millet, salt, sugar, flour...the list is endless! Glass bottles upside down can be half buried to line paths or flowerbeds, and they can serve to put plants in
-  Use tins as planting pots for tree nurseries
-  Glass and plastic bottles with deposits can be returned to shops for re-use. Likewise, milk bottles are usually re-used by distributors
-  Wash and dry plastic bags for re-use
-  For scrap paper, staple together office paper that has only been written on one side
-  Nursery schools make good use of the inside core of toilet rolls and paper towels, egg boxes, cereal boxes and jam jars.
-  Charities welcome unwanted clothes, furniture, toys, books and magazines
-  Repair things rather than throw them away

Source: ENVIROFACTS

RECYCLE

Recycling means breaking the waste down into raw materials, ready to use again...

In South Africa, they recycle two-thirds of all steel cans used in the country, around half the paper used, about a third of all glass, but only a sixth of the plastic (Collect-a-can website). Can you find out how this compares with your country?

Recycling organic waste

COMPOSTING is a way of recycling the nutrients in organic waste (See Action Sheet 31: Practical composting and Action Sheet 78: Permaculture). Ecosan toilets make nutrients from human waste ready for using to improve the soil and grow more food (See Action Sheet 26). It's also possible to produce energy for cooking and heating from organic waste (See Action Sheet 66: Biogas and Action Sheet 77: Fuel briquettes). Cooking oils can even be turned into bio-diesel and used to run engines.

Glass, paper, metal and plastics

Glass, paper and metal manufacturers often buy back used materials for recycling. Plastic is harder to recycle, but as it is made from petroleum (a fossil fuel), a non-renewable resource that will become more expensive as it runs out, it is likely that more recycling companies will find ways of recycling plastics in the future (See Action Sheet 75: The Plastic Bag Problem). Governments can encourage industrial recycling by making new policies including recycling targets for manufacturing companies.

-  Glass is 100% recyclable - make use of bottle banks. Find out whether glass can be recycled in your city.
-  Cans are 100% recyclable – they can be sent back to factories and melted down to produce new steel, aluminium and tin. 3 billion drinks cans are consumed every year in Southern Africa. Crush the cans to save space, and then sell them back to scrap metal dealers or recycling projects.
-  Collect-a-Can is a company whose shareholders are Mittal Steel the tinsplate producer and Nampak the can manufacturing companies. The objectives are to reduce the environmental impact of can packaging. Schools and community groups can get involved and make money by delivering cans to collection points. According to Collect-a-Can, almost 300 million Rand has been paid out over the last 13 years, and there are now over 139 000 people who collect and return cans in Southern Africa.
-  You can recycle paper into all sorts of attractive and valuable items yourself! Action Sheet 74: Papier mache shows you how!

Rubber

Rubber tyres

WHATS
WRONG WITH OLD
TYRES ANYWAY?!



Waste tyres are ugly to look at and harmful to the environment and public health. They contain a whole range of dangerous chemicals and up to 17 different heavy metals (including lead, zinc, arsenic, and chromium), all of which are poisonous and can potentially contaminate drinking water. If this occurs, damaging health effects could include cancer, birth defects, and impaired child development. Lead is poisonous to the nervous system and known to cause learning disabilities. Zinc can cause birth defects, and chromium and arsenic can cause cancer. In tropical countries old tyres accumulating rainwater are also perfect breeding grounds for mosquitoes, adding such killer diseases as malaria, yellow fever and dengue to the list of health hazards. Safe re-use or recycling of old rubber tyres is vital for environmental and public health.

Earthlife Africa list 70 ways to re-use or recycle rubber from old tyres on their website. How many can you think of?

Source: Earthlife Africa (www.earthlife.org.za)

What about dangerous or hazardous waste?



Medical waste from hospitals, clinics and laboratories may carry diseases. It should be incinerated.



Household hazardous waste includes things like oil-based paints, wood preservatives, pesticides, used oils and batteries. These waste materials all contain dangerous chemicals that will pollute the environment and cause serious damage to human and animal health if they are not disposed of carefully. For example, used motor oils contain heavy metals and other toxic substances that can cause cancer, anaemia and other illnesses. Take these items back to shops or collection points for safe disposal. See Action Sheet 80: Cleaning Chemicals – Impacts and Alternatives for more ideas.



If you don't have a collection point, you could set one up or start a campaign to make sure that governments insist that companies producing products containing hazardous waste also provide safe means of disposal.

WASTE OIL COLLECTION

In Botswana, the Tshole Trust have established a local waste oil collection company called Environmental Systems. The Oil Industry in Botswana finance the Tshole Trust by paying a tax called the Waste Oil Management Levy on each litre of oil they sell. This funding system has enabled the Tshole Trust to educate people nationwide about the dangers of waste oil and set up community disposal points throughout the country, making it a safer place to live! In South Africa, the ROSE (Recycling Used Oil) Foundation manages the environmentally acceptable collection, storage and recycling of used lubricating oil. Find out about what happens to used oil where you live.

DRY CELL BATTERIES

Used batteries – especially dry cell batteries – are also a serious hazard to human and animal health. If animals feed on rubbish heaps that contain dry cell batteries, toxic substances like lead and cadmium get into the animals bodies. When people eat milk, meat or eggs produced by the animals, they may get very ill.

The main thing is that used batteries don't end up where they may leak their toxic substances and contaminate the surroundings. Schools and community groups can set up a dry cell battery collection point to make sure these dangerous items don't get dumped just anywhere, but are contained somewhere safe. Alternatively, you could campaign for safer ways to power your radio or electric lights in the first place (See AFRICA OUR HOME Chapter 5: Energy).

How to get started with a new waste management project?

GET ORGANISED!

Community groups, schools, households can all get involved in waste management. The first step is always sort waste out into different types of material. This can be done at the source – in households or institutions, so that people can re-use or recycle parts of the waste themselves. Alternatively, sorting can be done by people employed at the rubbish dump.

Sort it out!

Biodegradable	Not biodegradable
Organic waste	Paper/cardboard Plastic/Polythene Glass Metal Other

Waste management systems can work in all sorts of different ways. Individual households, community groups, local government and private companies may all play a part. It also helps if people make money along the way!

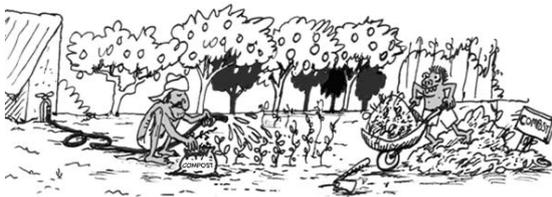
This Practical Action project in Sri Lanka is one example of how waste management can be organised at a community level.



Following meetings to discuss how to improve the management of waste, neighbouring households joined together into small waste management groups. Each group sorted out their rubbish at home, ready for regular collection days.



The households made compost with organic waste and used it to improve their vegetable gardens



On collection days, group leaders **weigh** the different types of waste and make a written record...

...before carrying the waste to a central collection point



All the sorted waste is then **sold** to recyclers – a paper company buys the waste paper, a glass company buys the waste glass, and middlemen buy plastic to sell to other companies.



Money made from selling the waste is **redistributed** back to the households in proportion to the waste they had collected.

GET INSPIRED!

- Community groups and entrepreneurs are turning waste into money all over Africa

Andrew Machuria and the Nairobi city dump

In the PACE film on Urban Living, you will meet inspiring entrepreneur Andrew Machuria of Nairobi, Kenya. His group, the City Garbage Recyclers, sort through Nairobi's rubbish, turning organic waste into useful and profitable things: compost for urban gardening; polythene to stuff mattresses and pillows, and a combination of cardboard and charcoal dust to make fuel briquettes. In this way, Andrew Machuria makes money and provides jobs for young people.

So-Afr Eco Community Group

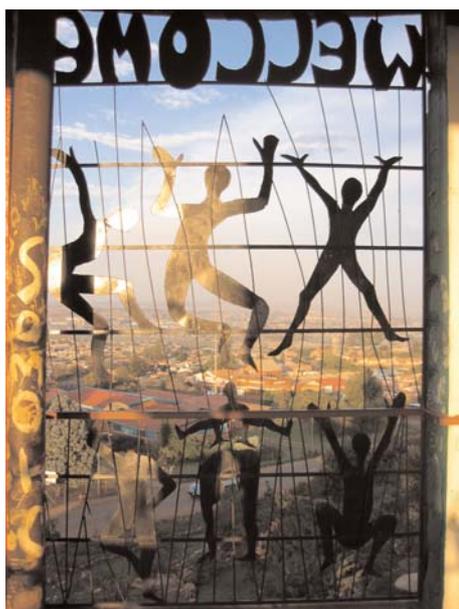
In the PACE film you will also see the So-Afr Eco community group, who weave plastic bags into beautiful mats, hats and handbags. Find out more in Action Sheet 75: The Plastic Bag Problem.

- Artists and educators use recycled materials to inspire the next generation

Leratong Crèche

The children at Leratong Crèche sit at chairs and at tables that have been made from recycled material, and play with papier-mâché fruit and vegetables as educational toys. Find out more in Action Sheet 74: Papier-mâché.

SOMOHO



Somoho is short for Soweto's Mountain of Hope, a centre for cultural and community revival in Johannesburg, South Africa. Working with Mandla Mentoor, a community and environmental activist, young artists make use of recycled materials to make sculptures - wire cars, African masks, waste trophies, plastic bowls, bead work, waste paper animals, tin furniture. Old tyres are put to new use - as flower pots. Through the project, children are encouraged to develop artistic creativity and environmental awareness.

ACKNOWLEDGEMENTS: This Action Sheet was compiled by Nancy Gladstone and Alan Hesse, and is based on the following sources: Practical Action Community Waste Management project (www.sda-uk.org/content/designcontexts/itdg/itdg1.asp), Envirofacts War on Waste, edited by Linda Biggs, Share-net; JICA, NCC, MOLG, Rep. Of Kenya "The study on solid waste management in Nairobi City in the Republic of Kenya. Final Report Vol. 2", August 1998. Original cartoons by Alan Hesse. Photo of Somoho by Sarah Watson, PACE.

FOR FURTHER INFORMATION

CONTACTS

Collect-a-can - www.collectacan.co.za
Earthlife Africa – www.earthlife.org.za
Institute for Zero Waste in Africa – Email: zerowaste@iafrica.com
Practical Action – www.practicalaction.org
ROSE Foundation - www.rosefoundation.org.za
Somareland Tikologo – www.st.info.bw
Tshole Trust - www.info.bw/~tshole/
WASTE – www.waste.nl

WEBSITES

www.iwmsa.co.za/
www.recoup.org - plastics recycling
www.botany.uwc.ac.za/Envfacts/facts/waste.htm
UN HABITAT – www.unhabitat.org
ZERO WASTE ALLIANCE - www.zwia.org

DOCUMENTS

Practical Action (ITDG) Technical Briefs: www.practicalaction.org/?id=technical_briefs
Recycling of organic waste
Recycling of plastics (tells you how to test for different forms of plastic waste and how to go about recycling them)
Recycling of rubber
Down to Earth – Solid waste disposal or low-income countries by Mansoor Ali, Andrew Cotton, and Ken Westlake, 124pp. WEDC, 1999 (Available from www.wedc.ac.uk/)
Process of Change: Field Notes Capacity Building in primary collection of solid waste by Mansoor Ali and Andrew Cotton, 54pp. WEDC, 2000 (Available from www.wedc.ac.uk/)
Sustainable Composting by Mansoor Ali and Jonathon Rouse, 134pp. WEDC, 2005 (Available from www.wedc.ac.uk/) - This book provides guidelines helping for planning and managing compost projects to create jobs in cities