

FOOTSTEPS

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WASTE



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FOOTSTEPS

WASTE

My eyes stung, my throat was aching and I was struggling to breathe.

Someone was burning an enormous pile of rubbish, dumped by the river behind our house in the Democratic Republic of Congo. The smoke was thick and foul-smelling, and lasted for several days. It was not a pleasant experience! But it is one that so many people face around the world as part of everyday life.

In this edition, we look at the subject of waste – something that we all produce. But when we throw things away, how much thought do we give to where 'away' is? Is our waste being disposed of in a responsible way that protects rather than harms the environment? Are we and our governments doing all we can to recycle? A well-known quote in the recycling community is, 'Waste is just a resource in the wrong place'. But how can we stop producing so much waste in the first place?

In this edition we tackle some of these tough questions. We look at how to set up a simple community waste collection service (page 14) and feature an exciting project in Pakistan that collects and recycles 90 per cent of household waste (page 8). We include advice on advocating with decision-makers about waste (pages 12–13) and hear from two inspiring 'waste entrepreneurs' from Haiti (page 20). And we share practical tips on organising a litter clean-up event (page 17) and making charcoal briquettes from woody waste (pages 9–11).

I am both excited and sad to say that this is my last edition of *Footsteps* for a while. I am expecting a baby and will be going on maternity leave soon. It has been a real honour editing *Footsteps* for the past three years, and I have loved hearing from many of you by post and email. I will be passing *Footsteps* over to Jude Collins, who is currently a trusted member of the *Footsteps* Editorial Committee and knows the magazine well. In fact, Jude has contributed an excellent article on composting to this edition (page 15). I know you will enjoy hearing more from her.

With every blessing,



Zoe

Zoe Murton – Editor

📷 Cover shows a community waste worker in a new project in Pakistan run by Tearfund's partner Pak Mission Society (PMS). Photo: Hazel Thompson/Tearfund



by Zoë Lenkiewicz

WHY TALK ABOUT WASTE?

We all produce solid waste in our homes, businesses, markets, schools and health centres. Solid waste is anything that we no longer have a use for, and so discard.

A wide range of materials are found in solid waste, from plastic bags and vegetable peelings to old shoes and used batteries. Some materials such as vegetable peelings will rot down, but most other types of waste do not. Instead, they accumulate in the environment, polluting land, rivers and the oceans.

Around one in three people in the world do not have their waste managed properly. When municipal government does not provide this service, people have to dispose of their waste themselves. This often means they:

- drop it on the ground
- throw it in a river, drain or dry river bed
- burn it in the yard
- take it to a local informal dump site.

When waste is disposed of in these ways, it causes harm to people, livestock and wildlife. Worryingly, we are producing

more and more waste, and by not managing it properly we are causing problems for future generations.

Fortunately, waste management can be very cost-effective and can even generate a profit. Introducing a simple system can provide jobs and improve public health, as well as raising people's perceptions of a place.

PROBLEMS

When different types of waste materials are mixed together they pollute farmland and water courses, attract vermin, increase the spread of disease and produce harmful gases. Waste thrown in rivers, canals and gullies blocks drainage and makes flooding worse. This can lead to the spread of water-borne and mosquito-borne diseases, such as dysentery, cholera and malaria.

Children who grow up without a waste management service suffer the most. They are twice as likely as other children to develop diarrhoea and six times more likely to develop breathing problems, and their physical and mental development is often stunted.

Decisions that we make about our waste at home can have global consequences. Carbon and methane gases given off from waste are contributing to climate change. Dead seabirds and mammals washing ashore with stomachs full of plastic are a sign of what can happen when we fail to manage our waste properly.

OPPORTUNITIES

The good news is that, if waste is managed properly, it is worth money. By keeping the different waste materials separate, they can be recycled into new products and sold to generate an income.

For example, some plastics can be turned into furniture or construction materials. Woody waste can be turned into a low-smoke cooking fuel. Food waste can be turned into compost to improve soil quality.

With a simple waste management service, the neighbourhood becomes cleaner, children's health improves, fewer livestock and wild animals get sick, and a range of jobs can be created. Once people understand these benefits, most will pay a small amount of money towards waste management in their community.

The important thing to remember is to keep the materials separate. This is much easier if you can collect waste close to where it is generated – for example, directly from homes or offices. When the materials are all mixed together at the dump site they are very difficult (and quite unpleasant) to work with. But when they are clean and separated, the materials are a good resource for making new products.

As well as making the community cleaner and safer, community waste management brings local economic benefits:

📷 The fumes released from burning plastic waste are very harmful for people's health. Photo: Hazel Thompson/Tearfund



- Anyone, including local youth, women and marginalised groups can organise waste collection and reprocessing activities, creating jobs and generating income.
- New products made locally from waste can be used instead of expensive alternatives.

- A stronger, healthier community is better able to continue with their daily work.

People do not need large machinery or expensive vehicles to manage their waste. There are plenty of no-cost or low-cost ways that communities can recover the value from waste materials.

CHANGING HEARTS AND MINDS

It is quite common for people to look down on those who work with waste. But in fact, these people are environmental heroes. They are providing a very valuable service, preventing pollution, protecting public health and generating their own income.

To work in waste management and recycling is something to be proud of. We encourage everyone to talk to their community about the benefits of working together to support a local waste and recycling system.

Zoë Lenkiewicz is Head of Communications at WasteAid, a charity helping communities to develop low-cost solutions to their waste problems.

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WHAT CAN I DO ABOUT WASTE?

We can all make an impact on the amount of waste in our community. Remember: Reduce, Re-use, Recycle.

- We can start by **reducing** how much we consume. We can refuse unnecessary plastic bags and single-use disposable products. Reducing the amount of waste that needs managing is the cheapest way to address the problem.
- **Re-using** items also reduces waste. For example, a plastic bag can be used many times, extending its useful life from minutes to years.
- Waste materials that are unavoidable can often be **recycled** into new products.
- **DO NOT BURN PLASTICS.** When plastic is burned it releases harmful gases that can make people very ill.
- Speak to your local government and ask what their plans are for waste management in your community.
- Find out what your national government is doing to improve waste management. See pages 12–13 for tips on advocating about waste.



CASE STUDY: CHANGING LIVES THROUGH WASTE IN INDONESIA

A church in Ngelo, Indonesia, has decided to do something about the waste in its community – with amazing results.

In 2013, local NGO Yayasan Sion introduced the Ngelo congregation to the church and community mobilisation process (CCM). This approach encourages churches to work together with their community to solve the problems they face. They decided that their biggest problem was waste, so the church decided to start a rubbish bank.

They appointed administrators and decided on some rules. Members of the scheme could bring their non-organic waste to the rubbish bank regularly. For the elderly or those living far away, volunteers would collect their waste from their homes. The team decided to

pay people for their waste, with different prices for different materials – for example, 2,000 rupiah (0.14 USD) per kilo for iron.

After collecting the waste, the team separates it according to how it can be used. Some is sold on to waste collectors. Other materials are made into handicrafts such as purses, bags and lamps, which can be sold in the market. The team then takes the remaining waste to the final rubbish dump, 15km away.

From the beginning, the community felt very positive about the project, because it enabled them to use their waste as a source of income. Poor families are now able to pay the school fees for their children. For the church, the garbage bank is a starting point for building

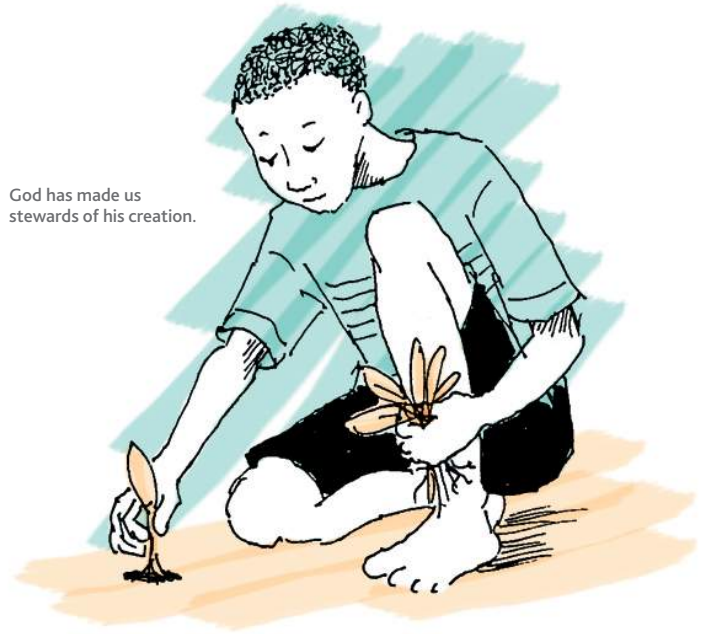


Photo: Mesakh Riwanto/Yayasan Sion Salatiga

relationships with the community. More than 50 people from outside the church have already joined the scheme.

Web: www.yasiga.org

God has made us stewards of his creation.



by Rev Canon Dr Claire Nye Hunter

BIBLE STUDY

TAKING CARE OF GOD'S EARTH

'In the beginning God created the heavens and the earth.' (Genesis 1:1)

'The earth is the Lord's, and everything in it, the world, and all who live in it.' (Psalm 24:1)

The earth does not belong to us – it belongs to God! It is a gift from God, a home that we share with the rest of creation. But with this gift comes responsibility.

RULERS OR STEWARDS?

Read Genesis 1:26–31 and Genesis 2:1–15

In Genesis 1, God instructed humans to 'rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals, and over all the creatures that move along the ground', and to 'fill the earth and subdue it' (Genesis 1:26, 28). This passage has sometimes been used to justify abuse of the earth.

Some people believe that the instruction to 'rule' over the earth means we have absolute authority over creation. In this view, nature is a resource for humans to benefit from economically, whatever the environmental impacts. This theology has allowed Christians to chop down tropical forests to grow soya for cattle feed and to pollute rivers with waste products from mines as we dig for precious metals.

To challenge these ideas, Christians have turned to the second creation account in Genesis 2. In verse 15, humans

were placed in the Garden of Eden and instructed to 'work it and take care of it'. In other words, God has given us the responsibility to act as stewards of his creation – to care for, manage, oversee and protect all that God owns. What an honour and privilege!

This does not give us free licence to exploit and abuse God's earth. As stewards, we need to act in the owner's best interests, treating his 'property' with respect. We must not use it in a way that causes harm to our neighbours. One day we will have to give an account to God of how we have treated his earth.

When we forget our responsibility to be wise stewards, creation groans. The earth can no longer cope with the demands humans place on our natural resources. Our waste and pollution are poisoning the air, soil and water. If we continue to exploit and abuse God's earth, what will be left for future generations to inherit?

BEWARE THE 'WHY BOTHER?' DISEASE

When faced with major global issues (resulting from human activities) – such as climate change and polluted land and sea – it is easy to become overwhelmed.

We might throw our hands in the air and say: 'Well, it is not my fault. There is nothing I can do to prevent it. Leave it to the politicians.' We might think: 'Who cares if I use plastic bags, throw litter

out of the car window etc? I am only one person – what difference will it make?'

Beware of the highly contagious 'Why bother?' disease! This is a moral and spiritual issue. What I do in my daily life does matter. The immediate consequences of my actions might not be felt by me, but they will most certainly affect someone else.

God sees and honours the efforts we make, even if they seem small to us. And together, we can make a difference!

DISCUSSION QUESTIONS

- What positive, practical steps can you as an individual take to care for God's precious creation – particularly regarding waste?
- What can your church community do?
- Is there anything you need to stop doing?

Rev Canon Dr Claire Nye Hunter is an Anglican priest in Grahamstown, South Africa.

Adapted from Seasons of Creation 6, a resource by Green Anglicans. See www.greenanglicans.org/resources/liturgical

THE PROBLEM WITH PLASTIC

Plastic is an amazing material. It is cheap, hygienic, long-lasting and convenient. It helps to shape modern life as we know it. For example, it has transformed health care, giving us everything from syringes to hearing aids.

However, plastic has also become one of the biggest environmental challenges we face today. Plastic packaging makes up nearly half of all the waste produced around the world. Much of this is single-use packaging, such as plastic bags and Styrofoam containers. It is designed to be used only once and then thrown away.

PLASTIC WASTE

Plastic waste does not just spoil the beauty of our surroundings. When not disposed of properly, plastic clogs drains and rivers, bringing flooding and disease. It is often eaten by animals, causing ill health or death. If burnt, plastic releases poisonous chemicals into the air and soil.

Much of our plastic waste is washed into the ocean, choking or poisoning sea creatures. According to one estimate, by 2050 there will be more plastic in the oceans than there are fish (by weight).

Unlike natural materials, plastic does not decompose. After many years it breaks down into tiny microplastics – small

fragments of plastic less than 5mm in size. When sea creatures and other animals eat these, the microplastics can enter the human food chain. Although we do not have much evidence yet, this may harm people's health.

WHAT CAN BE DONE?

While recycling is a step in the right direction, it will not completely solve the problem of plastic. When plastic is recycled, its quality decreases. It can be recycled only a few times before it can no longer be used. It is therefore best to use as little plastic as possible, and to reuse the plastic products we already have.

So far, more than 60 countries have introduced **regulations** against single-use plastics. This can include a **ban** or a **levy** (additional charge or tax) on single-use plastics. The suppliers, retailers and/or customers may be charged for the products.

In half of the countries that have introduced regulations, there is not yet enough evidence to be sure of the impact. In 20 per cent of the countries, the policies have had little or no effect. But 30 per cent of the countries have seen dramatic drops in plastic pollution and the use of plastic bags.

In the countries where bans and levies have not had much impact, the two main problems have been:

- lack of proper enforcement
- a lack of suitable alternatives.

This has sometimes led to people smuggling plastic bags into the country.

The UN Environment Programme gives the following advice to policymakers wanting to reduce the use of single-use plastic. Could you use this to help advocate with your government about taking action on plastic?

- **Assess the baseline conditions**, eg the most common single-use plastics in your country.
- **Evaluate possible solutions.**
- **Arrange discussions with the groups who would be affected by a new policy on plastics.**
- **Raise awareness of the new policy.**
- **Help people access cheap, eco-friendly alternatives.**
- **Provide incentives to those who may resist the new policy.**
- **Use money raised from any levy wisely**, eg to improve recycling facilities.
- **Enforce the policy well.**
- **Monitor and adjust the policy if needed.**

📷 Plastic waste can cause health problems for animals, such as this buffalo.
Photo: Liaqat Gill/Pak Mission Society



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For more information see the UN Environment Programme's booklet Single-use plastics: a roadmap for sustainability. Available online at www.unenvironment.org/resources/report/single-use-plastics-roadmap-sustainability

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RWANDA GOES PLASTIC BAG FREE

by Emmanuel Murangira

Rwanda outlawed the use of non-biodegradable plastic bags in 2008. At the time, many people asked: 'Is this really necessary? Surely Rwanda has bigger and more important things to worry about?'

A few years before that, though, farmers were losing their livestock to plastic bags at an alarming rate. Rivers, streams and drains were blocked by plastic bags. Even farmers' fields were choked by these bags.

I personally came face to face with the plastic bag menace in 2006. At that time, my mother owned six dairy cows. One of the cows began to lose weight and became sickly. My mother called in a vet, but the cow got worse. Within four weeks, four cows had died. When the vet performed an autopsy, it turned out they had all eaten plastic bags.

Sadly, this was not an isolated incident. Plastic bags were affecting the local economy across Rwanda. People called urgently on the government to do something. There were discussions at all levels, from

community meetings to parliamentary debates. Eventually a law was passed banning plastic bags.

But first the country desperately needed to rid itself of the bags that were already littering it. Special clean-up days were organised, and the results were shocking. There were mountains of plastic bags in virtually every village. Burning them would have caused huge amounts of air pollution, but there was no way to dispose of them. This needed a solution at government level.

The government invested in a plastic recycling plant through incentives to the private sector. The mountains of plastic bags began to disappear from villages, transported to the new plant. Soon, other types of plastic waste followed.



📍 The route from Kigali to Eastern Province, Rwanda. Kigali is now considered by many to be the cleanest city in Africa. Photo: Eleanor Bentall/Tearfund

Today, the country is virtually plastic bag free. After the clean-up campaign, the government began to enforce the ban throughout Rwanda, including at the borders. Plastic bags were confiscated, and users and sellers were given heavy fines. Businesses were encouraged and supported to find alternatives.

The ban went far beyond just outlawing plastic bags: it created a sense of environmental responsibility among Rwandans.

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CASE STUDY: SPEAKING OUT AGAINST PLASTICS

In March 2015, the government of Malawi banned the production, sale and use of single-use plastic bags. However, putting the ban into practice was not easy. The plastic bag manufacturers appealed and got a court injunction to halt the ban. While waiting for their appeal to be heard, they continued to produce and sell the bags. This continued for more than three years.

In 2018 Tearfund in Malawi and several partner organisations formed a new environmental network. The Malawi Creation Care Network put pressure on the high court to make a judgement

against the plastic manufacturers' appeal. They mobilised leaders from churches and NGOs, and teamed up with other networks of local activists. This led to a city-wide march in Blantyre on 5 June 2018 – World Environment Day. A wide variety of people joined the march: NGOs, politicians, church leaders, university students, school wildlife clubs and the general public. They planned an even bigger march to the high court ten days later.

Thankfully, before the second march could take place, the court ruled to uphold the ban. Although the plastic

manufacturers have since obtained another injunction against the ban, the matter has now been taken up by parliament, with the speaker of parliament leading the cause. The Creation Care Network and other activists are continuing to advocate strongly for the ban to be upheld.

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By Hannington Muyenje, a Senior Associate in Tearfund's Global Advocacy team.

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A GREEN REVOLUTION IN PAKISTAN

Rashid Hameed is 51 years old and lives in one of the 34 informal settlements in Islamabad, Pakistan. His community has no waste collection service, and rubbish is openly dumped and burned.*

Rashid explains: 'Our slum is located on the bank of a stream, which is full of solid waste and is a breeding place for mosquitoes, flies and rats. These cause diseases in our children and old people, and we spend a great deal of money on their treatment. People living outside the slum discriminate against us because of our unclean environment.'

Rashid's situation might seem bleak, but a neighbouring area has been transformed through a community recycling and waste management centre.

RESOURCE RECOVERY CENTRES

In this nearby community, the Dr Akhtar Hameed Khan Memorial Trust (AHKMT) introduced a transformative approach to managing waste in 2014.

AHKMT set up an Integrated Resource Recovery Centre (IRRC), which allows 90 per cent of a community's waste to be recycled. It provides a 'triple win' – it creates jobs, improves residents' health

and protects the environment from open burning and dumping.

In this scheme, paid workers collect local households' waste six days a week. They take it to the centre, where staff sort the waste. They keep the organic waste and use it to make high-quality organic compost, which is sold on to plant nurseries. The plastics, metals and other dry recyclables are sold to a local buyer. Only around 10 per cent of the waste cannot be recycled or composted, and this is disposed of at a municipal landfill.

The centre pays for its activities from the sale of recyclable materials and compost, and by charging a small amount to each household for waste collection (approximately 200 PKR per month, or 2 USD). AHKMT provided the start-up costs for the centre, but by its third year it was able to pay for its own running costs – and make a profit. The IRRC currently serves 1,670 households and processes 1,000 tonnes of waste each year.

DIGNIFIED EMPLOYMENT

When starting a project such as the IRRC, it is important to make sure no harm is done to those already working informally as waste pickers. Instead, the centre makes sure it employs existing local waste pickers

among its staff, providing them with safer and better-paid employment. The centre calls their waste workers 'E-guards' (Environment guards) and supplies them with a protective uniform, giving them dignity and respect in the community.

Faraz Karim* is 45 years old and has been working at the IRRC for the past three years. His job is to separate organic, recyclable and rejected waste. He earns 14,000 rupees per month (approximately 113 USD) from the IRRC, and also gets health benefits through Social Security.

Before, he worked as a house servant and earned much less. He says: 'After joining the IRRC, my life has changed completely. My financial situation has improved, and I have learnt health and hygiene practices that have improved my health and the health of my family. I have gained knowledge of solid waste management, composting and recycling, which is very useful for me and my community. I am happy and satisfied as I am playing a productive role in society.'

SCALING UP

The IRRC model was first used in Bangladesh in 2007 by the NGO Waste Concern. Since then, it has been introduced successfully in a number of East Asian countries. IRRCs are an effective solution in circumstances where the government does not have the capacity to provide waste disposal services.

Tearfund's partner Pak Mission Society (PMS) is adapting the IRRC model to serve poor communities. PMS started one IRRC in Pakistan in 2018 and plans to introduce the model much more widely during 2019.

**Names have been changed to protect identities.*

📷 'Environment guards' collect household waste and transport it to the IRRC in Islamabad.
Photo: Hamid Ullah/AHKMT



To find out more about Tearfund's work on IRRCs in Pakistan, email Richard Gower on richard.gower@tearfund.org

HOW TO TURN WOODY WASTE INTO CHARCOAL BRIQUETTES

Woody waste materials, such as dry leaves and coconut shells, are all around us. In a few easy steps, you can transform these into charcoal briquettes – a great source of fuel for cooking.

Briquettes are cheaper than traditional charcoal, and burn hotter and for longer. When used as a fuel for cooking, they are less smoky than wood, reducing the problem of indoor pollution. They do not require trees to be cut down, helping to protect the environment. The equipment is cheap and the process is easy.

Summary: Carbonise the material in a barrel with limited air (like making charcoal), then grind it into a powder, and mix with binder. Compress the mixture in a briquette mould and then dry the briquettes in the sun.

Waste materials you can use: Dried leaves, twigs, straw, coconut shells, baobab shells, maize cobs, groundnut (peanut) shells and sawdust. Do not use anything that is too wet or anything other than dry leaves or woody waste. Make sure there are **absolutely no plastics** in the waste.

Try out different mixtures of materials that you can find locally. One example of a mixture that works is 50kg of groundnut or coconut shells plus 25kg mango leaves. You will then need 1kg cassava flour (or another similar starch) and 2 litres of water to create a binder for the briquettes. If you are using leaves, you may want to try adding some woodier material (such as coconut shells). It is better to have a consistent mix of materials so the briquettes burn at a steady rate.

► **PLEASE NOTE:** In some countries, making charcoal is illegal or requires a special permit. You may wish to check that making charcoal briquettes in this way is allowed in your area.

SAFETY FIRST

- You will be working with fire and combustion, so make sure you have water nearby to put out any flames.
- You will be using heat and fire. Make sure you have fireproof gloves (fabric, NOT rubber) and heatproof boots (NOT rubber), and cover your arms and legs with overalls or heavy trousers.
- Be aware that the process produces a lot of smoke and needs to be done in a well ventilated outside space. Never stand over the smoking barrel, and make sure the smoke will not affect anyone nearby.
- Stand back when opening the barrel after carbonising, as flames may leap out. Have somebody ready with water to pour on the flames and sprinkle on the material so it does not burn in the open air.

If you do not have a briquette press and cannot make one, you can make briquettes by hand, using only sawdust and binder. You do not need to carbonise



📷 A woman in the Gambia prepares charcoal briquettes for market.
Photo: Mike Webster/WasteAid

the material in this case. Simply squeeze it into balls and leave them to dry for 2 to 8 days, depending on the climate. Sawdust briquettes cook fast like firewood; charcoal briquettes cook more slowly.

YOU WILL NEED:

- Overalls, gloves, masks, covered shoes or boots
- Dry woody material (see above)
- 1 metal barrel – an oil drum with several air holes in the bottom, handles on two sides and a large hole in the top with a lid or chimney
- Stick or rod to turn the material
- Metal wheelbarrow or heatproof container to hold the carbonised material after burning
- Water to sprinkle on the carbonised material
- Mortar and pestle or another way to crush the charcoal
- Gum or starch from cassava or similar as a binder (you can even use clay)
- Cooking stove, fuel and a container to warm and mix your binder with water
- A place to mix your material with the binder (a table or a plastic sheet on the floor)
- Briquette press (see over)

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HOW TO TURN WOODY WASTE INTO CHARCOAL BRIQUETTES

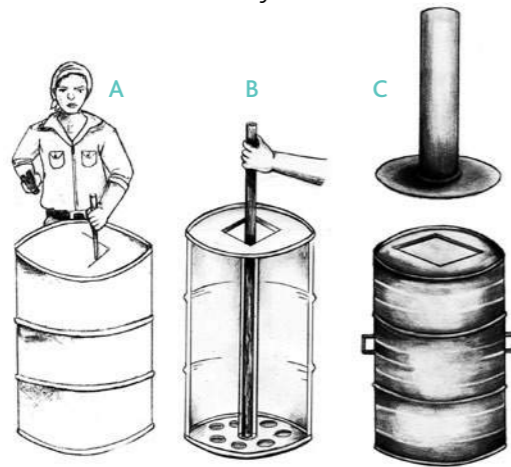
PREPARING YOUR EQUIPMENT

HOW TO PREPARE THE CARBONISING BARREL

Take a standard metal oil barrel and cut a large hole in the top (A). The hole needs to be large enough to allow you to comfortably fill the barrel with woody waste material.

Then cut some holes in the bottom of the barrel, about 6cm across (B). These holes will be used to poke material through and start the fire. You will also need a stick long enough to reach to the bottom of the barrel comfortably.

It is good practice to attach some handles to the sides of the barrel, and make a chimney that fits over the top (C). If you cannot make a chimney, use a flat metal lid that will cover the hole.



HOW TO MAKE A BRIQUETTE PRESS

There are lots of ways you can make a briquette press. This example produces square briquettes.

If you do not have welding equipment, you could ask a garage or workshop in your community to do this for you.

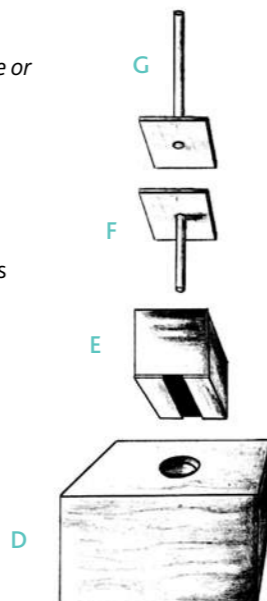
Drill a hole in the centre of a wooden block, large enough for a piece of metal bar (such as rebar) to fit in it (D).

Make the briquette mould by welding four plates together to make a square tube, and then welding two narrow plates onto an open end, with a channel down the centre wide enough for the rebar to fit through (E).

Weld one piece of rebar onto a plate to make the base (F).

Weld another piece of rebar onto a plate to make the plunger (G).

See step 7 (next page) for how to use a press.



MAKING YOUR BRIQUETTES

1 SORT

Choose material that is brown and dry. Remove all unwanted materials, especially plastics.

2 LIGHT

Poke dry leaves through the holes in the base, leaving some sticking out (this is easiest with the barrel lying on its side). Then place the barrel on three stones and fill it with the material. Use the stick to make sure the material is distributed evenly throughout the barrel. Set light to the leaves sticking out underneath, so that the fire burns through the material.

3 CARBONISE

The burning material will produce a lot of smoke. Using the stick, turn the material to make sure it is all carbonised. When the smoke reduces and flames come, wait a few minutes and then put the lid/chimney on the barrel. Remove the stones underneath and seal any air gaps around the bottom of the drum and the lid with sand or dirt (not necessary if using a chimney).

Leave for 5 to 10 minutes, then check. The material inside should be like small pieces of charcoal (char). If it is not yet carbonised, then leave it for longer. Do not leave it for too long or it will turn to ash. Different materials take different amounts of time – for example, coconut shells take 5 to 10 minutes to carbonise. You will need to practise a few times to get it right!

Be careful when you open the lid. Occasionally there will be flames leaping out, so you should keep your head and arms clear.



4 TIP OUT

With a person on each side, pick up the barrel (wearing gloves) and tip the charred contents into a metal wheelbarrow or heatproof container. Sprinkle it with water to stop it burning in the open air.



5 COOL AND CRUSH

When the carbonised material has cooled, crush it to powder. You can use a mortar and pestle, or crush it in your hands, or put it inside a sack and hit it with a stick.

6 MAKE YOUR BINDER

To bind the carbonised powder into a briquette, you will need to mix it with a binding agent. The best binder is starch. Simply boil a plant or material containing starch in a small amount of water until a thick, sticky paste forms, like porridge. Different types of starch include:

- cassava starch
- corn or maize starch or maize flour
- wheat starch or wheat flour, potato starch or rice flour

Other alternatives include gum Arabic or acacia gum. You can even use newspaper or mud from termite mounds mixed with water.

Mix the binder with the carbonised powder. Use enough binder to hold the mixture together, but not so much that your briquettes fall apart.

7 MOULD

Take your briquette press (see page 10). Place the metal base (F) into the mould (E) and rest the stick of the base inside the hole in the wooden block (D).

Push the briquette material inside the mould with your fingers.

Put the plunger (G) on top with the stick pointing up and hit with a hammer five times, taking care of your fingers. Remove the plunger. You will be able to see the briquette material compressed in the bottom of the mould.

Lift the mould out of the wooden block and rest the end of the rebar on top of the block. Push the mould down and the briquette will remain on top of the base. Remove the briquette and put in a dry place.

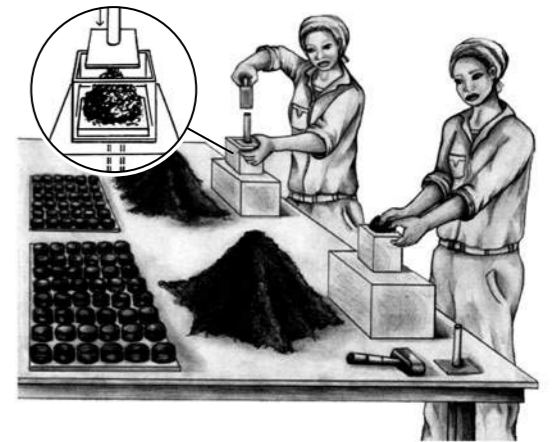
Depending on the climate, charcoal briquettes take one and a half to seven days to dry. Turn them so that they dry evenly.

8 MARKET

You can sell the charcoal briquettes in daily portions or in bigger sacks. You could give some away for free to potential buyers so people understand their benefits.

Adapted from Making waste work: a toolkit, by WasteAid. See Resources page for details.

Visit <https://www.youtube.com/watch?v=nLd-IJW1nXc> to watch a video of how to make charcoal briquettes.





by Julia Kendal

📷 Waste pickers often work in dangerous, unhealthy conditions. Photo: Eleanor Bentall/Tearfund

CLEANING UP THE SYSTEM

HOW TO ADVOCATE ON WASTE

The waste that forms dumpsites and blocks rivers is part of a bigger system. This system makes, sells, uses and throws away two billion tonnes of products and packaging every year.

But it does not have to be this way. Through advocacy we can create a better system – one that works for people living in poverty and cleans up the natural world we live in.

The waste system involves many different groups, including: consumers; waste workers; national and local governments; companies that make and sell the items that are thrown away; families living by dumpsites; and civil society groups already working on the waste problem.

This creates many opportunities for advocacy. There are both potential

decision-makers to influence and allies to work with. So where should you start?

WHAT IS THE ISSUE?

Understanding the problem will help you to identify what needs to change. You might want to research the following points:

- the main kinds of waste in your area
- where the waste is coming from
- who is already involved in collecting the waste
- who is responsible for local waste management and collection, and whether they are delivering what they promise
- how waste is affecting the local community.

Collecting local evidence can be powerful for showing decision-makers and local people why change is needed.

WHAT NEEDS TO CHANGE?

For advocacy to be effective, you need to be clear about what you want to see change. It could be:

- better management of waste, eg for the local government to introduce waste collection, set targets for waste reduction or recycling, or deliver on existing promises
- informal recyclers to be included in public waste management
- less waste to be created. For example:
 - new government regulations making manufacturers responsible for collecting and taking apart their product at the end of its life

KEY INTERNATIONAL POLICIES ON WASTE

Sustainable Development Goals: Most countries have signed up to the 17 Sustainable Development Goals (SDGs). Tackling waste relates to several of the SDGs, including those around health (SDG 3), decent work (SDG 8) and responsible consumption and production (SDG 12).

Paris Agreement on Climate Change: Almost all countries have signed up to the Paris Agreement, committing to limit global warming to well below 2°C (35.6°F). Reducing waste lowers greenhouse gas emissions from dumpsites. Reusing or recycling materials saves the energy that would be needed to make new ones. The

government in Kenya framed its waste management plans around the Paris Agreement, giving them access to funding. Other governments could do the same.

Basel Convention: Most countries have committed to this convention, which aims to prevent the moving of hazardous waste from developed to less developed countries.

- companies changing the way they design products or packaging so they last longer and are easier to repair.

HOW CAN YOU SHOW YOU ARE WORTH LISTENING TO?

Decision-makers are more likely to listen to you if they see that you are a trustworthy voice on this issue. Below are a few ways you can build your reputation for advocacy on waste.

- Take action on waste yourself. For example, you could gather local people to collect waste from a beach or river (see page 17).
- Get representatives onto local councils – for example, in Brazil, Tearfund is helping people to join local Environment Councils. This shows their commitment to the issue, as well as giving them access to decision-makers.
- Use international policies as a tool for national advocacy (see box on page 12).

Local-level advocacy can be a first step towards developing your skills and reputation for national or international advocacy.

HOW WILL THE CHANGE HAPPEN?

To answer this, you can consider:

- the people who have the power to bring about change
- the barriers to change happening. For example, if governments offer free landfill collection (particularly to businesses), this encourages people to throw away items instead of recycling them. A landfill tax would discourage this.

- approaches that are already working well, which could be copied or scaled up.

Choose advocacy approaches that will help to create the change you want. Options include:

- **direct contact with decision-makers**, eg starting conversations with local or national government officials, business leaders and others who have influence over the change you want to see
- **mobilising the public** (sometimes called campaigning). This might include letter-writing, petitions and internet campaigns, street marches and demonstrations.

- **working with the media**, eg television, radio, newspaper or social media, to raise awareness of the issues

- **working with others**. Coalitions or networks can share resources, reduce potential risks and increase your influence with decision-makers.

Using several of these approaches can be effective, eg meeting directly with decision-makers to present them with a petition showing public support for the change you are asking for.

Involving the local community is important and will make your strategy more effective.

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Julia Kendal is a Policy Associate with Tearfund's Global Advocacy team.

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CASE STUDY: WASTE SEPARATION IN BRAZIL

Much of Brazil's waste is sent to open dumpsites. As it has not been separated into different types of waste, it becomes hard to recycle. Tearfund partner Diaconia organised a campaign in north-east Brazil called Waste separation: I commit!

The campaign educated people about the need to separate their household waste into three groups: organic, recyclable and non-recyclable. This makes it easier for waste pickers to sell it on to recycling companies. Diaconia used radio, printed materials and a television interview to spread the message. They involved local authorities, including the mayor. They also formed partnerships with eight schools, which started separating their waste and educating pupils about better waste management. Local business

owners caught the vision, making arrangements to deliver their waste directly to the collectors.

At the same time, Diaconia is helping waste pickers to gain more dignity and security. These workers survive by searching rubbish dumps for anything of value, operating in unhealthy and dangerous conditions. Diaconia helped them to form associations and advocate together for their rights. They also trained them in how to earn more from recyclable materials. Diaconia provided machines such as a press and cardboard baler, which make the materials more valuable to buyers. In one area, Diaconia worked with the local government to supply waste pickers with trailers for collecting waste. Gradually, the waste



📷 Diaconia's awareness-raising campaign. Photo: Diaconia

pickers' incomes are increasing and they are able to spend less time at the dumps.

.....
Web: www.diaconia.org.br

by Zoë Lenkiewicz and Mike Webster

SETTING UP A COMMUNITY WASTE COLLECTION SERVICE

If your community does not have an official waste collection service, perhaps you could consider starting one!

Community waste collection usually involves householders and businesses putting waste out for collection, and paid workers collecting it and taking it to a community composting, recycling or disposal site. There might be door-to-door collections or communal containers placed near the road, marketplace or other public area. You will need a cart or motor vehicle to collect the waste in.

There must be strong cooperation from householders and businesses. You will need to research how much they are willing to pay for waste collection, and organise payment for the workers.

GAIN PERMISSION

Before you start, find out who is responsible for waste management in your local government and arrange a meeting. It is wise to have an agreement in place before you start work, preferably in writing. This is because waste materials might be the official property of the government and you may need permission to collect them. You may also need permits and an environmental impact assessment. Check with the local environmental protection or enforcement agencies.

ANALYSE THE WASTE

Before setting up your collection service, it is a good idea to collect a sample of the community's waste and analyse what it is made up of. You could take 50kg or 100kg and sort it into different materials, eg organic waste, paper, metals, plastics, glass and 'other'. Once you know what is in your community's waste, you can find

a solution for each material. For example, organic waste can be made into compost.

ENCOURAGE SEPARATION

Separated waste is much easier to work with. Ask people to separate their waste into different categories, such as organic, recyclable (eg plastic, glass, metal and paper) and non-recyclable (eg sanitary napkins, oily rags and some textiles).

COLLECT THE WASTE

Consider how often you will need to collect the waste. For example, organic waste needs to be collected at least once per week (more frequently in hot, humid climates). Containers for collecting waste should be easily accessible to the collection team. If waste containers are transported to the disposal site, provide replacements or return them quickly afterwards. Plan a short, simple route that ends as near as possible to the disposal site.

SAFETY FIRST

- Use suitable containers that do not leak, with lids and handles.
- Lift heavy items carefully and watch out for sharp objects.
- Waste collectors should wear strong, protective clothing: gloves; covered feet, arms and legs; and highly visible colours to avoid traffic injuries.
- Always wash thoroughly after working with waste.

SORT AND PROCESS

Once you have collected the waste, it can be sorted and processed. Organic waste can be made into compost or biogas, and recyclables can be sold on to buyers. Visit



There are many different ways to collect waste. Photo: Hazel Thompson/Tearfund

local scrap yards and industrial areas to investigate who buys these materials. You can also use the internet to research recycling businesses. Existing buyers are often interested in metals, paper and cardboard, and certain types of plastic.

The amount people will pay for your waste material depends on:

- how much you have
- how clean it is
- whether you can bring it to them or they have to collect it from you
- how you package it – if you bale it, or prepare it in the way the recyclers want, they will usually pay more.

After you have recycled everything possible, there will nearly always be some waste left. This needs to be buried safely, preferably in a properly managed landfill. (If there is no sanitary landfill nearby, see WasteAid's toolkit *Making waste work* for information on constructing a simple waste disposal site.)

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Adapted from WasteAid's toolkit Making waste work. See Resources page for details.

by Jude Collins

FIVE STEPS TO GREAT COMPOST



Farmers and gardeners use compost to improve their soils and increase plant growth. Compost is made from plant and food waste, which is broken down by worms and other organisms. It needs enough oxygen (from the air) and the right amount of moisture. Below is one method for making compost.

Jude Collins is a Project Information Officer at Tearfund. Email: jude.collins@tearfund.org

1 MAKE A HEAP

A compost heap does not have to be contained in anything, but it is easier to manage if it is. You could use a pit, a slatted box or chicken wire. Aim for a minimum of 1 metre in each direction. It is useful to have two or three heaps so that material can be added to one while the other is breaking down. In dry areas, make compost in a pit. In wetter areas, make your heap above the ground. In cooler climates, make the compost in a sunny position. In hot, dry climates, place it out of direct sunlight. Make heaps on well-drained soil or grass, avoiding concrete.

2 LAYER IT UP

Use a good mix of so-called 'brown' and 'green' materials (see below). If you live in a wet area, make a base layer of stones and twigs to allow drainage. Start with a layer of brown followed by a layer of green materials. If available, you can add a thin layer of manure and a thin layer of top soil. Then repeat these layers. Add water if the materials are dry. **Do not use:** non-organic waste, meat, bones, oils, dairy products or faeces from meat-eating animals (eg dogs and cats) or humans as these contain harmful bacteria. Avoid adding recurring weeds or diseased plants.

3 LET IT HEAT

Cover the compost with a tarpaulin, mud or wide leaves (eg banana). This helps to keep moisture in when it is hot and prevents the compost becoming waterlogged when it rains. Do not let it dry out – add water if necessary. The heap should become warm in the middle.

4 TURN REGULARLY

Keep the compost full of oxygen by turning it every few weeks. There is no need to keep layers separate.

5 DIG IT IN

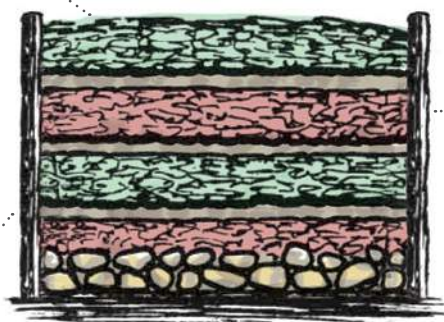
When the mixture turns dark brown/black and crumbly with an earthy smell, the process is complete. This may take two months to a year. Dig it into your soil and enjoy the results! You could try selling your compost to farmers or agricultural stores (sieve it so it is fine enough).

'GREEN' MATERIALS

Rich in nitrogen

- vegetable and fruit waste
- tea leaves and coffee grounds
- grass and flowers
- urine (animal or human)
- crushed egg shells

Thin layer of soil and manure (optional)



'BROWN' MATERIALS

Rich in carbon

- hay and straw
- small twigs
- paper and cardboard, torn into strips
- dry leaves
- wood ash
- sawdust

SOLVING PROBLEMS

If the compost is smelly and wet, there is too much nitrogen and/or water.

▶ Add more brown materials. Cover the compost to prevent it getting too wet.

If the process is very slow, there is not enough nitrogen, oxygen or water.

▶ Add more green materials. Chop the brown materials into smaller pieces. Turn the compost to add oxygen. Add water if necessary.

If your compost is attracting insects and rodents...

▶ Cover newly added kitchen waste with brown materials. Use chicken wire around the base to keep rodents out.



WHERE DO WE PUT OUR WASTE?

God has created a beautiful world for us to live in. He has given us the job of taking care of it, and that includes being careful of what we do with our waste. If people throw litter, it does not just make a place look untidy, it can harm animals and clog drains and rivers, causing floods.

PLASTIC BOTTLE SKITTLES

Rather than just throwing things away, we can reuse and recycle the ones we already have. Here is an easy idea for making a game with old plastic drink bottles.

- Take six empty plastic bottles. You can decorate your bottles by painting them or gluing strips of old material around them.
- Put a handful of sawdust, earth or pebbles in each bottle.
- Set them up in the pattern below. Stand at a short distance. Use a ball or stone to see how many you can knock over. Put the fallen bottles upright again and let your friends have a go!



Answers: Banana skin: 2 years, paper bag: 1 month, rolled-up newspaper: 10 years, plastic bag: 10–20 years (but it breaks down into smaller microplastics), plastic bottle: 450 years, glass bottle: never.

HOW LONG TILL IT IS GONE?

When rubbish is dropped on the ground, it can stay there for a long time. Draw a line between each object below and the length of time it takes to break down and disappear (answers are at the bottom of the page).

		1 month
Plastic bag	Glass bottle	2 years
		10 years
Plastic bottle		10–20 years
		450 years
Rolled-up newspaper		Never
	Paper bag	
Banana skin		



BIBLE VERSE MEMORY CHALLENGE

Can you learn this Bible verse by heart?

'The Lord God took the man and put him in the Garden of Eden to work it and take care of it.' (Genesis 2:15)

HOW TO ORGANISE A LITTER CLEAN-UP

Litter clean-up events are fun and easy to organise. They can transform people's attitudes to litter and inspire more permanent solutions. Clean-ups are a practical way to love your neighbour and your neighbourhood. Here are some tips...

BEFORE THE DATE

Choose a location. Ideas include a beach, riverbank or park.

Pick a date. Consider choosing an international celebration day, such as World Environment Day (5 June) or World Clean-up Day (a date in September each year).

Develop a core group. Recruit three or four motivated people to help you organise the event.

Get permission. Tell the local government about your litter clean-up. They might even agree to provide equipment such as litter sacks.

Plan a safe event. Visit the clean-up location and plan the event there.

- Identify the places where:
 - people will meet
 - the clean-up will start and end
 - the litter will be sorted
 - the litter will be deposited awaiting pick-up.
- Set the start and end times for the event.
- If you are cleaning up a beach, check the tides for that day.
- Think about possible problems. Consider what you can do either to prevent the problem, or to have a plan in case it happens. Think about any equipment required.
- Prepare guidelines on avoiding dangerous litter, such as asbestos, dead animals, corrosive materials (eg car batteries) and needles (which can transmit HIV). Check

local guidance on dealing with hazardous waste, if available.

Spread the word. Publicise the event with friends, family, colleagues and your community. Why not involve your local newspaper or radio station?

Connect with a litter monitoring group. This is optional, but your clean-up will be even more useful if you record the different types of litter you find. To reduce litter at its source, we need to know what it is and who is producing it. Then we can campaign for change. Find a national or international litter monitoring organisation and familiarise yourself with their recording requirements.

ON THE DAY

Bring any equipment you will need, eg gardening gloves for volunteers, litter bags and a first aid kit.

Welcome everybody, and explain the plans for the day.

Collect the litter!

Sort the litter. Then leave it at the pick-up point to await collection, or transport it to the final location you have agreed with the authorities.

Debrief. Congratulate everyone and take a group photo.

AFTER THE DATE

Share your results on social media, blogs etc. Report back to the local government and thank them for any help.

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Adapted from A Rocha International's guide, How to organize a litter clean-up, available in English, French, Portuguese and Spanish. Visit www.arocha.org/microplastics-toolbox and click on 'Lifestyle' to download a copy.



David Junior and his youth group organised a beach clean-up in Maputo, Mozambique. Photo: Anisio Macie/Anglican Youth

INSPIRING YOUNG PEOPLE

by David Junior

Several years ago I started to feel very frustrated about the litter on the beaches in my town of Maputo, Mozambique. My church youth group and I planned a clean-up event for the most popular beach. So far, we have completed four clean-ups.

It was easy to get other partners involved. We have been working with our local government, who fortunately embrace the cause of taking care of the environment. Environmentalists in our network gave us advice, and a TV channel shared our story.

Around 50 people attended one of our recent clean-ups. We can see positive changes in the participants' lives – in their daily routines and the way they behave towards the environment. Gradually, the wider community is starting to change, and we are seeing less littering on the beach. I think young people can inspire others to take action on the environment!

.....
.....
David Junior is the Youth Coordinator for the Green Anglicans in southern Africa.

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PREVIOUS FOOTSTEPS

- FOOTSTEPS 99: Climate change
- FOOTSTEPS 59: Pollution
- FOOTSTEPS 41: Looking after our land
- FOOTSTEPS 20: Our environment

Visit www.tearfund.org/footsteps to download a free copy, or contact us to order paper copies.



MAKING WASTE WORK: A TOOLKIT

by *Zoë Lenkiewicz and Mike Webster*

The charity WasteAid has produced a toolkit filled with practical information on managing community waste. It includes 12 guides on topics such as how to organise a community waste collection service, how to prepare plastics to sell to market and how to convert organic waste into biogas.

Visit www.wasteaid.org.uk to download a free copy in English.



A COMMUNITY GUIDE TO ENVIRONMENTAL HEALTH

by *Jeff Conant and Pam Fadem*

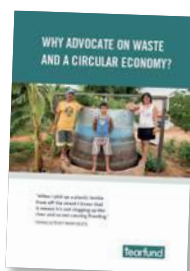
This practical, easy-to-use guide covers many aspects of maintaining a healthy environment. It includes sections on managing solid waste, creating sanitary landfills and dealing with health care waste. Available in English, Portuguese, Spanish, Chinese and Russian. Visit http://en.hesperian.org/hhg/A_Community_Guide_to_Environmental_Health to download a free copy or order a printed copy for 31.95 USD.



WHY ADVOCATE ON WASTE AND A CIRCULAR ECONOMY?

by *Julia Kendal*

An overview of why and how to advocate about waste. Visit www.tearfund.org/circular to download a free copy in English or Portuguese.



GARBOLOGY LITE

The Indian organisation WasteLess has put together a series of fun, interactive lessons for children aged 6–15 on waste. Lessons include 'Introduction to solid waste', 'Waste relay race' and 'Map my soft drink'. Visit www.wastelessindia.org and click on 'Garbology Lite' to download lesson plans in English or Tamil. Lessons are shared for free, one at a time, in return for feedback and social impact data.



AGRODOK 8: PREPARATION AND USE OF COMPOST

by *Madeleine Inckel, Peter de Smet, Tim Tersmette and Tom Veldkamp*

Agromisa Foundation has produced a detailed guide to composting. It sets out a number of different composting methods. Visit www.agromisa.org/product/preparation-use-compost to buy an electronic or printed copy for 5 or 10 USD in English, French or Portuguese.



USEFUL WEBSITES

Available in English unless otherwise stated.

answers.practicalaction.org
Practical Action provides technical information on development topics, including waste management.

www.arochoa.org
A Rocha is a Christian environmental organisation working in 20 countries. Website available in English, French, Portuguese and Spanish.

www.ecobricks.org
You can make ecobricks by stuffing plastic bottles with dry plastic waste. They can then be used in construction projects. Website available in English, German, Indonesian and Zulu. See also www.bottleschools.org

www.iswa.org
The International Solid Waste Association website provides reports and training materials on solid waste management.

www.renewourworld.net
Renew Our World is a global campaign engaging Christians to act and pray for a just and sustainable world, focusing on climate change and caring for creation. Website available in English, French, Portuguese and Spanish.

THE CHALLENGE OF 'ZERO WASTE'

Several years ago, I watched a TV programme about a lady who had helped start the 'zero waste' movement. She had reduced the amount of waste she and her family sent to landfill to a single jar's worth every year! I realised that if this lady with her family of four could live so very lightly on the earth, I could do the same.

Living a 'zero waste' life is proving tricky. It throws up many challenges that I do not have all the answers to yet. I know that this will require time and commitment. There are days when I wonder if this amount of effort is really worth it – if it makes any difference when others around me create as much waste as I used to.

In these moments I am reminded of why I am doing this. This is a part of my



Photo: @zerowastehome

worship of Jesus, to seek justice for those living in poverty by caring for creation. The world needs people who refuse to accept things the way they are and who open up a new path for others to follow. Will you join me?

*Jo Herbert is a Theology and Networks Manager at Tearfund.
Email: jo.herbert@tearfund.org*

KNOTTY PROBLEM

Question: If open dump sites are so unhealthy, should we be working to simply close them down?

Answer: Often, when the world's attention turns to an open dump, the government responds by closing it and the journalists go home. All that happens is another open dump emerges nearby, and those who scavenge from the waste move to the new site.

The problem is that if there is no alternative solution in place, people will discard their waste in the only ways available – dumping it or burning it. And the waste pickers will follow the waste.

Replacing an open dump with a government-controlled waste management system is not an automatic solution, either. The losers, again, are the hundreds of men, women and children who make their living by scavenging from the dump. If you take that opportunity to earn a small living away from the poorest

people in society, they will starve. Solutions need to be inclusive.

To close dump sites, you need to have a workable alternative solution in place. You need to have regular waste collection taking place, and you need somewhere to take it. One idea is to build resource recovery facilities alongside existing open dumps (see page 8). Informal waste pickers who are currently working in dangerous conditions on the dump site can gain employment (or better still, form a cooperative) sorting recyclable materials and reducing the amount of real 'waste' that needs to be disposed of.

There will always be something left, though. The fact is that in most cases, a standard, lined landfill site with landfill gas capture is still the most appropriate answer for non-recyclable waste. (That is, until we stop producing waste, or learn how to make it disappear!)

Answer provided by Zoë Lenkiewicz at WasteAid. Email: zoe@wasteaid.org

FOOTSTEPS

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Readers are invited to contribute views, articles, letters and photos.

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INTERVIEW

FROM TRASH TO TREASURE

In 2016, young Haitians James Desrosiers and Obed Arris started their own company making stylish bags from discarded water sachets. They share their story below...

What inspired you to start your company?

The waste management situation in Haiti is disastrous, with people using the streets, rivers and sea as their rubbish dump. After James attended a seminar on environmental protection, he began experimenting with making things out of plastic waste. He showed the results to Obed, and we decided to create a company working in recycling: Arris Desrosiers. We make products such as backpacks, laptop bags and lunchboxes using discarded plastic water sachets.

How did you develop your products?

We had to try out several models before finding the best one. Then, we worked on perfecting it.

Like most companies, to get started we needed funds – which we did not have! We looked for funding from government and private organisations, but with no success. So we began with less than 200 USD. But after that, we received support from several people, who constantly encouraged us. Now, we are making a good profit. At present our main clients are NGOs such as Food for the Poor and Oxfam. Local people also buy our products.

We sell around 2,000 items a month and are working to increase this number. There is now an international demand for our products, especially in the USA. Currently we have about 50 employees, mainly young

people. We want to provide work for as many people as possible.

How do you collect the plastic sachets?

At first, we collected the sachets in the streets. Some people called us crazy because they did not know what we were doing. Now, we have agreements with some of the companies selling water sachets, and they send us their waste almost free of charge. Also, because of our awareness-raising campaigns, the public are beginning to send us their water sachets rather than throwing them in the street. In the future we plan to set up collection centres around the country, paying people for their plastic waste.

What challenges did you have and how did you overcome them?

We encountered many challenges. Firstly, some people did not like the thought of wearing a product made from waste. Secondly, we had financing problems. Thirdly, we had little knowledge of what we were doing, in either the technical or administrative side of our work.

Over time, we began awareness-raising campaigns through social media. We had to fundraise among family and friends to meet the company's financial needs. With time, we have learnt how to do things better. And most importantly, we developed a desire to fill in the gaps in our knowledge, attending

lots of seminars and reading many books. And we still have a lot to learn.

What advice would you give to anyone wanting to develop a business using waste?

We would tell them not to make backpacks, because we are already doing this! More seriously, we would tell them to organise their activities well, to plan their actions carefully to ensure they do not cause more harm than good to the environment, and to be assured that it is all worth it.

What is your dream for the future?

We are currently starting a new waste collection service to help solve the wider waste problems in Haiti. We dream of a cleaner environment and a country where everyone has the opportunity to work for companies like ours – companies that aim to provide solutions to the major problems facing the world.

Web: www.facebook.com/arrisdesrosiers17
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▶ PLEASE NOTE: Making a profit selling handicrafts made from waste can be challenging. It is important to make sure there will be enough demand for your product. See *Footsteps 103: Entrepreneurship* for advice.



James Desrosiers and Obed Arris started a business making products from discarded plastic water sachets. Photo: Jack Wakefield/Tearfund