Keystage 3

Teaching the 3 Rs: Reduce, Reuse, Recycle

Eco-Schools

An Eco-Schools Production

www.rethinkwasteni.org

rethink waste

Teaching the 3 Rs: Reduce, Reuse, Recycle Keystage 3
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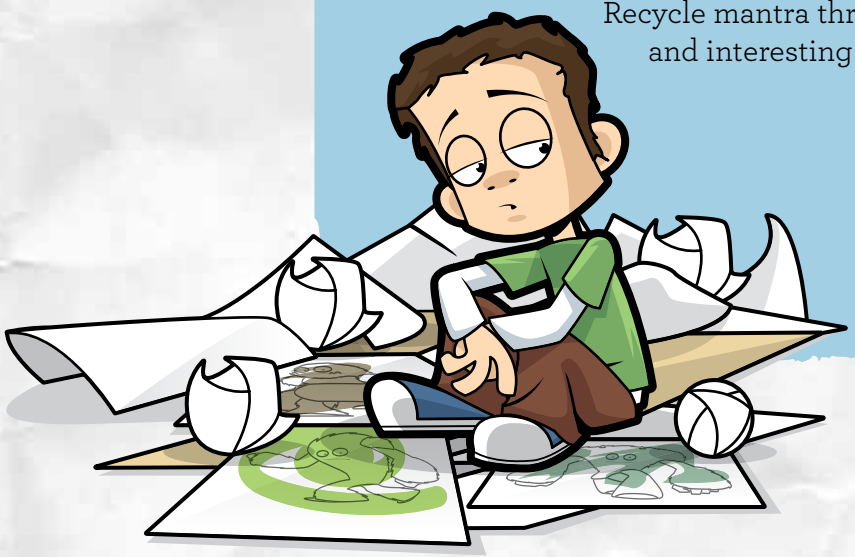
Introduction

The aim of the eight activities outlined in this resource is to help pupils discover what waste is and what happens to it; how much we as individuals create and what we can do to Reduce, Reuse and Recycle. Pupils are encouraged to look at their own habits and to consider how these can be changed. Through these activities it is hoped that the pupils develop a sense of personal responsibility with regard to waste and its environmental impact. We intend not only to establish a waste free classroom but habits that last a lifetime.

The activities are based on eight main themes and build on the pupil's existing knowledge.

Activities have been designed to suit the mixed abilities across the Key Stages and are integrated into the 'Rubbish Monster' books, forming the backbone of the stories.

The overarching aim of the programme is to create a generation of advocates for the Reduce, Reuse and Recycle mantra through fun, educational stories and interesting activities.



Eco-Schools

Eco-Schools is an international award programme that guides schools on their sustainable journey, providing a framework to help embed these principles into the heart of school life.

Eco-Schools is one of five environmental education programmes run internationally by the Foundation for Environmental Education or FEE. In Northern Ireland the Eco-Schools programme is operated by Tidy Northern Ireland, an environmental charity.

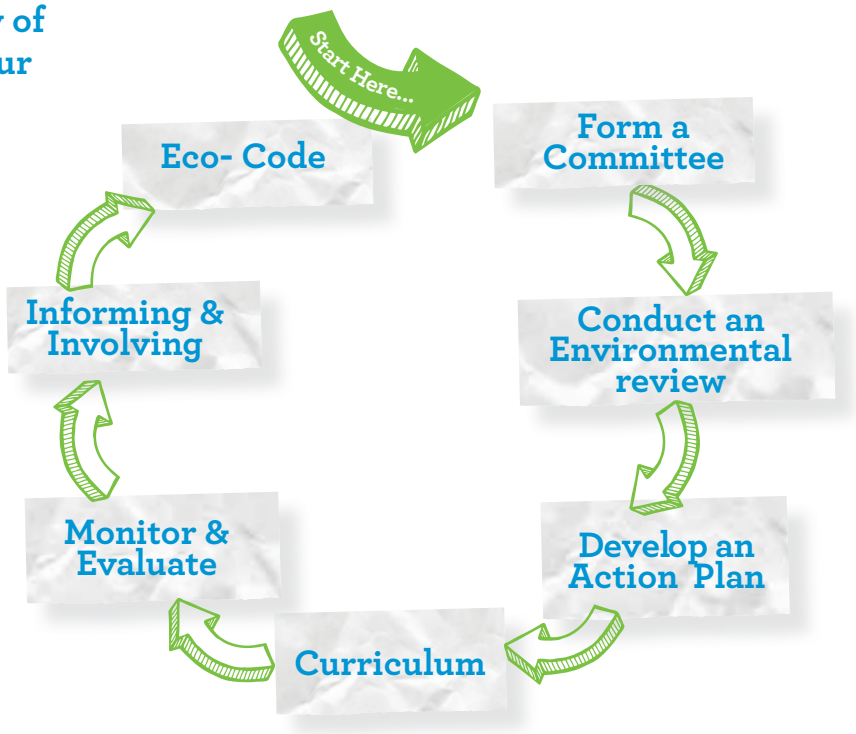
Joining the Eco-Schools programme is free to schools and it makes tackling sustainable issues manageable and easy for all schools. Studying many of the topics can also help your school save money.

Once registered, schools follow a simple seven-step process which helps them to address a variety of environmental themes, ranging from litter and waste to healthy living and biodiversity.

How does the Eco-Schools programme work?

Children are the driving force behind Eco-Schools. They lead the Eco-Committee and help carry out an audit to assess the environmental performance of their school.
Through consultation with the rest of the school and the wider community it is the pupils that decide which environmental themes they want to address and how they are going to do it.
Measuring and monitoring is an integral part of the Eco-Schools programme, providing schools with all the evidence they need to really shout about their environmental success.

What are the main steps in the process?



There is lots more information and support on the Eco-Schools programme on our website **www.eco-schoolsni.org** Here you can also find templates, teaching resources, information on our delivery partners and information on competitions and events.

Becoming an Eco-School

1. Set up an Action team/ Eco-Committee	The Pupils can be selected by peers or pupils can nominate adults within the school community to be on the committee. Pupil members of the committee are responsible for taking ideas from the rest of the pupils and reporting back results of committee meetings to all the classes or forms in the school.
2. Conduct an Environmental review	This can be completed using the Eco-Schools simple environmental review sheet *(for bronze and silver)* and formal environmental review sheet for Green Flag. Doing the environmental review should enable the Eco-Committee to highlight areas within the school that need addressed such as litter or energy.
3. Make an Action Plan	The Action plan should be included in your School Development Plan. The Pupils on the Eco-Committee take responsibility for leading some action areas. The Action Plan prioritises targets i.e. those areas that need work that have been highlighted by the school's Environmental Review. The Action Plan should include how activities will be monitored and evaluated when the time frames have been completed. *Schools must cover one major topic (in depth) and two additional minor topics.*
4. Integrate the programme into the curriculum	The school has a curriculum plan integrating a range of ESD issues into the curriculum across all year groups in all subjects. Aspects of Eco-Schools activities integrated into a range of subjects across the curriculum via ESD for the majority of year groups. Issues surrounding sustainable development are explored through curriculum activities in many year groups.
5. Monitor and Evaluate	This section is about collecting information and relating it to targets set out on your action plan. The Eco-Committee ensures that monitoring of action is on-going and that some of it is carried out by the pupils. The Eco-Committee meets to review progress and analyse the data collected.
6. Inform the whole school and the wider Community	Eco-Schools activities are displayed for the local community. e.g. noticeboard/ website. The whole school engages in a Day of Action *(or similar action)*. The wider community *(can include Non-Government Organisations, parents, community groups, businesses etc.)* are involved in the activities going on in the school. Pupils can also write reports of activities for the local press.
7. Develop an Eco-Code	The whole school is given the opportunity to make suggestions for what they believe should be included in the Eco-Code. The Eco-Committee draws up a code from suggestions collected and presents it to the school for approval. The Eco-Code is displayed on the Eco-Schools notice-board and in all classrooms. The Eco-Code is reviewed by the whole school every year to make sure it remains relevant.

FEE

TIDY Northern Ireland

There are three great ways YOU can eliminate waste and protect your environment! Waste, and how we choose to handle it, affects our world's environment -- that's YOUR environment, everything that surrounds you including the air, water, land, plants, and man-made things. The waste we create has to be carefully controlled to be sure that it does not harm both our health and also the environment.

WHAT EXACTLY IS "WASTE"?

Simply speaking, waste is anything discarded, rejected, abandoned, or otherwise released into the environment in a manner (or quantity) that could have an impact on that environment.

HOW CAN YOU HELP?

You can help by learning about and PRACTISING the three R's of waste management: Reduce, reuse, and recycle! Practising all three of these activities every day is not only important for a healthy environment, but it can also be fun.

REDUCE

Reduce/Reduction: to make something smaller or use less, resulting in a smaller amount of waste. "Source reduction" is reducing waste before you purchase it, or by purchasing products that are not wasteful in their packaging or use. A key part of waste "reduction" is "conservation" - using natural resources wisely, and using less than usual in order avoid waste. You can practice reduction by selecting products that do not have to be added to landfills or the waste stream in general. How can you reduce?

- Buy products with little or minimal packaging
- Try to avoid single serve containers
- Instead buy large recyclable bottles
- Reuse water bottles each time you go to the gym etc
- Buy in bulk and then divide the goods into smaller portions
- Buy concentrates rather than diluted products
- Refuse store bags, take your own
- Say No to Junk mail contact the Mail Preferencing service to have Junk mail stopped
- Grow your own fruit and vegetables

REUSE

You can "reuse" materials in their original form instead of throwing them away, or pass those materials on to others who could use them too! Remember, one man's trash is another man's treasure! Here are some examples of how to reuse ...

- Take along washable cups or travel mugs instead of disposables; a lot of restaurants and stores will be glad to fill or refill your own mug
- When you do use disposables like plastic cups, plates, utensils, and plastic food storage bags, don't throw them away! Wash and reuse them!
- If you are replacing household items donate the old items to charity shops so that someone else may get use from them
- Use cloth gift bags and stop ripping the paper off gifts! If you remove the wrapping paper carefully, you can use it again!
- Use washable table napkins instead of paper napkins
- Buy washable cotton nappies instead of single use ones

RECYCLE

Recycling occurs when you save and take reusable materials to places where they can be remade into either the same product or new products, rather than to just toss them away. Making new items from recycled ones also takes fewer energy and other resources than making products from brand new materials. Your recycling mission is not impossible! In fact, it is very simple: Don't throw away anything that can be recycled!

These are some things that can be recycled:

- Acid Batteries
- Aluminium Cans
- Building Materials
- Cardboard
- Chemicals
- Electronic equipment
- Glass (particularly bottles and jars)
- Lead
- Magazines
- Metal
- Newspapers
- Oil
- Paint
- Paper
- Plastic Bags
- Plastic Bottles
- Steel Cans
- Tyres
- Writing/Copy Paper
- Garden Waste

Some of the items listed above will require special handling procedures and special recycling places just ask your local recycling office or council representative.

WASTE HIERARCHY

Most favoured option

REDUCE Lowering the amount of waste produced

REUSE using materials repeatedly

RECYCLE using materials to make new products

RECOVERY recovering energy from waste

LANDFILL safe disposal of waste to landfill

least favoured option

ACTIVITY 1

How Much Waste Do You Make?

Suggested Learning Intentions:

To Encourage Pupils to:

- Develop a sense of personal responsibility with regard to waste
- Explore their own habits regarding waste

Connected Learning Opportunities:

KS3: Learning for Life and Work: Local and Global Citizenship; Personal Development

KS3: Language and Literacy

KS3: Mathematics and Numeracy

Thinking Skills & Personal Capabilities:

Thinking, problem-solving and decision making, working with others.

Cross- Curricular Skills:

Communication, Using Mathematics.

Eco-Schools

This activity could be used as part of the Eco-Schools seven step methodology *(step 5)* pupils could monitor waste and use it as a baseline at the start of the programme to record reductions in waste through various initiatives they may introduce in the school.

Reduce Activity

Class activity:

Concept Map – the teacher writes the word 'waste' on the white board and asks pupils to call out words and phrases they associate with 'waste'. The teacher writes these on the board, linking connected words with arrows. This should lead to further discussion either in small groups or as a class.

Individual activity:

Pupils should be given the task of compiling a diary detailing the waste they create on an average day.

Finally:

The class is then given the opportunity to use maths skills to estimate how much waste an individual pupil generates in one day, one week and one year. This can also be calculated for the class as a whole.

Class activity:

Discussion *'Imagine a world where there is no recycling and all rubbish ends up dumped at landfill sites'*. The teacher should encourage the pupils to realise the consequences of their habits with regard to waste.

Extension:

Pupils are asked to come up with an action plan to reduce the amount of rubbish they create. They may be directed to the website **www.rethinkwasteni.org** for some ideas of ways to **Reduce, Reuse, Recycle.** Pupils can also be directed to the website **http://rethinkwastegame.eco-schoolsni.org/** where they can play an interactive game.

ACTIVITY 2

Waste and Landfill Sites

Suggested Learning Intentions:

To encourage pupils to:

- Consider what happens to the waste they create.
- Realise environmental impact of it.
- Explore how they may begin to change their habits.

Connected Learning Opportunities:

KS3: Language and Literacy

KS3: Environment and Society: Geography (objective 3)

KS3: Learning for Life and Work: Local and Global Citizenship; Personal Development

Thinking Skills & Personal Capabilities:

Being creative, Managing information.

Cross-Curricular Skills:

Communication, Using Mathematics.

Eco-Schools

This activity links with the reduction of waste and diversion of waste to landfill which can be link to help pupils in understanding the topic of Climate change. Pupils could record data of reduction of paper and plastic.

Reduce Activity

Class discussion/ activity:

The teacher leads a class discussion about landfill sites.

- What is a landfill site?
- What is the environmental impact of landfill sites?
- What are the alternatives to landfill sites?

Teachers may find relevant information on **www.ecoworld.org**. Pupils with access to the Internet may also be directed to this website.

In their research and discussion, pupils should be encouraged to think of this subject in personal rather than abstract terms; the information and discussion should be relevant to their own experience. Focus should be placed on the waste they personally create and how it is dealt with, the impact on their environment and the consequences to us all if our habits do not change.

Pupils may then be introduced to the 3 Rs... **Reduce, Reuse, Recycle.** Relevant information may be found by teachers and pupils on **www.ecoworld.org** and **www.rethinkwasteni.org.**

Individual activity:

Pupils are set the task of writing a poem or rap entitled *'Waste of Space'* about what they have learned.

Finally:

Pupils should share their work with their classmates and be given the opportunity to discuss the experience.

ACTIVITY 3

Litter

Suggested Learning Intentions:

To encourage pupils to:

- Recognise the consequences of dropping litter
- Actively deter their peers from dropping litter through creative projects

Connected Learning Opportunities:

KS3: The Arts: Art and Design

KS3: Learning for Life and Work: Local and Global Citizenship; Personal Development

Thinking Skills & Personal Capabilities:

Working with others, Being Creative.

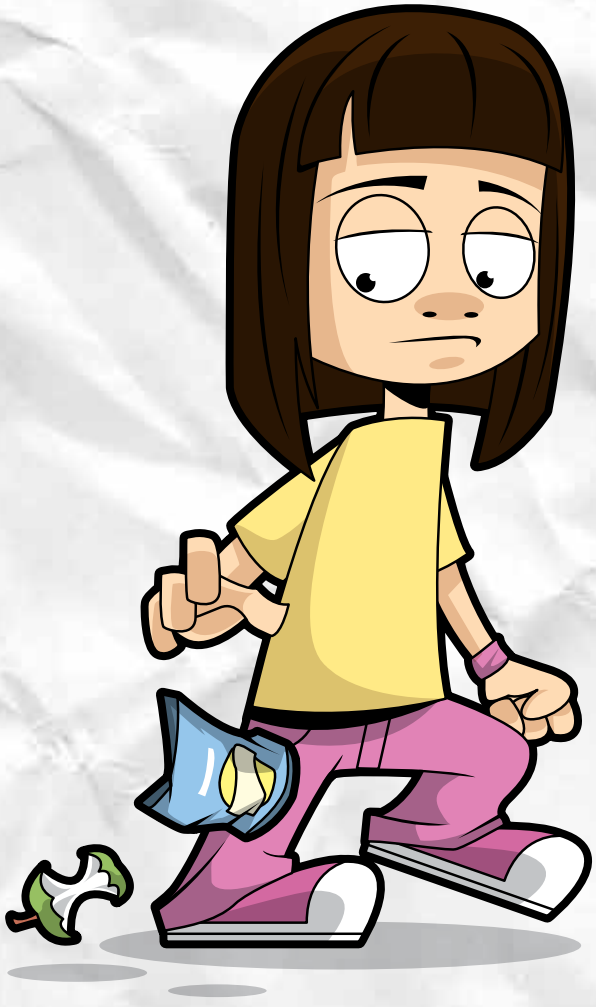
Cross-Curricular Skills:

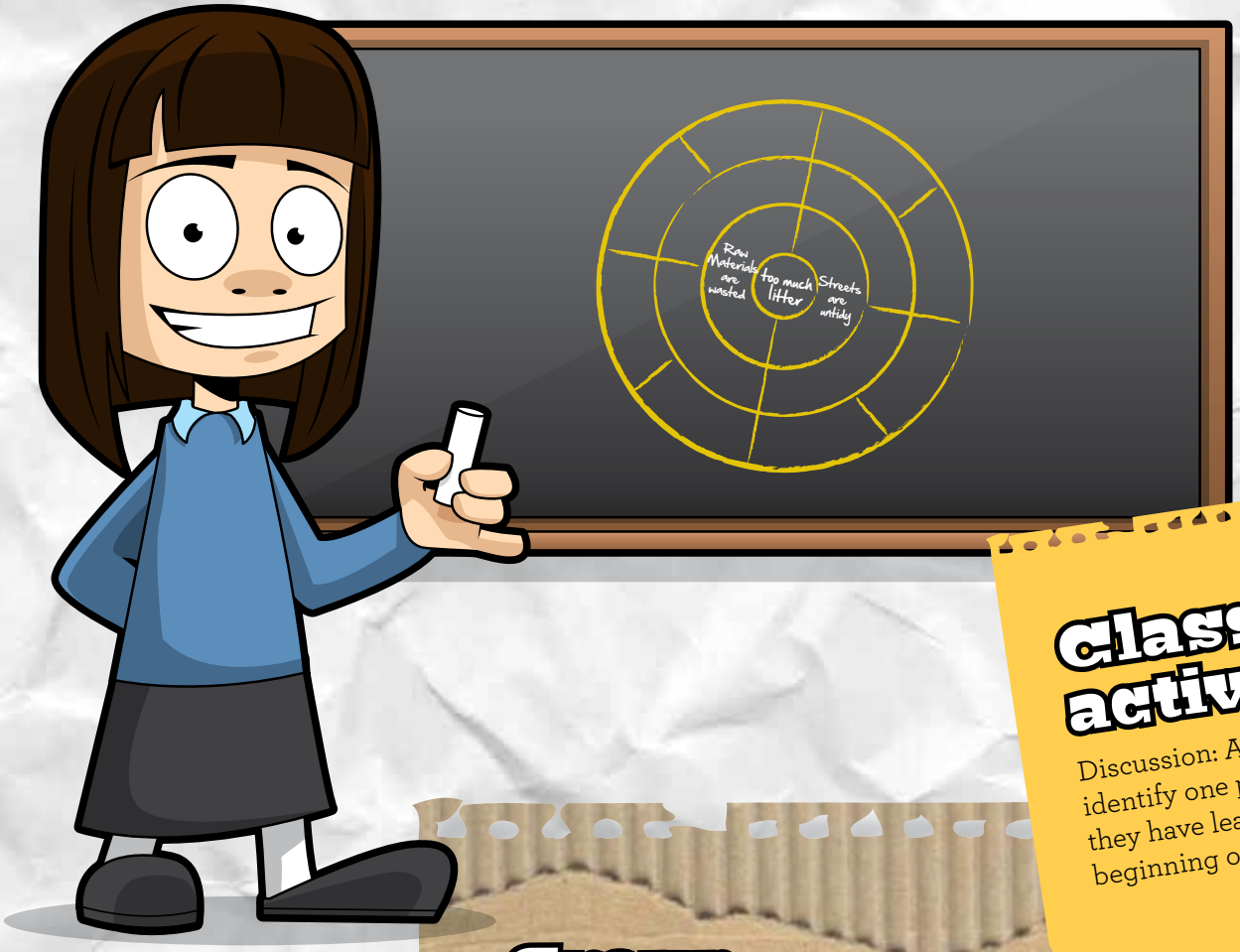
Communication, Using ICT.

Eco-Schools

This activity can be used if your school is focusing on the areas of litter or waste. The extension activity can also be used as part of your school's monitoring and evaluation process of various initiatives that are introduced in regards to the amount of waste and litter *(Step 5 of the Eco-Schools seven step methodology)*

Reduce Activity





Class activity:

Discussion: Ask each child to identify one piece of Information they have learnt since the beginning of this topic.

Group activity:

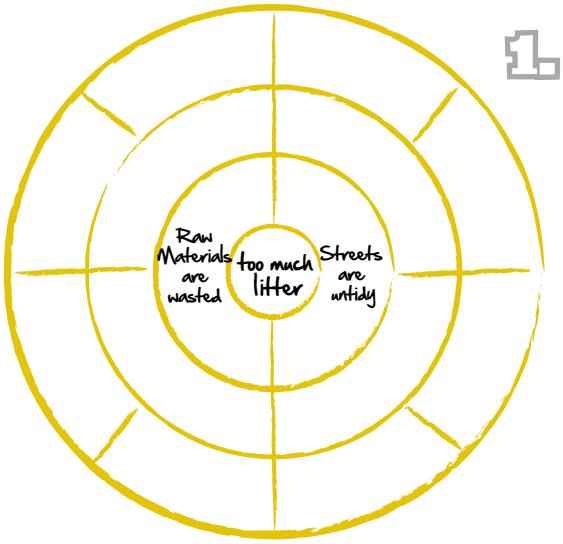
Consequence Wheel – following an initial discussion, pupils are be divided into small groups and asked to consider the consequences of dropping litter. The teacher may need to give direction as to the areas that may be considered e.g. other people, animals, environment, health, and vermin.

Pupils draw a circle and write 'I drop litter...'; they then write down a consequence of dropping litter and connect it to the first circle e.g. I drop litter... it attracts rats; if there is a secondary consequence then that is added and connected to the second circle e.g. I drop litter... it attracts rats... rats spread disease.

(The ideas explored in the consequence wheel and the complexity of these ideas can be adapted to reflect the age and ability of the group.)

Finally:

How effective are the completed posters? Have they changed the pupils' opinions?



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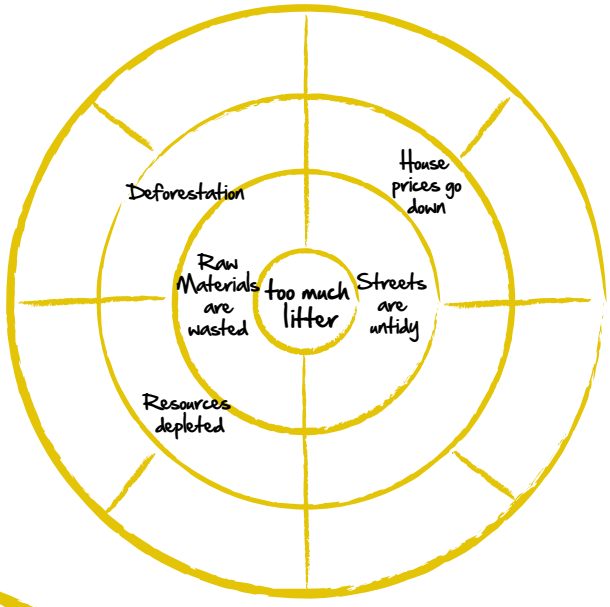

consequence wheel step by step.

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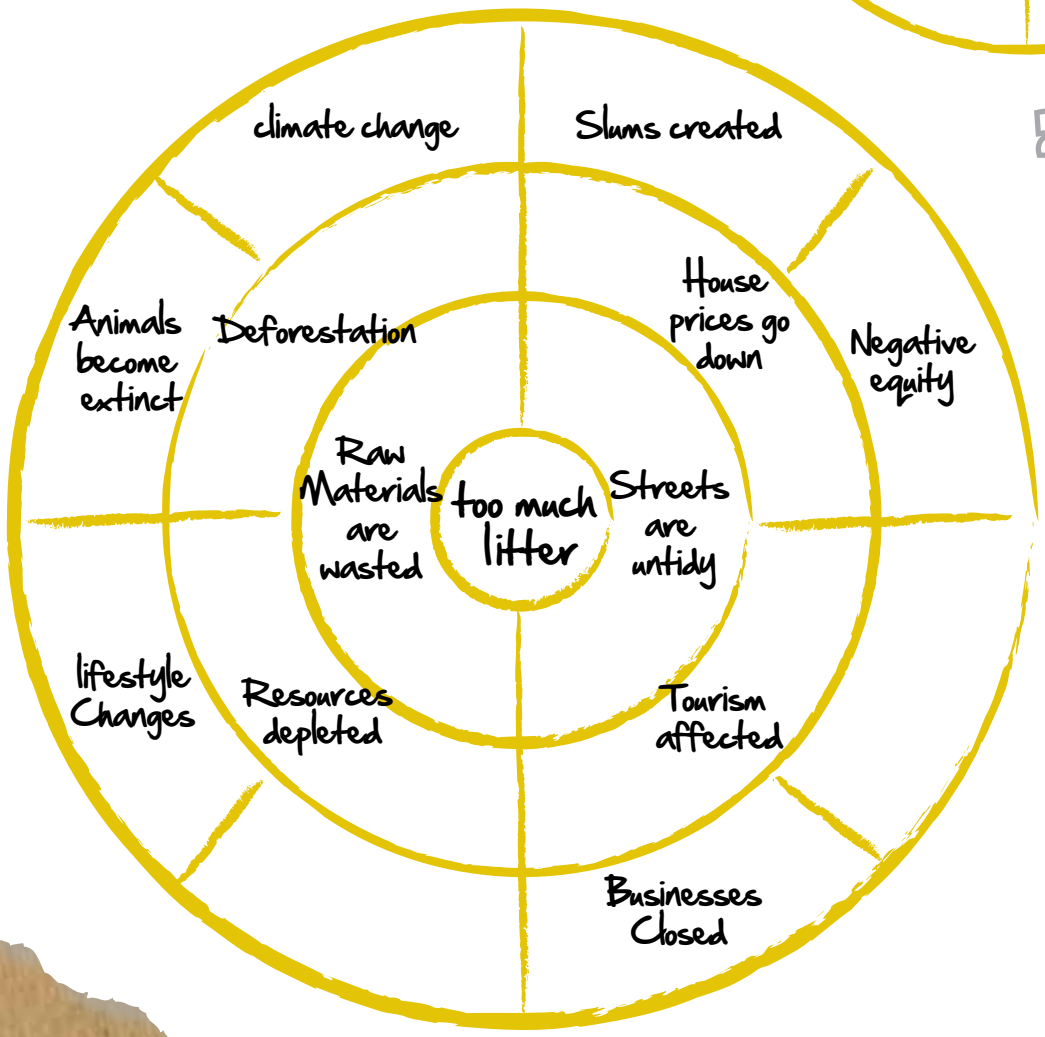

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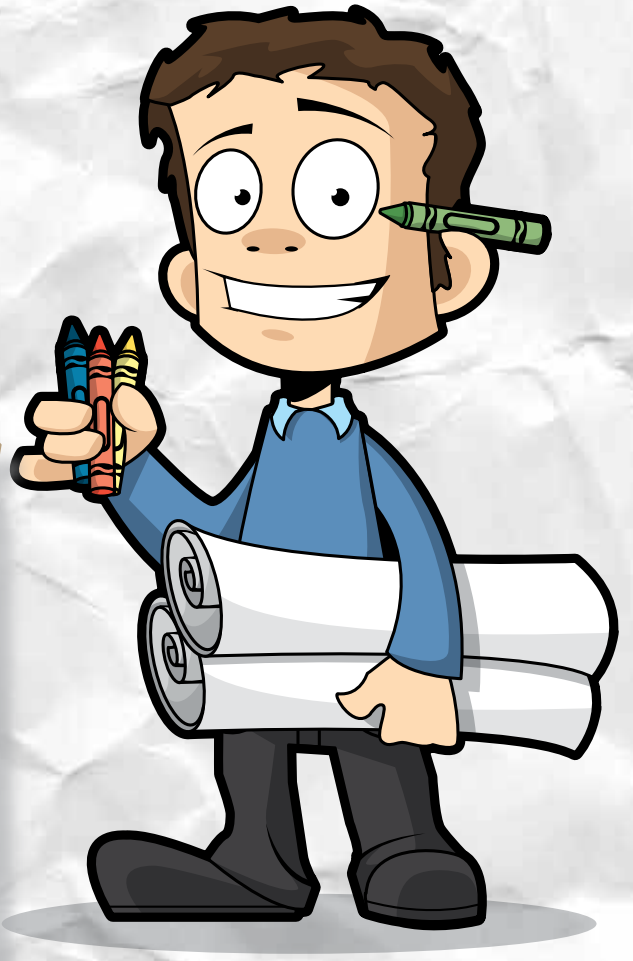


Individual activity:

Pupils are encouraged to creatively share what they have learnt by producing a poster to deter their peer group from throwing litter.

As this age group generally does not respond positively to simply being told not to do something, pupils should focus on the consequences of litter that they think will have the greatest impact on teenagers. Posters can be produced using a variety of media, including, where available, video content produced on a PC.

Extension:

Pupils could plan an anti litter campaign in their school using the posters they have created. They could benchmark the amount of litter in various places round the school grounds (locker bays, corridors, car park, playground) then one week after their 'campaign' begins, revisit the same locations to see if what they've done has had any impact.

They could continue to do this over a four week period, then present their findings to the rest of their year or the whole school.

Finally:

How effective are the completed posters? Have they changed the pupils' opinions?

ACTIVITY 4

Food (Love Food/ Hate Waste)

Suggested Learning Intentions:

To encourage pupils to reduce the amount of food they throw away.

Connected Learning Opportunities:

KS3: Learning for Life and Work: Home Economics (Independent Living)

KS3: Language and Literacy

Thinking Skills & Personal Capabilities:

Managing Information.

Cross-Curricular Skills:

Communication, Using ICT.

Eco-Schools

This activity can link to the topics of healthy living and also waste part of the Eco-Schools programme. An initiative could be introduced for pupils to collect food waste e.g. fruit waste and skin/cores at the end of lunch and break and be used to make compost/ wormeries.

This activity could also be used to monitor the amount of food waste as part of the monitoring process of the Eco-Schools Programme.

Reduce & Reuse Activity

Class activity:

Discussion...

- 8.3 tonnes of food is thrown away by families in the UK each year.

What do you think happens to all this waste?

Why should we care?

- If we stopped throwing this food away it would have the same effect on the environment as taking 1 in 4 cars off the roads in the UK.

How does this make you feel about the food you throw away? Why do you think we waste so much food?

What can we do to stop it?

Most of this food is wasted because we...

- Cook, prepare and serve too much.
- Don't use food on time.

Individual activity:

Each pupil should draw a table *(either on computer or in their notebooks)* with four columns.

In the first column the pupil records what they would eat in an average day *(e.g. bowl of cereal for breakfast, apple for break, yoghurt for lunch, etc).*

In the next column, a note is made of how much of this food ends up as general waste.

In the third column, ideas of how this waste can be reduced or alternative ways of disposing of it are listed *(e.g. only pour the amount of cereal you can eat into the bowl, take the apple core home and put it in a composting bin, eat the yoghurt within the use by date).*

In the fourth column, the pupil records how successful he/she is at implementing these ideas over a specified period.

Finally:

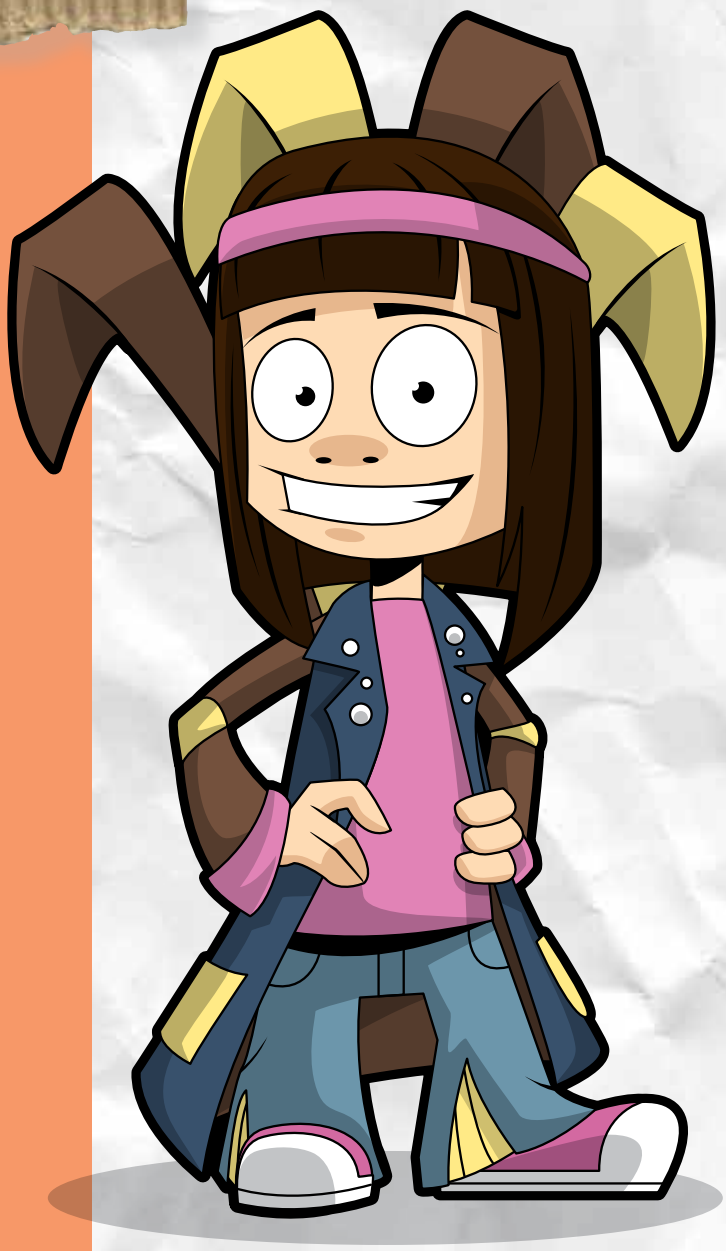
The pupils' work should be reviewed after a week. Pupils should share their findings with their classmates. How successful were they?

The pupils and teacher should then compile a list of ways in which they can reduce the amount of food they waste both now and in the future. For ideas go to www.lovefoodnotwasteni.org.

Pupils can use their IT skills to present this information attractively, and display on school notice boards and in the kitchen at home.

ACTIVITY 5

Fashion



Suggested Learning Intentions:

To encourage pupils to:

- Consider the production of fashion clothes *(child labour, sweat shops)*
- Consider the current trend for 'throw away' fashion and its cost in human and natural resources
- Make informed consumer decisions
- Consider the alternatives using the 3 Rs

Connected Learning Opportunities:

KS3: Learning for Life and Work: Local and Global Citizenship; Personal Development

KS3: Environment and Society: Geography *(Objective 3 Economic Awareness)*

KS3: Language and Literacy

Thinking Skills & Personal Capabilities:

Managing information, Working with others, Thinking, Problem solving and Decision making.

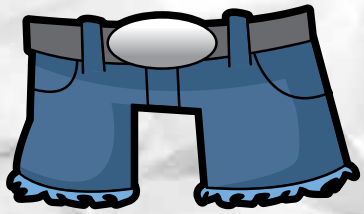
Cross-Curricular Skills:

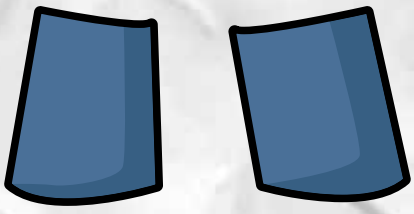
Communication.

Eco-Schools

This is a good activity if you are focusing on waste as a topic. The extension activity can be an excellent activity for reusing textile waste. Your school could also install a waste textile bin to help collect textiles whilst also generating money that could be used for new projects and initiatives.

Reuse & Recycle Activity





Class activity:

CAF (Consider All Factors). This task encourages pupils to think about all the factors relevant to fashion clothing.

The teacher may like to discuss with the pupils some of the issues surrounding the production of clothing (e.g. Have you thought about where your clothes are commonly produced? Why do companies make their clothing in other countries? What is the impact on the work force and environment?).

Pupils may then be presented with the following scenario:

I like to look fashionable and dress like all my friends. I don't have lots of money but I want to have new clothes. Clothing companies like me to buy lots of clothes so that they can make large profits, but I know that the people who make my clothes work long hours and don't earn much money. Also if I don't wear my clothes for very long and dump them when I've finished with them, I'm causing a problem for the environment. What factors should I consider before I decide which clothes to buy?

Pupils can then fill out the Consider All Factors template.

When these are completed pupils can compare all the different factors that they consider important.

Do they think their consumer decisions will change or remain the same?

Extension:

Consider the alternatives...

- Reduce the number of clothes you buy by planning your outfits, buying fewer better quality items and not making impulse purchases
- Reuse clothes by sharing with friends and passing unused clothes on to charity shops
- Recycle clothes which can no longer be worn
- Create their own 'fashion' label by each recycling one piece of old clothing they find at home. They can do this by altering its design, look or even purpose
- They could then run their own 'Refashioned Show' to the rest of their year group or the entire school

Consider all factors - Throwaway Fashion

Factor 1:

Advantages/Pros:

Disadvantages/Cons:

Interesting Factors:

Factor 1:

Advantages/Pros:

Disadvantages/Cons:

Interesting Factors:

Factor 1:

Advantages/Pros:

Disadvantages/Cons:

Interesting Factors:

After discussion of all factors, I think that...

ACTIVITY 6

Paper Audit

Suggested Learning Intentions:

To encourage pupils to:

- Focus on the impact of paper production on the environment
- Consider how much paper each pupil uses and how this can be reduced

Connected Learning Opportunities:

KS3: Environment and Society: Geography

KS3: Learning for Life and Work: Local and Global Citizenship; Personal Development

KS3: Mathematics & Numeracy: Number, Shape, space and Measure

Thinking Skills & Personal Capabilities:

Managing information, Working with others

Cross-Curricular Skills:

Communication, Using ICT, Using Mathematics.

Eco-Schools

This is an ideal activity if your school is focusing on the topic of Waste/ Energy or Climate change. By working out paper audits it could also be a useful tool in collecting baseline data and monitoring your schools progress on the Eco-Schools programme.

Reduce Activity

ACTIVITY 6 - PAPER AUDIT

Class activity:

The teacher may present their class with the following facts:

1. Every year in Northern Ireland, on average, each household needs more than three trees to provide the paper it uses.
2. We currently recycle about 40 per cent of our waste paper with the rest going to landfill. This figure should be higher because paper is one of the easiest materials to recycle.
3. By recycling 1 ton of paper you save:
   - 17 trees
   - 31,600 litres of water
   - 2,100 litres of oil
   - 266 kilos of air pollution
   - 2.5 cubic metres of landfill space
   - 4077 Kilowatt hours of energy

(More information may be found at ***www.ecoworld.org.uk/eco_topics/waste/facts.asp*** *)*

Pupils should be encouraged to discuss these facts and their implications.

Classroom paper audit

In notebooks or if preferred on computer, pupils will draw a table with three columns. In the first column they list all the paper products they use in a school day. In the second column they note what these items are used for. In the third they write down ways to reduce the amount used or other more environmentally friendly alternatives.

Extension activity:

To try to bring the scale of the figures above to life, pupils should be encouraged to put them into context by performing a series of simple mathematical equations. For example, work out how big a container would be needed to take the volume of water used in 1 ton of paper; how many light bulbs can be illuminated by the amount of energy used to create 1 ton of paper; how high 17 trees would be and what building is approximately that size.

Finally:

The teacher initiates the discussion of these ideas and encourages pupils to decide on an Action Plan to implement some of their ideas in their classroom.

ACTIVITY 7

The Horrible History of a Plastic Bag

Suggested Learning Intentions:

To encourage pupils to:

Become aware of the decomposing period of plastic.

Connected Learning Opportunities:

KS3: Environment and Society: History

KS3: Literacy and Language

KS3: Learning for Life and Work: Local and Global Citizenship; Personal Development

Thinking Skills & Personal Capabilities:

Managing information, Thinking, Problem-Solving and decision making.

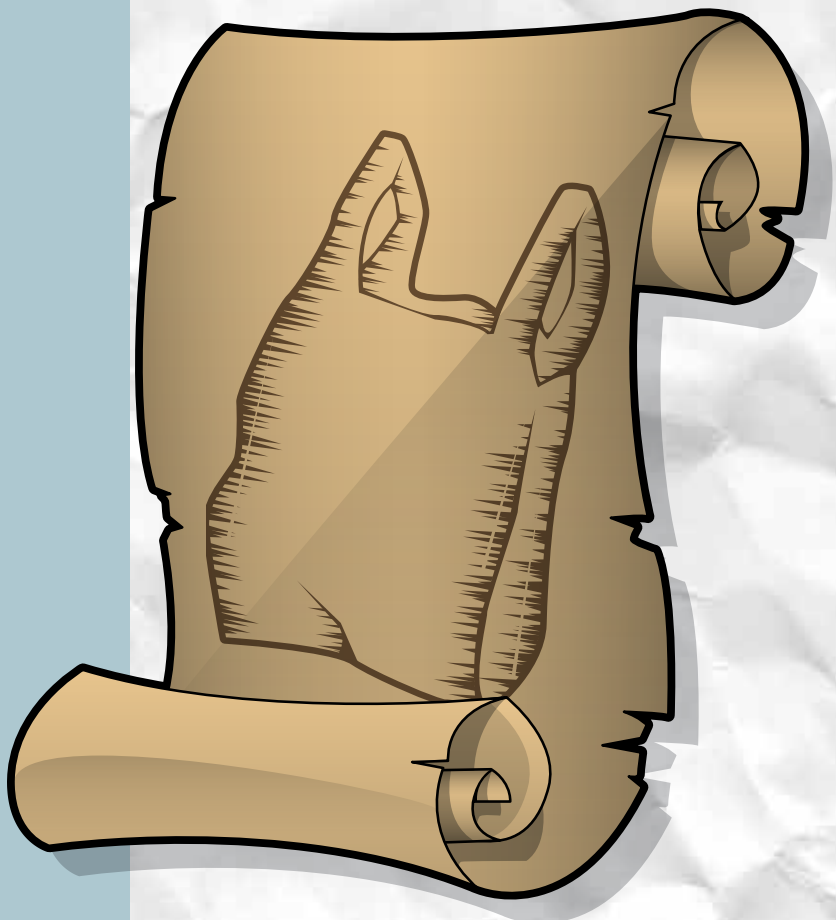
Cross-Curricular Skills:

Communication, Using ICT.

Eco-Schools

This activity can link to the topic of waste. It may allow pupils to suggest initiatives to deter the use of plastic bags in schools e.g. pupils carrying lunches in them and throwing them away. Pupils may rethink how they bring their lunch and help move towards promoting a waste free lunch.

Reduce & Reuse Activity



Class activity:

Ask the class to estimate how long it takes a plastic bag to break down and record their answers.

Give the pupils this information:

- If a plastic bag is exposed to air and sunlight it will take about 20 years to break down.
- In a landfill site it will take a plastic bag up to 1000 years to break down.
- Plastic bags do not biodegrade. They slowly become smaller pieces of plastic and eventually end up as plastic dust.

Allow pupils to discuss this. How does this compare to their estimates?

ACTIVITY 6 -
THE HORRIBLE HISTORY OF A PLASTIC BAG

Individual activity:

Create a historical timeline.

A thousand years is a long time and hard to imagine. To make it easier for pupils to grasp they will draw a historical timeline from 1000 AD to 2000AD. The teacher should explain and demonstrate what a timeline is.

Pupils can use their IT skills to research historical events and characters. The timeline can either be drawn in notebooks or on computer.

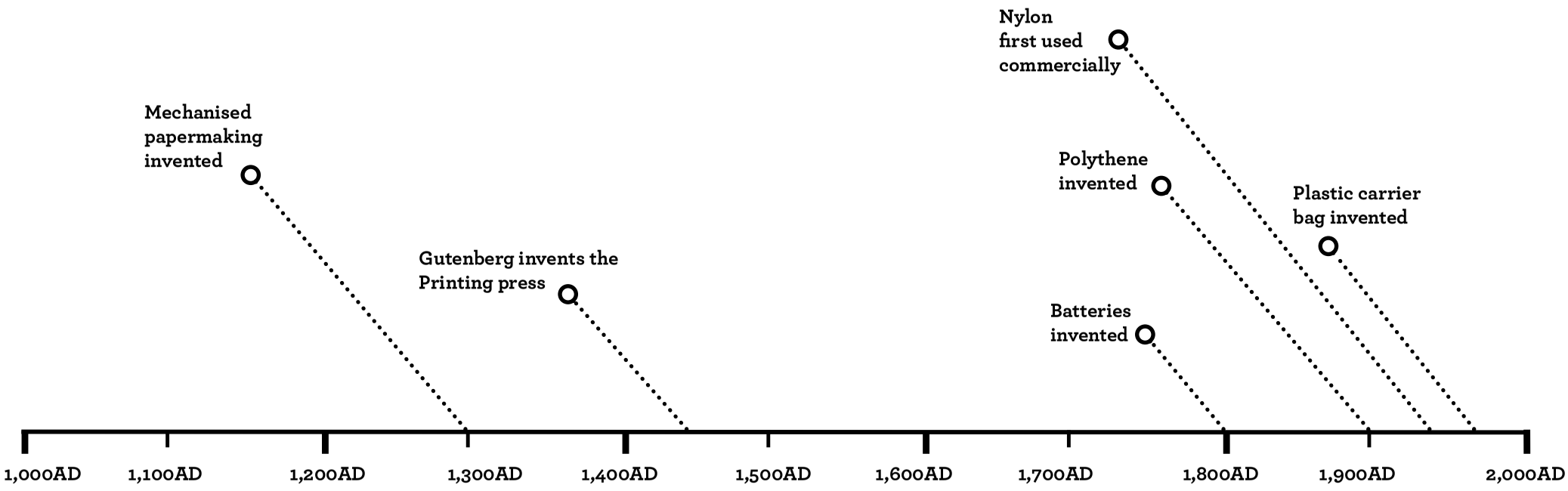
Finally:

Pupils can compare the timelines they have created. Which historical events and characters did they choose to include, and why?

Ask the pupils to imagine over that period of time plastic bags were being dumped in landfill sites. What do they think the world would be like?

It is estimated that supermarkets hand out around 10 billion plastic bags each year. Can the pupils then imagine what the world will be like in the year 3000 AD if we continue to dump these plastic bags?

The life and times of a plastic bag



ACTIVITY 8

Composting the simplest form of recycling

Suggested Learning Intentions:

To Encourage pupils to:

- Understand the principles of composting
- Demonstrate how this is helpful to the environment

Connected Learning Opportunities:

KS3: Science and Technology

KS3: Learning for Life and Work: Local and Global Citizenship; Personal Development

Thinking Skills & Personal Capabilities:

Managing information, Thinking, Problem Solving and Decision Making.

Cross-Curricular Skills:

Using ICT.

Eco-Schools

This is a great activity if your school is focusing on the topics of Waste or School grounds. Food waste could be recycled and then composted and added to the school grounds to nourish your plants and vegetables.

Recycle & Reuse Activity

Individual activity:

Using the words encountered in their research ask pupils to construct a leaflet explaining the process in simplified terms for the school's feeder Primary schools.

Class activity:

The largest single portion of household rubbish is organic material, such as vegetable peelings, fruit skin, bread, grass cuttings etc, which in the right conditions naturally breaks down and returns nutrients to the soil. Instead of sending this waste to the landfill it is easy to make your own compost.

Teachers and pupils can find information on how to compost at **www.rethinkwasteni.org/in-education/resources/how-to-compost**

Teachers can show a sample of compost to the class and explain how this is used to help plants grow.

ACTIVITY 8 - COMPOSTING
THE SIMPLEST FORM OF RECYCLING.

Class activity:
Brass from Muck

Pupils will be set a class project to plan, theoretically implement and market their own vegetable growing business.

Factors they will have to consider:

- area of school land to be cultivated and impact on the rest of the school's activities by doing so
- vegetables to be grown (availability, suitability, marketability research can be conducted)
- cost of materials (tools, time, soil etc)
- rota of workforce
- target customer audience
- advertising and marketing

Extension activity:

If possible, a class or group of pupils could put the theory of the task into action.

THE WASTE FREE CLASSROOM

Teaching any subject becomes much easier if the pupils can relate to the subject matter. The following themes and activities are designed to encourage the pupils to think about how they could reduce, reuse and recycle in the classroom they spend several hours in each day. Using real, tangible examples in context helps to bring home the reality of the waste debate.

A WASTE FREE LUNCH

Plan your own healthy packed lunch so that there is nothing to throw in the rubbish bin when you have finished. Think about how you are going to keep the food fresh and what sort of wrapping or containers you are going to use. Explain what you propose to do. You may wish to:

- Use refillable bottles or flasks rather than cans or cartons
- Put sandwiches in a reusable container rather than a bag, cling film or foil
- Avoid food that has lots of packaging - bring fruit or vegetables instead and compost the leftover cores and skins
- Use a decision diagram to explore the advantages and disadvantages of each
- Alternatively, investigate the possibility of having a school dinner instead

MATHEMATICAL WASTE

- Compare the cost of your normal lunch with a waste free lunch
- Estimate the total weight of rubbish thrown away by your class in a day
- Calculate how much this is per child in your class
- Calculate how much it would be for all the pupils in your school
- Compare the waste produced in your class with waste produced in the staff room

PACKAGING AUDIT

Research the types of packaging used in your classroom. Look at everything that may be packaged for example, lunches or new resources. Count the number of layers and the type of packaging. Design a data collection sheet (using ICT) to record your results. Use headings such as product, No of Layers, and type of packaging. You may decide to add further headings to record individual types of packaging eg card, paper, plastic, aluminium foil, glass. You could also record if the packaging could be recycled , reused or neither.

After a week collect all the data collection sheets and as a class find out

- Which products in your class are packaged
- Which packaging material is used most often
- How much of the packaging can be recycled
- How much of the packaging can be reused

Examine your class waste and separate it into 3 categories etc (from mathmatical/waste section)

DISPLAY THE RESULTS AS GRAPHS:

Teachers can extend this activity by asking the pupils to analyse what is brought into their homes in an average week. Inform parents that they will be looking at all items brought into the house for a week. As a class design a table to record results. Display collated results in graph form.

EXTENSION ACTIVITIES:

- Discuss what over-packaging means?
- How many examples of over-packaging did your class find?
- Estimate what percentage of your weekly household waste is packaging?
- Why is packaging important?
- Can you think of items where increasing the packaging decreases the amount of overall waste?
- Find out what (if anything) industry is doing to reduce the amount of packaging waste
- What happens to the waste that cannot be recycled or reused?
- List ways in which you could reduce the amount of packaging waste thrown away each week by your class or in your home

Organise a trip to a local shop. Look at the various types of packaging. Choose one example of a product you feel is over packaged. Ask pupils to write about why they think it is over packaged. Why do manufacturers use so much packaging? A good example might be 'Dairylea Lunchables' or a box of fruit. How did people package things 50 years ago or 100 years ago?

INDIVIDUAL PLEDGES

Encourage the class to sign up to a class pledge about how they are going to work towards their Waste Free Classroom by completing a pledge sheet. Pupils should work out exactly what pledges they are going to make individually and as a class. These could include having a waste free lunch, taking school lunch, switching off lights, using less paper, recycling ink cartridges and composting biodegradable waste. This can be displayed in the classroom.

CLASS PLEDGE

We the undersigned will:

1. Turn off computer when not in use to reduce our use of electricity
2. Turn off taps in the toilets to save water while we wash our hands
3. Ask our parents if we can walk, cycle or take the bus to school to reduce pollution
4. Keep windows and doors closed when the heating is on. If it is too hot, we will turn the thermostats down
5. Make sure that lights are not left on in an empty classroom and we will ask the caretaker to replace the light bulbs with energy efficient ones
6. Ask the Principal if we can use more sustainable green electricity from Northern Ireland Electricity.
7. Ensure that we minimise the amount of waste we produce by REDUCING, REUSING and RECYCLING as much as possible
8. We Will.....

.....

Signed: _____

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WASTE MANAGEMENT IDEAS

Ideas to help integrate waste management into your teaching/after school clubs are available to view at:

www.rethinkwasteni.org/in-education

Here are some further ideas for activities to help you integrate waste management into your teaching/after school clubs:

GREEN WASTE

- Waste material leaf bird – Build a bird out of a combination of waste cardboard and natural
- litter e.g. leaves, feathers, grasses
- Build a compost heap or wormery - suitable for both Science and Maths to show how organic waste can be recycled, producing free compost. *(Information on composting can be found at http://www.rethinkwasteni.org/in-education/resources/how-to-compost/)*

PAPER WASTE

- Bridge it with waste paper - a Science/Technology challenge to build a bridge out of used A4 pages, second-hand, washed and dried vending cups and sand.

METAL WASTE

- Design a Can Crusher - design on paper or make one in Technology. Use Business skills to market the invention.
- Pebble shaker - experiment with different sized tins and pebbles to make different sounds or combine with other recycled instruments to make a 'Recycled Band'
- Tambourine - experiment with different sizes of used, washed metal food containers and pebbles to create different sounds. Use Art and Craft skills to decorate the new instruments. Use the instruments to accompany other waste activities listed below.

GLASS WASTE

- Smash Crash Poetry - Language and literacy skills can be combined with Music skills to write a poem, then turn it into a 'rap' possibly accompanied by the Recycled Band.

TEXTILE WASTE

- Catwalk display - reuse old clothes and materials to make costumes or create fashion designs. Put on a Drama or display to music using recycled pebble shakers and tambourines (see above)
- Textile relay - as an indoor PE activity race against the clock or have a relay race to put on/take off items of clothing, hats etc. that are outgrown or no longer needed.

PLASTIC WASTE

- Bottle Bowling - this indoor or outdoor PE activity reuses old plastic bottles as pins.
- Bird Feeders - these reuse yoghurt pots and margarine tubs in a way that will help wildlife and improve your school environment.

GENERAL WASTE

- Home/School waste diary questionnaire - promotes numeracy and surveying techniques.
- Packaging Audit - this activity combines numeracy skills with Geographical issues i.e. carbon footprints and Science issues relating to seasonal food.

Rubbish Monster

Activities & how they relate to the NI Curriculum

ACTIVITY - Key Stage 3		English	Mathematics	Environment & Society	The Arts	Learning for life & Work	Science & Technology
1.	How Much Waste Do You Make?	★	★			★	
2.	Waste and Landfill Sites	★		★		★	
3.	Litter				★	★	
4.	Food (Love Food/Hate Waste)	★				★	
5.	Fashion	★		★		★	
6.	Paper Audit			★		★	
7.	The Horrible History of a Plastic Bag	★		★		★	
8.	Composting – the simplest form of recycling.					★	★

waste

Northern Ireland Waste

what's it all about?

In Northern Ireland around 928,122 tonnes of household waste were produced in 2007/2008. Each household in Northern Ireland contributes around 1.29 tonnes of waste per year 25kg per week and this amount is increasing!

Our current lifestyle, based on convenience and over packaged products, means we are producing more waste than ever. At the moment the most common way of managing waste in Northern Ireland is through landfill. 71% of municipal waste in 2007/08 has gone into landfill.

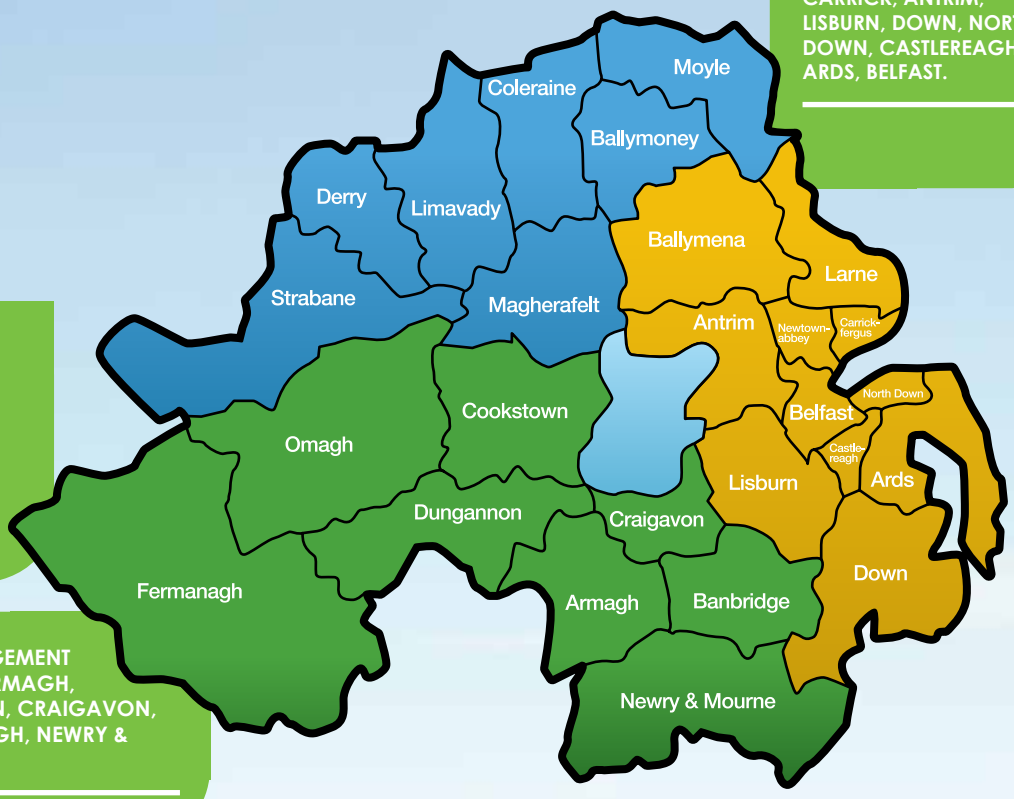
what can i do ?

Not only are we running out of space in landfill sites, but new legislation from Europe is obliging us to and better ways of dealing with waste. Northern Ireland has developed a Waste Management Strategy.

As part of implementing this Strategy the 26 councils formed 3 Sub Regional Groups. These groups developed joint waste management plans for their area to meet European and strategy targets for managing waste better, using the principles of the waste hierarchy.

This shows that the best way to manage waste is not to produce it at all, or at least reduce the amount which needs disposed of. Final disposal should be a last resort.

ARC 21 BALLYMENA, LARNE, NEWTOWNABBEY, CARRICK, ANTRIM, LISBURN, DOWN, NORTH DOWN, CASTLEREAGH, ARDS, BELFAST.



NORTH WEST REGION WASTE MANAGEMENT GROUP MOYLE, BALLYMONEY, COLERAINE, LIMAVADY, DERRY, STRABANE, MAGHERAFELT.

SOUTHERN WASTE MANAGEMENT PARTNERSHIP (SWAMP) ARMAGH, BANBRIDGE, COOKSTOWN, CRAIGAVON, DUNGANNON, FERMANAGH, NEWRY & MOURNE, OMAGH

You can adapt these principles for use in your home or at work!
You can also contact your local council and speak to their Recycling Officer to find out what facilities are available in your area.

why is it important?

Waste represents the squandering of our natural resources, it is unsightly and costly to remove or dispose of. The majority of waste goes to landfill, where materials with the potential for reuse or recycling are lost.

While the waste which is buried in landfill breaks down it begins to release methane gas. Methane is a harmful greenhouse gas. A liquid called leachate is also produced. This leachate has the potential to pollute our ground water. Here in Northern Ireland, In 2009/10 33% of household waste was recycled or composted and 29% of municipal waste recycled or composted.

In 2009/10 332,392 tonnes of municipal waste was sent for recycling or composting.

This must continue to grow or the future for Northern Ireland could be bleak.

Need to find out more?

For further information...

www.rethinkwasteni.org is the DOE website for the 'Rethink Waste Campaign' The NIEA website is at **www.ni-environment.gov.uk** and contains information on the NI Waste Strategy and legislation Tel. 028 905 46615 **www.wastewatch.org.uk** you can download or print other factsheets. **www.recycledproducts.org.uk** has some information on products made from recycled materials.

DOE Department of the Environment www.doeni.gov.uk

rethink waste www.rethinkwasteni.org

INVESTOR IN PEOPLE

waste

Waste Reduction

what's it all about?

Waste Reduction Is.....

- Reduction or elimination of the amount of waste produced in the first place
- Being economical with materials, energy and money
- Development of products or production techniques to minimise waste generation
- Reprocessing waste material for reuse

why is it so important?

Currently the majority of our waste goes to landfill which is not ideal as...

- It is a waste of resources that could be reclaimed for reuse
- It is potentially damaging to the environment
- We are running out of locations suitable for waste disposal and the amount of waste we produce is increasing every year

what can i do?

Take a good look at the waste you produce and ask yourself a few simple questions:

- Is there anything which may be of use to someone else?
- Is there anything which may be of use with a little modification?
- There are many different ways to minimise your waste at home, at work or at school.

at home

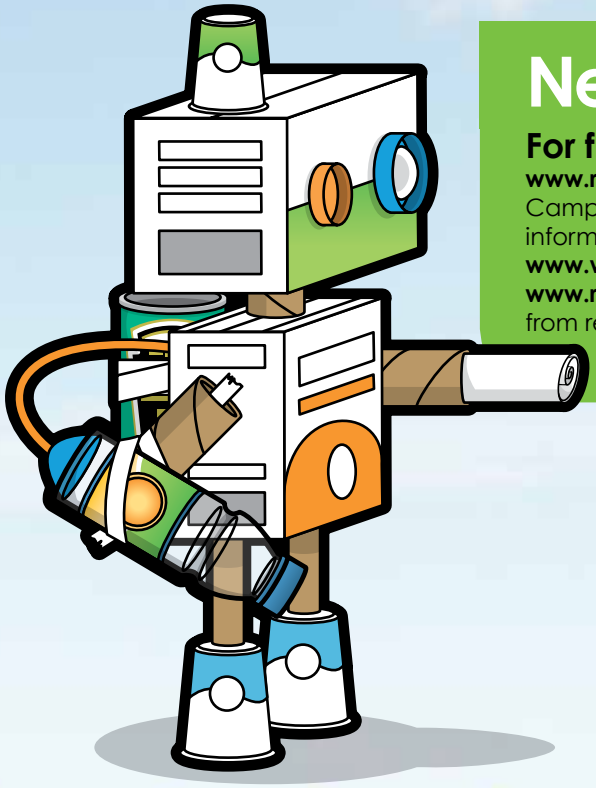
- Take your own bags to the supermarket (reuse plastic bags or use a bag for life)
- Get milk delivered in glass bottles which may be returned, washed and reused
- Buy goods with less packaging

at work

- Print and photocopy on both sides of paper where possible.
- Carry out a simple waste audit.
- Where is the waste produced in your workplace and how could you reduce it?
- Use e-mail instead of leaving paper notes.
- Take lunches in a reusable box instead of using sandwich bags.
- Provide recycling facilities for waste paper, cans, glass, etc.
- Use 'junk' (egg cartons, yoghurt pots etc) for craft work.

A number of Northern Ireland households entered a recent competition stating their 'top 20' ideas for waste reduction Here are some of the tips they came up with...

- **Old T- shirts make great dusters or cloths**
- **Share trips to the recycling centre with another family**
- **Buy loose fruit and veg**
- **Give old toys to the local playgroup**
- **Don't impulse buy**
- **Inner packets of cereal boxes can be used for your packed lunch**
- **Swap books with friends**



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INVESTOR IN PEOPLE

WCL003

waste

reduce, reuse & recycle

Every one of us generates waste each day and with our current consumer driven lifestyle the volume of this waste is growing every year.

waste...

- **squanders our natural resources and energy**
- **costs money to remove and disposal**
- **is harmful to the environment**

but... There are a few simple measures we can all take at home, at work and when out shopping that will reduce, reuse and recycle waste allowing us to minimise environmental impact and save money!

what's it all about?

The 'Waste Hierarchy' lists the best ways of managing wastes from the most to the least desirable

reduce

not producing waste in the first place

reuse

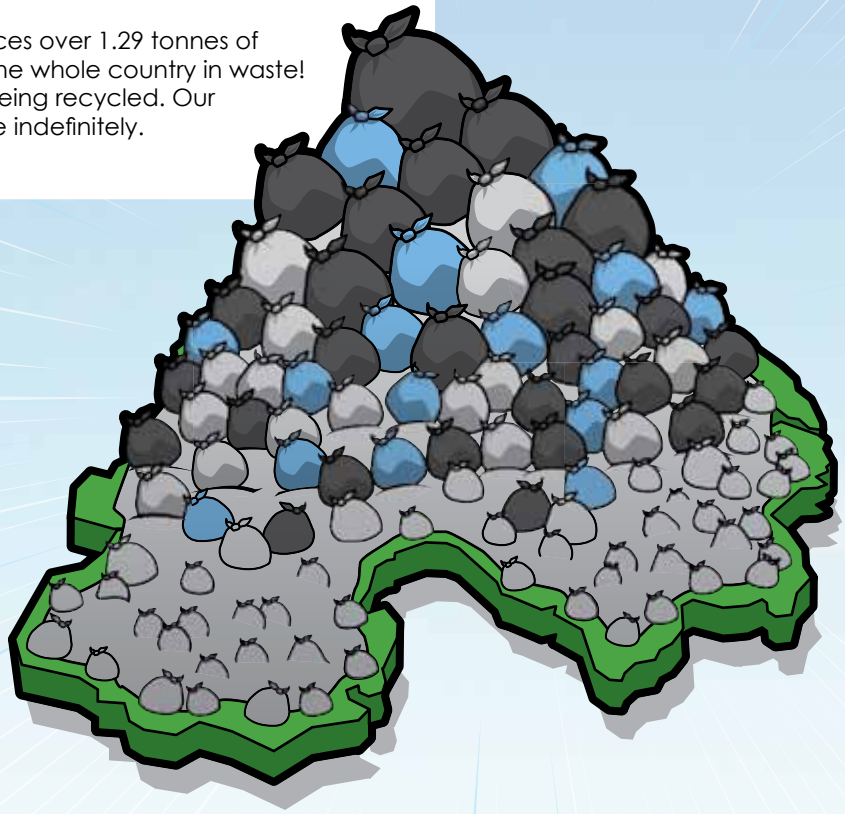
waste products which could be reused without a great deal of reprocessing

recycle

waste is processed into new products

why is it important?

In Northern Ireland every household produces over 1.29 tonnes of waste each year. That's enough to cover the whole country in waste! Only around 35% of this waste is currently being recycled. Our landfills cannot sustain this amount of waste indefinitely.



There are lots of things you can do at home to practice the 3 r's

reduce ideas

- **Say 'no thanks' to a carrier bag when out shopping: take your own**
- **Choose products with minimal packaging or packaging that can be returned for recycling**
- **Buy refillable bottles that can be used again**
- **Buy in bulk to reduce packaging waste**
- **Sign up with the mailing preference service or put a sign on your door requesting no junk mail**
- **Have your milk delivered in returnable bottles: plastic coated cartons are difficult to recycle**
- **Use reusable boxes for packaged lunches**
- **Choose clothes and household items of good quality that will last longer**

reuse ideas

- **Glass jars can be used again for storage**
- **Cover or paint cardboard boxes for storage**
- **Send unwanted but still good clothes to charity shops**
- **Cut up worn clothes into dusters and cleaning clothes**
- **Use a charger and rechargeable batteries instead of single use ones**
- **Use old carrier bags as bins or to take shopping**
- **Old furniture and household appliances can be refurbished and passed on to community groups or those in need**

what is being done?

in Europe - Directives have been drawn up to ensure all European countries develop better waste management in their national waste policies.

in Northern Ireland- In 2006, the Government produced the Northern Ireland Waste Management Strategy. The aim of the Waste Management Strategy is to help us manage waste and resources effectively. This means using material and resources in a way that reduces the quantities of waste produced and, where waste is generated, to manage it in a way that minimises its impact on the environment and public health and contributes positively to economic and social development. Since the publication of the first Waste Management Strategy in 2000, significant progress has been made in improving waste management in Northern Ireland.

local council- Your local council in partnership with other councils in the region has produced a plan for better waste management at a local level.

strategy targets- The waste management strategy team has set a household waste target of 50% by 2020. Recycling of waste is becoming much more common in N. Ireland. The Northern Ireland waste management strategy (2006) set a target that 35% of household waste should be recycled or composted by 2010. In 2009/10 36% of household and municipal waste was sent for recycling including composting.

recycling ideas

- **Collect glass, plastic, paper, cans etc. separately and take to your local recycling centre**
- **Turn vegetable and garden waste into fertiliser with a compost bin or heap**
- **Worn out clothes collected by charities can be sold on for reprocessing into fibres and industrial rags**
- **Collect oil from DIY car maintenance and take to your local civic amenity site: it can be recycled into**
- **boiler fuel and lubricant**
- **Take left over tins of paint to your local re-paint scheme**
- **Buy recycled products: they are of good quality and support the market for raw materials from waste**

Need to find out more?

For further information...

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Talk to your local council recycling or waste disposal department about recycling issues. See the Rethink Waste website for contact details and locations. You could also try the following bodies that offer information on environmental issues Bryson House is a charity involved in recycling schemes **www.rubbish2resource.com Tel:** 028 9032 5835

The Mailing Preference service **Tel:** 020 72913300 **www.mpsonline.org.uk**

ENFO are based in Dublin **Tel:** 00 232 (1)890 200194 **www.enfo.ie**

www.raceagainstwaste.com is the Irish governments waste awareness campaign

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INVESTOR IN PEOPLE

waste

Plastic

In Northern Ireland there are over 12,000 tonnes of plastic bottles in our waste stream, and this is increasing each year. In N. Ireland the average person uses 95 plastic bottles per year. In the UK in general there is 58,000 tonnes of plastic bottles that enter into the waste stream. All plastic bottles can be recycled.

Recycling one plastic bottle saves enough energy to power a 60 watt light bulb for 6 hours.

what's it all about?

Over the last few years, due to a number of changes in society and lifestyle, more and more waste plastic has been produced. Plastic is the fastest-growing component of the solid waste stream. The world's annual consumption of plastic materials has increased from around 5 million tonnes in the 1950s to nearly 100 million tonnes today. Every square mile of ocean contains on average of 46,000 pieces of plastic which can choke and entangle seabirds. The world-wide production of plastic is currently at 35 kilogram per year per person.

On average, it is increasing by 3% per year. This is due to manufacturers and retailers exploiting the fact that plastics are light, highly versatile, shatter resistant, durable, resistant to chemicals and water and inexpensive. Also, due to changes in lifestyle, we are more likely to buy items such as convenience foods which come packaged in plastic which is discarded after use.

why is it important?

It is important to recycle as plastics degrade very slowly in our landfills. 75% of post consumer plastic waste is sent to landfill. It is estimated that 4 out of 5 plastic bottles end up in landfill. In Northern Ireland we use 230 million plastic carrier bags each year most of which end up in landfill. Not only is this occupying valuable space but it is a waste of the plastic resource which could be recycled into other useful products. Plastic production uses 8% of the world's oil production, so recycling will conserve a non-renewable fossil fuel. Producing new bags from recycled plastic can cut energy consumption by one third and reduce the emission of harmful gases.

what can i do?

wash and squash Collect all your plastic bottles, remove the lids, wash and squash before placing in a plastic bottle bank or for collection through your local recycling scheme.

reuse plastic bags when you go to the supermarket or give them to charity shops. Use yoghurt pots for growing seedlings.

refill Some shops sell containers or take the containers back to be recycled

buy items with less packaging or those which are made from recycled materials where possible.

There are many different types of plastic which can be separated into about 50 different families. There are 7 main types.

Recycling plastics can be quite difficult as used plastics may be contaminated or soiled and mixed types cannot be processed. That is why this numerical code was devised to try and ease separation of the different types of plastics. All plastic bottles can be recycled. Other plastics are generally not recycled except in specific small projects.

1 PETE	**Polythylene Terephthalate**	Fizzy drink and water bottles, oven ready meal trays, waterproof packaging may all be made from PETE. This type of plastic may be recycled to make polyester carpets, fibre filling for pillows, quilts and jackets, ribbon for VCRs or reused in the bottle market.
2 HDPE	**High Density Polytehylene**	Milk, detergent and oil bottles are all made from HDPE, as are some toys and plastic bags. This type of plastic can be recycled into plastic pipes, plastic lumber, flowerpots and rubbish bins.
3 V	**Vinyl/Polyvinyl Chloride**	The majority of plastic bags, shrink wrap and garment bags are all made from LDPE. This plastic can be recycled into plastic bags, tubing, agricultural film and plastic lumber.
4 LDPE	**Low Density Polyethylene**	Refrigerated containers, some bags, most bottle tops, some carpets and some food wrap are all examples of PP. This plastic can be recycled into items such as flower pots and car components e.g. wing mirrors and bumpers.
5 PP	**Polypropylene**	Examples of PS include throwaway utensils, meat packaging or protective packaging. This can be recycled into coat hangers, furniture and television parts.
6 PS	**Polystyrene**	Desk accessories, cafeteria trays, plastic utensils, toys, video cassettes and cases, clamshell containers, packaging peanuts, and insulation board and other expanded polystyrene products (e.g., Styrofoam)
7 OTHER	**Other** *(including acrylic, acrylonitrile butadiene styrene, fiberglass, nylon, polycarbonate, and polylactic acid)*	This is usually layered or mixed plastic which is not easily recycled. Bottles, plastic lumber applications, Headlight lenses, and safety shields/glasses

Need to find out more?

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INVESTOR IN PEOPLE

waste

Composting Waste

Much of our household waste is organic and can be recycled into compost.

what's it all about?

Composting is an ancient technology. It was introduced by the Romans about 2000 years ago as a way to build up the fertility of the soil.

- **Compost is an essential ingredient for good soil.**
- **it brings fertility to the soil**
- **improves structure of the soil**
- **improves the drainage**
- **breaks up clay**
- **binds sand**

8.3 million tonnes of food is thrown away by households in the UK each year. If this waste is thrown straight into the bin its potential value is lost and it will go straight to landfill where it will not only take up valuable space but it will also decompose releasing gases and liquids which have the potential to harm the environment.

Wasting food costs the average family with children £680 per year.

Our organic waste is a valuable commodity which may be used in the production of a prime quality compost.

how do i start?

Compost can be made by leaving material in a heap or in a bin. The method you choose may depend on the size of your garden, the amount of material you have to compost or the amount of compost you require.

A compost heap should be at least one metre square and one metre high.

If possible it should be enclosed with brick or timber and covered to keep the rain out. Space should be left at the front, giving room to turn the heap.

Compost bins are a better option for smaller gardens. They may be purchased from garden centres. Many local councils may offer them at a subsidised price. The bin is open ended to allow earth worms to enter the material and help speed up the process.

If neither of these is a feasible option, our local council may run a community composting scheme where you can take your waste along to a massive compost heap which is managed by your local council. Your compost heap should be easily accessible, for example it may be convenient to have two compost areas, one near the back door for kitchen waste and one in the garden to collect material there.

what should i put in my compost bin/heap?

For best results a good mixture of waste is needed and any large woody material should be chopped up.

✔ DO put in

- **lawn and hedge clippings**
- **shredded stalk and vegetable peelings**
- **cut flowers and leaves**
- **teabags and egg shells**

✘ DO NOT put in

- **diseased plants and weeds**
- **plastic and glass**
- **cooked food including meat and fish**
- **coloured glossy paper**
- **pet droppings**

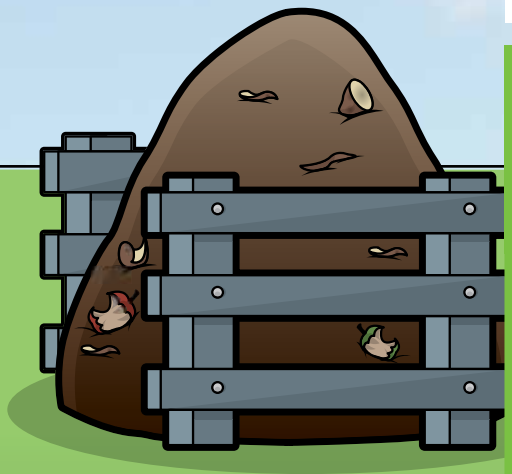
the composting process

There are three types of organisms involved in the composting process;

fungi, bacteria and actinomycetes (bacteria that branch).

These organisms begin to grow all over the material and their biological activity begins to break down the waste. This produces heat, further increasing the activity of the bacteria. Once the bacteria have used up all the starch and sugars the temperature begins to fall again, creating an environment more favourable for the fungi, which then begin breaking down any woody material. Composting can take weeks or months depending on how much air and moisture are present. The compost is ready to use when it is crumbly in appearance and has a slightly earthy smell.

Your compost can then be used in your garden, improving plant health, growth and, increasing yields of fruit, vegetables, flowers and herbs. By using compost you have helped the environment by reducing the need for toxic chemicals and pesticides and increased the nutritional value of home grown foods. You have also helped save our natural bogland which is a finite resource used in the commercial production of compost, and finally you have, of course, **saved yourself money.**



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www.wastewatch.org.uk you can download or print other factsheets.
www.recycledproducts.org.uk has some information on products made from recycled materials.
www.wrap.org.uk has information on composting organic material and standards.
www.compost.org.uk The Compost Association web site

waste

Paper

The average Family throws away 6 trees worth of paper into their household bin in a year. Initially the paper was made entirely by hand and mainly from cloth fibres. Machines were then developed to produce the paper in large quantities to keep up with demand. It was only 100 years ago that they began to make paper on a large scale from wood pulp.

what's it all about?

Paper is one of the most important and diverse consumer materials with approximately 7000 different types, each with very different uses. There are 6 main types:

- **newspaper**
- **printing and writing paper**
- **case making materials**
- **packaging papers and boards**
- **household and toilet tissues**
- **industrial and special purpose papers**

These different types of paper may have to be segregated for recycling depending on the preprocessor's end product.

For example, if the end product is grey, rough material, such as a drinks tray or egg box it is not necessary to segregate paper waste. But if the end product is to be of higher quality, office waste paper or unprinted news sheet may be used.

why is it important?

The 'Waste Hierarchy' lists the best ways of managing wastes from the most to the least desirable Making new paper requires pulp obtained from trees. Paper and card make approximately ¼ of our waste.

However, used paper may be placed in a large vat of water and mixed to create the pulp, therefore reducing the need to use trees. Recycling waste paper also reduces energy consumption, and water use (a lot of the water which is used may be recycled back into the system).

it takes 24 trees to make 1 ton of newspaper.

Paper recycling can reduce volumes of landfilled waste and may generate revenue from the sale of good quality paper to a reprocessor. Paper and card make up approximately one third of our waste, with the majority of this being newspapers and magazines.

Paper is one of the easiest materials to recycle, and may be recycled up to 8 times before the cellulose fibres begin to deteriorate. 70% less energy is required to recycle paper compared with making it from raw materials.

what can i do?

First and foremost it is important to Reduce the amount of paper you use, print on both sides, any unused side can be used to jot down notes.

If you receive a lot of junk mail you can register with the mail preference service online at mpsonline.org.uk to reduce the amount delivered to the door. Reuse wrapping paper, paper bags and envelopes. Set up recycling containers at home, at work and at school especially beside printers, fax machines and photocopiers.

The average household receives 224 items of Junk mail per year.

Councils throughout Northern Ireland are in the process of issuing containers to all households. Use them wisely.

Your local council will be able to advise you on what you may put in. "When leaving paper for recycling make sure there are no contaminants"

If there is contamination a whole lorry full of paper may have to be diverted to landfill. All small contaminants such as magazine staples, paper clips, sticky tape, food remnants, metal foil or plastic.

Recycled paper can be used to make new paper products, moulded packaging for eggs, fruit etc, plaster board production, thermal insulation for buildings, cat litter, shredded for animal bedding, moulded disposable hospital produce. Buying products made from recycled paper stimulates the market making recycled paper a more valuable resource.

Need to find out more?

For further information...

www.rethinkwasteni.org is the DoE website for the 'Rethink Waste campaign'. The NIEA website is at **www.nienvironment.gov.uk** and contains information on the NI Waste Strategy and legislation **Tel: 028 905 46615** **www.wastewatch.org.uk** you can download or print other factsheets. **www.recycledproducts.org.uk** has some information on products made from recycled materials.

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Cans

Every year in N. Ireland we use more 600 million aluminium cans If they were placed end to end they would stretch around the coast of Ireland 7 times. These cans are worth around £1 million.

what's it all about?

Steel cans have been used for packaging since 1810 when a Frenchman, Nicholas Appert was challenged by Napoleon to invent a method of preserving food for the French Army. His invention was the steel can.

The steel can produced today has progressed, and is a lot lighter than that of many years ago. Aluminium cans have also come on the market. These are light, easy to transport and keep products fresh, making them very desirable for many manufacturers.

24 million tonnes of aluminium is produced annually, 51,000 tonnes of which ends up as packaging in the UK. Aluminium cans can be recycled and ready to reuse in just 6 weeks.

One recycled tin can would save enough energy to power a television for 3 hours.

why is it important?

Both aluminium and steel are very valuable resources. Extraction of the raw materials for the manufacture of new cans can result in pollution and habitat destruction. Recycling cans reduces the use of finite resources such as bauxite, iron ore and materials which are mined to produce iron and aluminium. By using scrap steel instead of iron ore energy savings are over 70%, and emissions can be reduced by about 30% to air and by 60-70% to water. Recycling Aluminium cans saves 95% of energy used to make a can from raw material.

why is it so important?

Producing new steel and aluminium is a costly business! BUT it takes only 5% of the energy to produce an aluminium can from recycled material than from raw material, and 25% of the energy compared to producing steel from raw materials.

why recycle?

- **drinks cans, food cans and pet food tins can all be taken to your nearest bank**
- **where possible, crush (not aerosols) and was cans before putting them into recycling banks. It takes up less space**
- **which means more cans can be collected**
- **clean aluminium foil, including foil foodtrays, can also be deposited in can banks for recycling**
- **cash for cans schemes - groups may collect cans and sell them on to a processor**

what happens next?

The cans are collected from the recycling facilities and taken to reprocessing plants. The aluminium cans are separated from the steel cans with a magnet, the steel cans stick.

The aluminium cans are melted down to make big blocks of aluminium which are then rolled to make aluminium sheet which is then used to make new cans. Aluminium foil is separated and reprocessed into new foil.

Steel cans have the tin coating taken off first and then are melted down to make steel ingots which are used to make construction materials, appliances and new cans.

Need to find out more?

For further information...

www.rethinkwasteni.org is the DoE website for the 'Rethink Waste campaign'. The NIEA website is at **www.nienvironment.gov.uk** and contains information on the NI Waste Strategy and legislation **Tel: 028 905 46615**
www.wastewatch.org.uk you can download or print other factsheets.
www.recycledproducts.org.uk has some information on products made from recycled materials.
Alupro scheme **www.alupro.org.uk** or the Alcan scheme **www.cashforcans.co.uk**
Both these websites provide information on collection and recycling of cans.

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Glass

The average person in N. Ireland uses about 140 glass bottles per year.
Glass is 100% recyclable and can be used again and again.
Recycling just four glass bottles saves one litre of oil.

what's it all about?

Glass is manufactured by a process which has remained unchanged for centuries. Raw materials (sand, soda ash and limestone) are heated together in a furnace at up to 1500°C to form glass. This is either moulded into shapes or undergoes further processing. Across Europe 75% of glass produced is used in the packaging of drinks. The average glass bottle contains over 25% recycled glass.

Glass is potentially 100% recyclable.

why is it important?

Glass makes up 6.9% of the household waste stream here in Northern Ireland. The cost of transporting and landfilling this volume of material is considerable.

Producing glass from raw materials uses a lot of energy, and requires quarrying of raw materials Currently we landfill around 1,400,000 tonnes of glass in the UK each year. 52,000 tonnes of glass are landfilled each year in N. Ireland. This waste stream could be cut by a third if each person in Northern Ireland recycled just 20 bottles.

recycling will...

- **reduce disposal costs - any increase in recycling saves on collection and disposal costs**
- **save energy - the energy needed to melt recycled glass is much less than that needed to melt virgin raw materials**
- **conserve the environment - recycled glass saves using raw materials. This reduces costs and the need to quarry new materials**
- **reduce volumes to landfill - about 1.5 million tonnes of glass goes to landfill each year. This is not biodegradable and takes up landfill space**

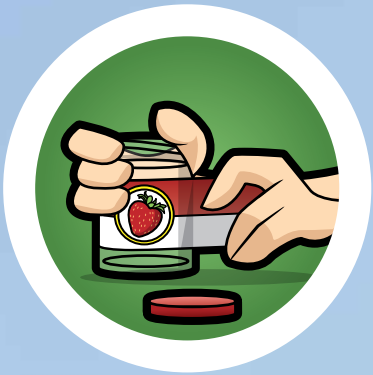
what can i do?

Firstly Think about reducing the amount of Glass waste you produce. Buy products in bulk reducing the weight and quantity of glass i.e. buy one large bottle of juice not several small ones.

What about re-using glasss? Take refillable containers back or reuse glass containers such as jam jars around the house or at work.

Think about recycling!

When buying products, choose those packaged in glass that can be recycled at your local recycling centre.



Recycling tips

- Locate your nearest bottle bank by contacting your local council
- you can recycle most types of jars including jam jars, drinks bottles, coffee jars and sauce bottles.
- You cannot place Pyrex, crystal, plate glass or ceramics in a bottle bank as they have a higher melting point than glass and will upset the recycling process. Any Banks with these items found in them may lead to all the contents being rejected and potentially landfilled.
- Try and incorporate visiting the bottle bank with another journey i.e. going to the supermarket
- There may be bottle banks for each colour of glass
  - wash bottles before depositing
  - remove metal/ foil caps and rings and any shrink wrap

The first bottle bank was intro-duced in the UK in 1977

Need to find out more?

For further information...

www.rethinkwasteni.org is the DoE website for the 'Rethink Waste campaign'.
The NIEA website is at **www.ni-environment.gov.uk** and contains information on the NI Waste Strategy and legislation **Tel: 028 905 46615**
www.wastewatch.org.uk you can download or print other factsheets
www.naturalcollection.com contains many products made from recycled materials
www.britglass.co.uk/recycling UK Glass Federation

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What happens to our waste

"Waste: any substance or object ....which the holder discards or is required to discard" (European Waste Framework Directive)

what's it all about?

Local Authorities have the responsibility for managing, collecting and disposing of a wide range of waste in Northern Ireland. Wheelie bins are collected from outside our door and the contents are tipped into a lorry leaving them free to be filled again.

What happens to the rubbish in the Lorry?

The lorries take this rubbish to the local landfill site. In some areas, this is a giant hole (perhaps an old quarry) that has been specially lined to prevent direct contamination of the surrounding land. The waste is dumped, buried in more waste and eventually covered with clay and soil. In general the waste we put in our wheelie bins is made up of food waste, dust, paper and card, glass, metals and textiles. Here in Northern Ireland approximately 85% of our household waste goes to landfill.

Some of this waste will decompose fairly rapidly. Kitchen and garden waste is biodegradable but as it begins to decompose it releases a gas called methane and a putrid liquid. Both of these are potentially harmful to the environment. Although the waste that does not decompose may not release by-products it takes up space and will be around for hundreds of years (see table below).

Item	Time for biodegradation
Newspaper	6 weeks
Apple core	8 weeks
Natural fibre rope	14 months
Plastic bag	10-2 years
Aluminium can	80-100 years
Glass bottle	up to 500 years
Plastic bottle	indefinite

what can i do?

We can reduce the amount of waste going to landfill by reducing the amount of waste produced in the first place:

- **avoid buying disposable items**
- **say no to plastic bags - use reusable bags or bags for life**
- **buy things with as little packaging as possible**
- **reuse items such as bags, lunch boxes, glass milk bottles and jam jars**
- **reuse envelopes by covering the old address with a sticker**
- **give unwanted toys and clothes to someone else or a charity shop**

we can recycle things!

Contact your local authority to find out what recycling and composting facilities are available in your area and make use of them!

In some areas councils have started collecting dry recyclables from households on a regular basis.

Need to find out more?

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www.wastewatch.org.uk you can download or print other factsheets

www.useitagain.org.uk has some information on products made from recycled materials

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waste

Energy From Waste

Every household in Northern Ireland produces at least one tonne of waste. This waste is known as municipal waste. Specialised wastes are also produced from places such as hospitals, farms and other industries. At the moment the majority of our municipal waste is landfilled. **This has to change. Landfill space is running out!!**

what's the solution?

The waste hierarchy is the best way to address the problem.

We can use the energy held in waste to generate power and heat.

Create less waste, recycle more rubbish and dispose of the remainder in a safe, environmentally friendly way. Any solution should not undermine the prevention or minimisation of waste. Heat value of waste is about one third that of coal.

how?

A number of techniques have been created to produce energy from waste.

Landfill Gas:

One of the main gas emissions from landfill is methane, a potent greenhouse gas. This gas may be collected and burnt to produce energy which can create heat and electricity. Combustion of landfill gas therefore reduces volumes of methane which would otherwise be emitted.

Mass Burn Combustion:

This is one of the oldest and simplest methods of producing energy from waste.

Untreated waste is incinerated. Steam is produced and passed through a turbine to create electricity and low temperature heat, which can then be used in nearby buildings.

Refuse Derived Fuel:

Waste is treated by separating the combustible waste from the non combustibles such as glass or metals. These may then be sent to be recycled. This leaves plastics, paper, wood etc which can be shredded and compacted making it more efficient to burn and easier to transport. As the waste has been separated before incineration, there will be less chance of noxious gasses such as heavy metals being released. An average dustbin could create enough energy for 500 baths, 3,500 showers or 5,000 hours of TV.

At least 0.55 million tonnes of combustible waste is generated each year in Northern Ireland which if burnt would be equal to burning about 0.6 million tonnes of coal per year.

The use of waste as an energy resource frees up a lot of space in our landfills and puts less of a strain on the world's finite resources such as oil, coal and natural gasses.

Anaerobic digestion:

Kitchen waste (raw vegetables, peelings etc) or agricultural waste (dairy, beef and sheep slurry or chicken litter) is placed in a heated airtight container where bacteria start to break down the material converting it to

Biogas - used to generate heat and/or electricity which may be used on site or the electricity may be sold to the national grid

Fibre – can be used as a soil conditioner

Liquor – may be pasteurised and used as a liquid fertiliser.

This process is used successfully in Germany and Denmark and now the first 'Centralised Anaerobic Digestion Plant' has been set up in Devon, England.

Gasification:

This is a thermo-chemical process in which waste is heated in an environment with a limited amount of oxygen. A low-energy gas is produced containing hydrogen, carbon monoxide and methane which can then be used as a fuel in a turbine or combustion engine to generate electricity.

Pyrolysis:

Waste is treated in the complete absence of oxygen. Gas, often liquid and char are produced in various quantities. The gas and oil can be processed, stored and transported, if necessary and combusted in an engine, gas turbine or boiler. Char can be recovered from the residue and used as a fuel, or the residue passed to a gasifier and the char gasified.

Need to find out more?

For further information...

www.rethinkwasteni.org is the DoE website for the 'Rethink Waste campaign'.

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Council Contacts

If there is any further information or assistance you might require within your schools or ideas to help promote, reducing, reusing and recycling you can contact your council representative at the details given below:

Antrim Borough Council

Address: Antrim Civic Centre, 50 Stiles Way, Antrim, BT41 2UB
Phone number: 028 9446 3113
Fax: 028 9448 1324
Email address: info@antrim.gov.uk
Website: www.antrim.gov.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Ards Borough Council

Address: 2 Church Street, Newtownards, County Down, BT23 4AP
Phone number: 028 9182 4000
Fax: 028 9181 9628
Email address: ards@ards-council.gov.uk
Website: www.ards-council.gov.uk/
Opening Hours: Monday to Thursday 9.00 am to 5.00 pm, Friday 9.00 am to 4.30 pm

Armagh City and District Council

Address: Council Offices, The Palace, Demesne, Armagh, BT60 4EL
Phone number 028 3752 9600
Fax: 028 3752 9601
Email address: info@armagh.gov.uk
Website: www.armagh.gov.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Ballymena Borough Council

Address: Ardeevin, 80 Galgorm Road, Ballymena, BT42 1AB
Phone number: 08456 581581
Fax: 028 2566 0400
Email address: council.reception@ballymena.gov.uk
Website: www.ballymena.gov.uk
Opening Hours: Monday to Friday 9.00 am to 1.00 pm, 2.00 pm to 5.00 pm

Ballymoney Borough Council

Address: Riada House, 14 Charles Street, Ballymoney, Co Antrim, BT53 6DZ
Phone Number: 028 2766 0200
Fax: 028 2766 0222
Email address: info@ballymoney.gov.uk
Website: www.ballymoney.gov.uk
Opening Hours: Monday to Thursday 9.00 am to 5.00 pm, Friday 9.00 am to 4.30 pm

Banbridge District Council

Address: Civic Building, Downshire Road, Banbridge, County Down, BT32 3JY
Phone number: 028 4066 0600
Fax: 028 4066 0601
Email address: info@banbridge.gov.uk
Website: www.banbridge.com/
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Belfast City Council

Address: Adelaide Exchange, 24-26 Adelaide Street, Belfast, BT2 8GD
Phone number: General enquiries 028 9032 0202
Email address: generalenquiries@belfastcity.gov.uk
Website: www.belfastcity.gov.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Carrickfergus Borough Council

Address: Carrickfergus Museum and Civic Centre, 11 Antrim Street, Carrickfergus, County Antrim BT38 9DG
Phone number: 028 9335 8000
Fax: 028 9336 6676
Email address: info@carrickfergus.org
Website: www.carrickfergus.org
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Castlereagh Borough Council

Address: Civic Centre, 1 Bradford Court, Upper Galwally, Castlereagh, Belfast, BT8 6RB
Phone number: 028 9049 4500
Fax: 028 9049 4515
Email address: council@castlereagh.gov.uk
Website: www.castlereagh.gov.uk

Coleraine Borough Council

Address: Cloonavin, 66 Portstewart Road, Coleraine, Northern Ireland, BT52 1EY
Phone number: 028 7034 7034
Fax: 028 7034 7026
Email address: info@colerainebc.gov.uk
Website: www.colerainebc.gov.uk

Cookstown District Council

Address: Burn Road, Cookstown, County Tyrone, BT80 8DT
Phone number: 028 8676 2205
Fax: 028 8676 4360
Email address: info@cookstown.gov.uk
Website: www.cookstown.gov.uk
Opening Hours: Monday to Friday 9.00 am to 1.00 pm and 2.00 pm to 5.00 pm

Craigavon Borough Council

Address: Civic Centre, PO Box 66, Lakeview Road, Craigavon, Co Armagh, BT64 1AL
Phone number: 028 3831 2400
Text phone Minicom: 028 3832 9757
Fax: 028 3831 2444
Email address: info@craigavon.gov.uk
Website: www.craigavon.gov.uk
Opening Hours: Monday to Friday 8.45 am to 5.15 pm

Derry City Council

Address: 98 Strand Road, Derry, BT48 7NN
Phone number: 028 7136 5151
Fax: 028 7126 4858
Email address: info@derrycity.gov.uk
Website: www.derrycity.gov.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Down District Council

Address: 24 Strangford Road, Downpatrick, County Down, BT30 6SR
Phone number: 028 4461 0800
Fax: 028 4461 0801
Email address: council@downdc.gov.uk
Website: www.downdc.gov.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Dungannon and South Tyrone Borough Council

Address: Council Offices, Circular Road, Dungannon, County Tyrone, BT71 6DT
Phone number: 028 8772 0300
Fax: 28 8772 0368
Email address: info@dungannon.gov.uk
Website: www.dungannon.gov.uk

Fermanagh District Council

Address: Townhall, Enniskillen, County Fermanagh, BT74 7BA
Phone number: 028 6632 5050
Text phone: 028 6632 7969
Fax: 028 6632 2024
Email address: fdc@fermanagh.gov.uk
Website: www.fermanagh.gov.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Larne Borough Council

Address: Smiley Buildings, Victoria Road, Larne, County Antrim, BT40 1RU
Phone number: 028 2827 2313
Fax: 028 2826 0660
Email address: admin@larne.gov.uk
Website: www.larne.gov.uk
Opening Hours: Monday to Friday

Limavady Borough Council

Address: 7 Connell Street, Limavady, County Londonderry, BT49 0HA
Phone number: General enquiries 028 7772 2226
Fax: 028 7772 2010
Email address: info@limavady.gov.uk
Website: www.limavady.gov.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Lisburn City Council

Address: Lagan Valley Island, Island Civic Centre, The Island, Lisburn, County Antrim, BT27 4RL
Phone number: 028 9250 9250
Text phone: 028 9250 9508
Fax: 028 9250 9288
Email address: enquiries@lisburn.gov.uk
Website: www.lisburncity.gov.uk

Magherafelt District Council

Address: 50 Ballyronan Road, Magherafelt, BT45 6EN
Phone number: 028 7939 7979
Email address: info@magherafelt.gov.uk
Website: www.magherafelt.gov.uk
Opening Hours: Monday to Friday 9.00 am to 1.00 pm and 2.00 pm to 5.00 pm

Moyle District Council

Address: Sheskburn House, 7 Mary Street, Ballycastle, County Antrim, BT54 6QH
Phone number: 028 2076 2225
Fax: 028 2076 2515
Email address: info@moyle-council.org
Website: www.moyle-council.org
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Newry and Mourne District Council

Address: Monaghan Row, Newry, BT35 8DJ
Phone number: 028 3031 3031
Fax: 028 3031 3077
Email address: administration@newryandmourne.gov.uk
Website: www.newryandmournedc.gov.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Newtownabbey Borough Council

Address: Mossley Mill, Newtownabbey, County Antrim, BT36 5QA
Phone number: 028 9034 0000
Fax: 028 9034 0200
Email address: info@newtownabbey.gov.uk.
Website: www.newtownabbey.gov.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

North Down Borough Council

Address: Town Hall, The Castle, Bangor, County Down, BT20 4BT
Phone number: 028 9127 0371
Fax: 028 9127 1370
Website: www.northdown.gov.uk

Omagh District Council

Address: The Grange, Mountjoy Road, Omagh, County Tyrone, BT79 7BL
Phone number: 028 8224 5321
Fax: 028 8224 3888
Email address: info@omagh.gov.uk
Website: www.omagh.gov.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Strabane District Council

Address: 47 Derry Road, Strabane, County Tyrone, BT82 8DY
Phone number: 028 7138 2204
Fax: 028 7138 1348
Email address: info@strabanedc.com
Website: www.strabanedc.org.uk
Opening Hours: Monday to Friday 9.00 am to 5.00 pm

Useful Links:

For more information about all of the subjects touched on in this resource booklet, the following websites are an excellent source of information and extension activity ideas.

rethinkwasteni.org

ni-environment.gov.uk

rubbish2resource.com

raceagainstwaste.com

mpsonline.org.uk

swamp2008.org.uk

recyclenowpartners.org.uk

lovefoodhatewasteni.org

wastewatch.org.uk

eco-schoolsni.org

energysavingtrust.org.uk

recyclenow.com

wrapni.org.uk

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