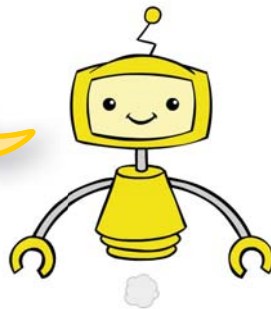


Reduce, reuse, recycle

Did you know that I'm made of some new and some recycled parts? My CPU used to be part of a car manufacturing plant in China, and my waterproof motorised widget was first used by Jason, the robot who explored the wreck of the *Titanic* in 1985! I wonder whether Indonesians recycle. Let's find out about waste management in Indonesia!



LINKS TO:
 Stage 2, Module 13
 Learning Object 3: Calculate your ecological footprint

PRIOR LEARNING:
 Stage 2
 Module 13 Work Sheet 3: *A lightbulb moment*



The house as a system

1

The world is made of all kinds of interlocking systems. An ecosystem is a biological environment. It's a word we use to talk about everything inside a particular area. A home is also a system — a micro-environment that includes air, soil, water, animals and plants, bricks, bats and beehives!

Every system has inputs and outputs. If you think of your home as a system, some of the inputs might be food, water and electricity. A major output of most homes in the world is waste.

All households produce waste. In ancient times, the waste produced might have included animal bones, seed husks, and broken tools, while in modern times the waste might also include batteries, tin cans and plastic bags.

The waste of ancient civilisations is one of the key resources for archaeologists, who can tell much about a society from ancient middens. A midden (*timbunan sampah*) is a domestic waste dump.

In Australia, shell middens created by Indigenous Australians provide evidence of their presence in the country, and some of their hunting and food management practices. The presence of Indigenous middens can also be used as evidence for both native title claims and cultural assessments for development and industry.

A home produces all kinds of waste. The average Australian home produces more than 700 kg* of waste every year! In Indonesia, the average home produces around 730 kg of waste a year.

All that rubbish has to go somewhere! How we manage household waste changes a great deal from country to country. In many countries, people are encouraged to personally support more sustainable waste management by using the principles: reduce, reuse, recycle.

But what kinds of waste does a household produce? The diagram on the following page shows some of the typical waste produced by an Australian household and how it's disposed of.

*Waste per year figure from the OECD, 2008 figure.

Note:

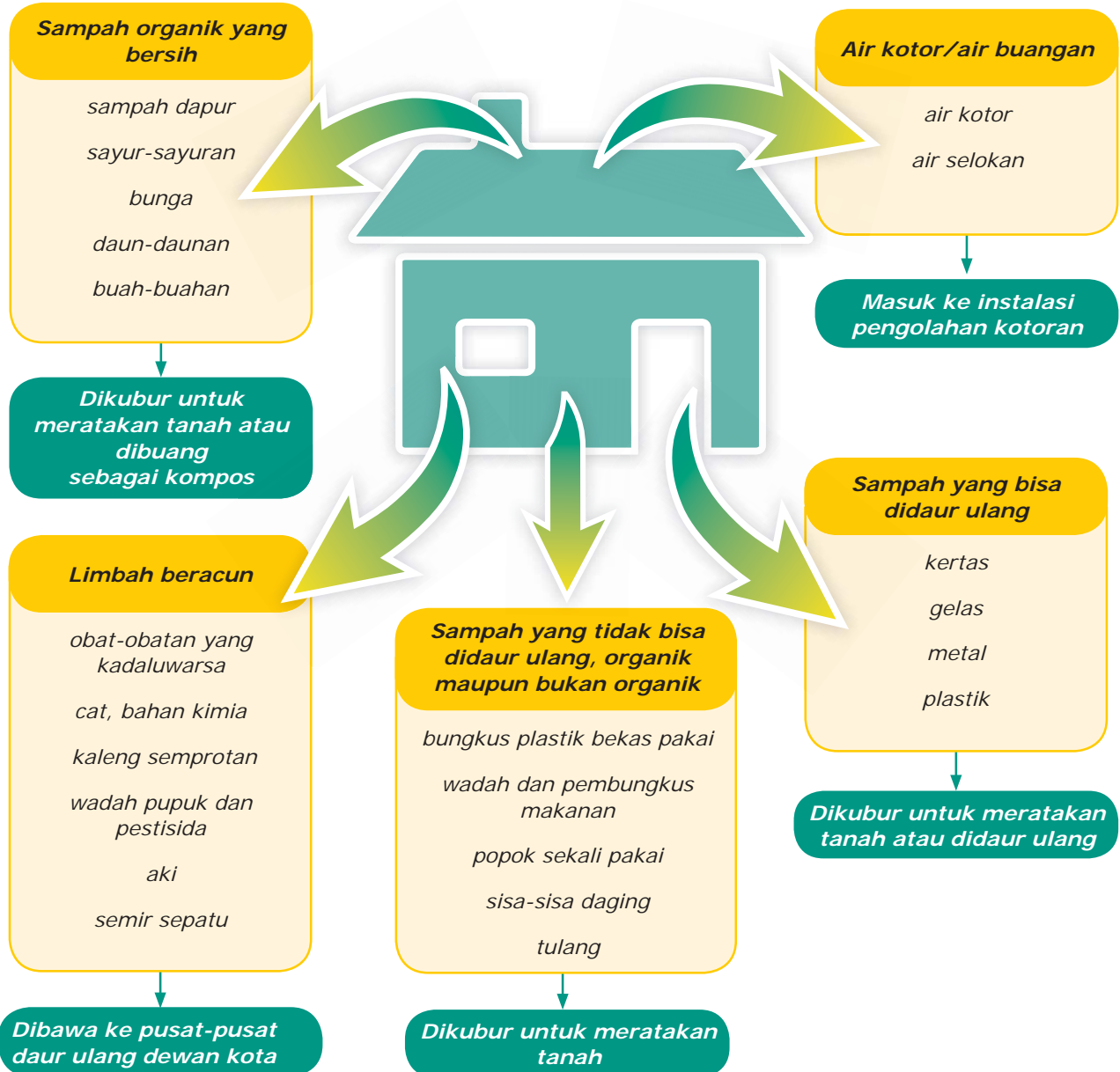
An Indonesian midden was discovered at an archeological dig at Bukit Kerang, which means 'hill of mollusc shells'. The site is in the regency of Aceh Tamiang in Aceh, North Sumatra, and dates from the Mesolithic era (5000–7000 years ago). The large shell mound, or midden, is the most significant part of the dig. In the Mesolithic area, people lived along the shore of eastern Sumatra; molluscs were a significant part of their diet. As a result of geological movement, this site, stretching some 120 kilometres, is now located between 10 and 15 kilometres inland from the coast.

Archaeologists have also discovered various bones, such as skulls and brainpans, at the site, along with stone tools and pottery.

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2

Reduce, reuse, recycle

In Australia, people are encouraged to consider the environment. Government advertising campaigns, as well as non-government organisations (NGOs), promote sustainable practices such as recycling, reducing waste, protecting native species and natural environments, using public transport rather than driving, purchasing environmentally-friendly products and so on. In Australia, environmental policies are focused on clean air, clean water, and clean soil.

In practical terms, most Australians have a recycling bin or access to a recycling centre. As

an individual, it can sometimes be difficult to feel like you are making a difference, but every individual can help, in terms of their impact on the environment, just by being thoughtful about how they deal with their waste. Dealing with rubbish doesn't have to be boring; you can be a creative recycler!

Reduce (*Kurangi*)

The first step is to reduce the amount of rubbish you produce. Think about the things you throw

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away that you never needed to bring into your personal ecosystem! You can reduce the amount of rubbish you produce by not buying things you do not need, buying things without packaging or with minimal packaging, and reducing the amount of rubbish that you contribute to landfill by reusing and recycling.

These days many families use energy-saving lightbulbs, which reduce the amount of power you use. In the supermarkets of Australia, many environmentally friendly products are available, such as washing powders, detergents and soaps. These reduce the negative impact that you and your family have on the environment.

You can also reduce your carbon footprint by buying locally produced products. Products that are grown and sold locally do not have as much impact on the environment because of the reduced amount of fuel and energy used in storage, transport, and packaging.

Reuse (*Pakai lagi*)

Much of the household waste you produce can be reused. Remember in kindergarten, when you made artworks out of egg cartons and toilet rolls? Many families compost their kitchen waste, which is one way of both reducing your waste, and reusing it! Most Australians are encouraged not to use plastic shopping bags, but to bring their own reusable shopping bags. How can you be creative with your 'rubbish'? Can you donate some of your 'rubbish' to the local kindergarten or preschool?

Can you reuse some of the food packaging you've purchased to pack your school lunch? Can you use some of your 'rubbish' to make gifts or art objects?

Recycle (*Daur ulang*)

In most places, there are at least some recycling services you can access. If you have a recycling bin, you can make sure that you separate your recyclables, such as glass, plastic, some metals, paper and cardboard from the general waste.

As well as household recycling bins, you may be able to access council, community or private recycling centres. In many areas of Australia, you can also recycle some household goods by donating them to charitable organisations for resale.

In Australia, you can take your old mobile phones to Australia Post for recycling. There are also depots that collect and recycle waste such as printer cartridges, computer parts, mobile phone components and car tyres. You may even be lucky enough to live near a 'Reverse Garbage' style outlet. These are shopfronts that collect clean, reusable 'rubbish' to resell to the public. Some of the 'rubbish' they collect is used for artworks, or in home repairs and refurbishment, to make shopfront displays or — for whatever you can imagine! You might find old shopfront dummies, theatre sets, or all kinds of other weird and wonderful things to use for your next creative project.

3

Waste management in Indonesia

Household waste management varies a great deal from country to country. These variations occur for a number of reasons, including the volume of waste produced, the infrastructure for dealing with waste, legal regulations and cultural practices.

In Indonesia, the typical household is different to the typical Australian household in how the waste is disposed of.

Solid waste disposal

In Indonesia, waste management is managed very differently to the ways it is managed in Australia.

Even in large cities, like Jakarta, there is only

limited, often small-scale kerbside waste collection service. There are a number of reasons for this difference, including municipal budgetary constraints, and the inability of large waste-collection trucks to navigate the narrow backstreets and laneways of Indonesian cities.

Suburban waste not collected through 'official' channels' is collected by the 40,000-plus *pemulung*, or waste collectors, whose livelihood depends on how much recyclable waste they are able to collect. *Pemulung* push waste collection carts or carry waste collection sacks along Jakarta's narrow streets and lanes. They sift through the waste in the large concrete bins outside many homes, looking for anything that can be recycled. Some *pemulung* sift through the

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neighbourhood rubbish disposal site before the waste collected there is incinerated.

In the poorer *kampung*, household waste often ends up in the canals and rivers.

In wealthy households in Jakarta, responsibility for managing waste is usually delegated to the *pembantu* (domestic helper).

Of the 6250 tons of waste produced in Jakarta each day, 4500 tons is collected by the City Sanitation Office and ends up at the landfill of Bantar Gebang in Bekasi, which is 30 kilometres east of Jakarta. This landfill, which is 25 metres high and a square kilometre in area, is the permanent home of more than 4000 *pemulung*, who sift through the mountain of rubbish looking for recyclables such as plastic and paper.

Sewerage

Jakarta produces 1.2 billion litres of sewage every day, 600,000 litres of which is handled by sewage treatment plants. Many Jakartans use

private septic tanks that need to be emptied twice a year.

According to the Ministry of Public Works, many households in the capital dispose of raw sewage into closed or open gutters, the ground, or canals and rivers. Contamination of groundwater is therefore a constant problem.

Source: *The Jakarta Globe*, 24 July 2009.

Green projects

Some charitable foundations in Jakarta have realised that there is money to be made in recycling waste. The KDM Green Project Jakarta was founded in 2001 in order to assist the foundation in its charitable work with Jakarta's street children. Since its inception more than 250 households, schools and companies have joined the scheme.

4

Exercises

Exercise 1

Anna is working on a project with Ardi about recycling. They are going to compare how households in Indonesia and Australia deal with rubbish using two case studies, and then present their findings to the class as a talk.

Their first step is to map the waste each household produces, and how it is dealt with.

- 1.1 Anna has to put together a record of the rubbish the Smart household produced in a typical day while they were living in Australia.

Use your own household as a model to fill in the table on the following page on behalf of Anna.

An example has been given below to get you started.

<i>Macam sampah</i>	<i>Contoh?</i>	<i>Jumlah?</i>	<i>Dibuang ke mana?</i>
<i>Sampah organik bersih</i>	<i>sayur-sayuran yang tidak dimakan</i>	<i>setengah piring</i>	<i>memberi makan ayam</i>

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<i>Macam sampah</i>	<i>Contoh?</i>	<i>Jumlah?</i>	<i>Dibuang ke mana?</i>
<i>Sampah organik bersih</i>			
<i>Sampah yang tidak bisa didaur ulang, organik maupun bukan organik</i>			
<i>Air kotor/air buangan</i>			
<i>Limbah beracun</i>			
<i>Sampah yang bisa didaur ulang</i>			

- 1.2 Ardi has agreed to keep a rubbish diary for the project. Based on your knowledge of Indonesian waste management, fill in the following rubbish diary for the Sugianto household.

<i>Macam sampah</i>	<i>Contoh?</i>	<i>Jumlah?</i>	<i>Dibuang ke mana?</i>
<i>Sampah organik bersih</i>			
<i>Sampah yang tidak bisa didaur ulang, organik maupun bukan organik</i>			
<i>Air kotor/air buangan</i>			
<i>Limbah beracun</i>			
<i>Sampah yang bisa didaur ulang</i>			

- 1.3 Anna and Ardi need to design a presentation based on their findings, comparing and contrasting the waste management practices in their households.

Use the following 'screens' to design a presentation, with some speaker notes in dot-point form for Anna and Ardi to use when they give their talk. Answer these questions in Indonesian.

The first five screens are for comparing the information Anna and Ardi have collected in Exercises 1.1 and 1.2.

- 1.3.1 Screen one: Sampah organik yang bersih.
Compare how much clean organic waste each household produces, and how they deal with it.

Keluarga Smart (Brisbane Australia)	Dibuang ke mana?	Catatan
Keluarga Sugianto (Jakarta Indonesia)	Dibuang ke mana?	Catatan

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1.3.2 Screen two: Sampah yang tidak bisa didaur ulang, organik maupun bukan organik. Compare how much dirty organic waste each household produces, and how they deal with it.

Keluarga Smart (Brisbane Australia)	Dibuang ke mana?	Catatan
Keluarga Sugianto (Jakarta Indonesia)	Dibuang ke mana?	Catatan

1.3.3 Screen three: Air kotor/air buangan.

Compare how much dirty organic waste each household produces, and how they deal with it.

Keluarga Smart (Brisbane Australia)	Dibuang ke mana?	Catatan
Keluarga Sugianto (Jakarta Indonesia)	Dibuang ke mana?	Catatan

1.3.4 Screen four: Limbah beracun.

Compare how much toxic waste each household produces, and how they deal with it.

Keluarga Smart (Brisbane Australia)	Dibuang ke mana?	Catatan
Keluarga Sugianto (Jakarta Indonesia)	Dibuang ke mana?	Catatan

1.3.5 Screen five: Sampah yang bisa didaur ulang.

Compare how much recyclable waste each household produces, and how they deal with it.

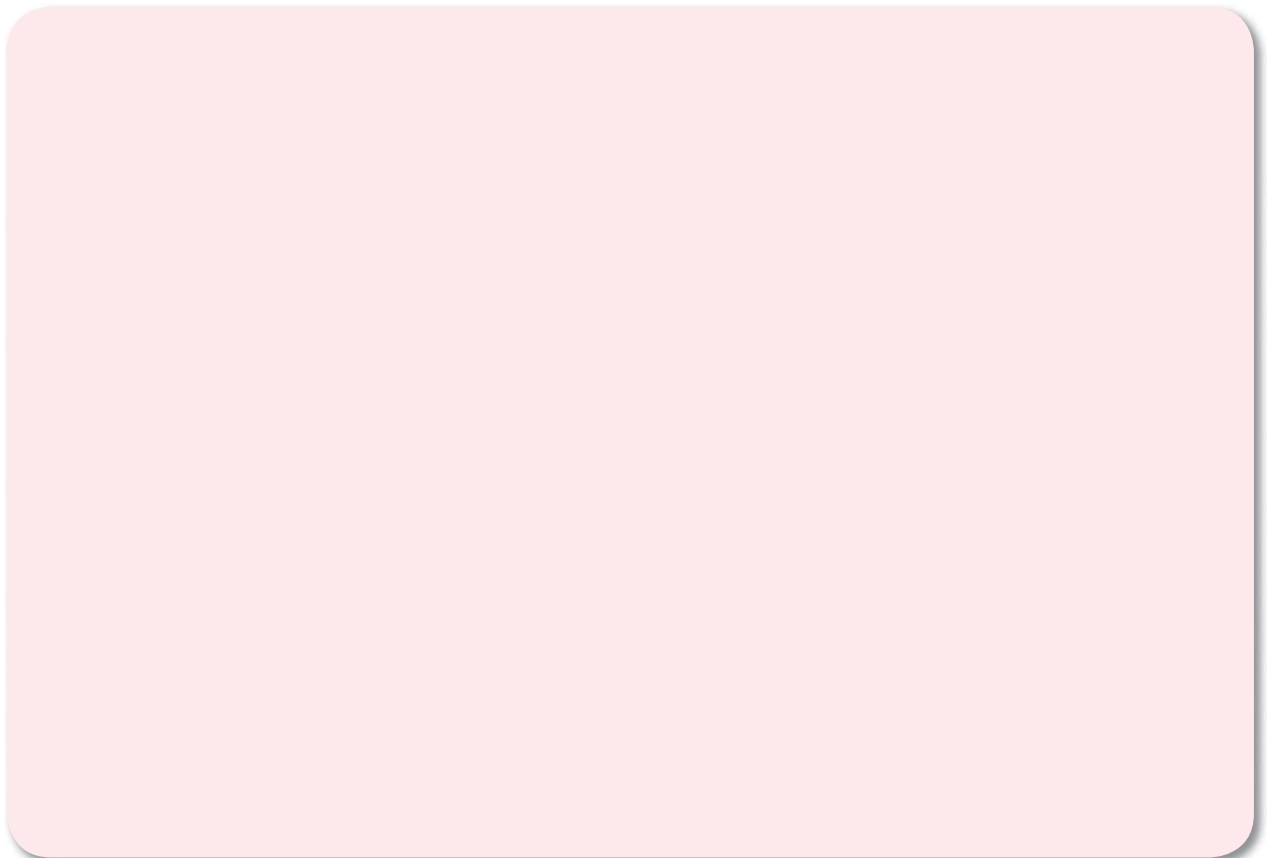
Keluarga Smart (Brisbane Australia)	Dibuang ke mana?	Catatan
Keluarga Sugianto (Jakarta Indonesia)	Dibuang ke mana?	Catatan

The next three screens are for Ardi and Anna's discussion of the issues related to rubbish and recycling. Anna and Ardi have been asked to answer the questions as part of their talk.

1.3.6 Screen six: What cultural factors influence Australian attitudes to household rubbish and recycling?



1.3.7 Screen seven: What cultural factors influence Indonesian attitudes to household rubbish and recycling?



1.3.8 Screen eight: Based on Anna and Ardi's research, as well as what you know about rubbish and recycling in Australia and Indonesia, what similarities and differences are there in the way the two countries deal with their household rubbish?

Australian practices

Indonesia practices

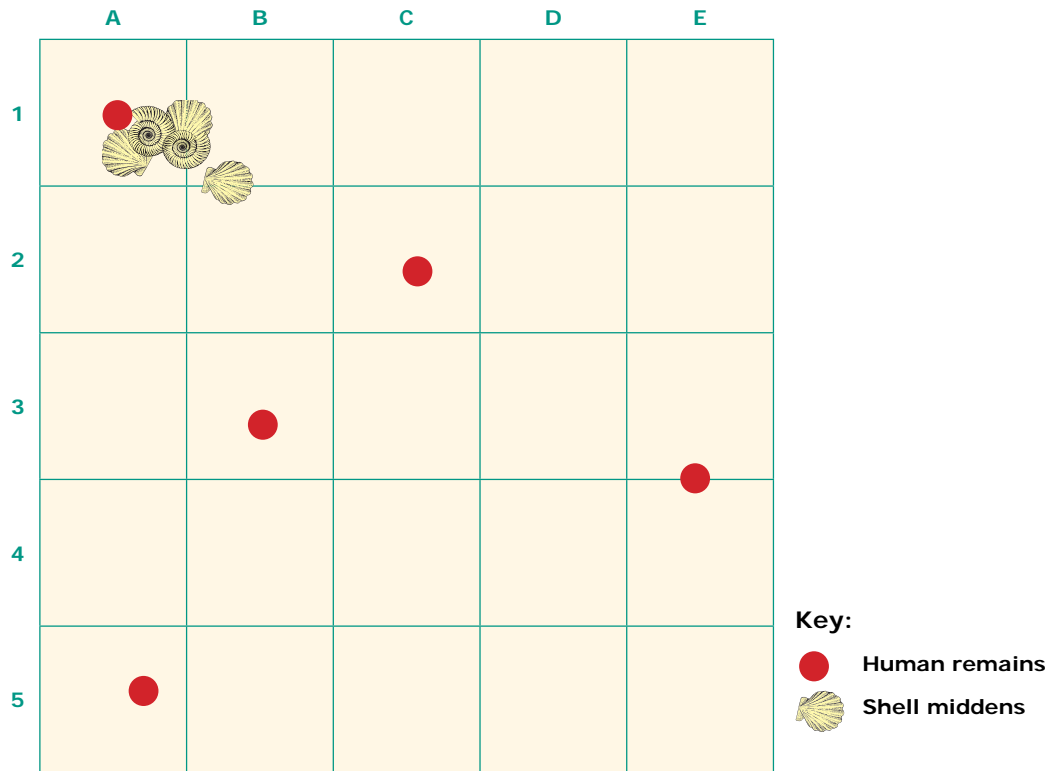
Similar practices

Exercise 2

Peter and Anna's class have been on an excursion to the archaeological dig at Bukit Kerang in Indonesia.

While they were there, the class visited the midden or hill of mollusc shells! Local archaeologists and their team of researchers and students were really excited about this discovery, and invited Peter and Anna to help photograph the mound.

Just for your interest, below is a diagrammatic example of an archaeological dig showing how midden mounds and human remains are mapped.



Answer the following questions in English.

2.1 What do these objects suggest about the local culture in Mesolithic period?

Hint! You might like to consider what the evidence in the midden suggests about food preparation and diet and what people did for work or for entertainment.
