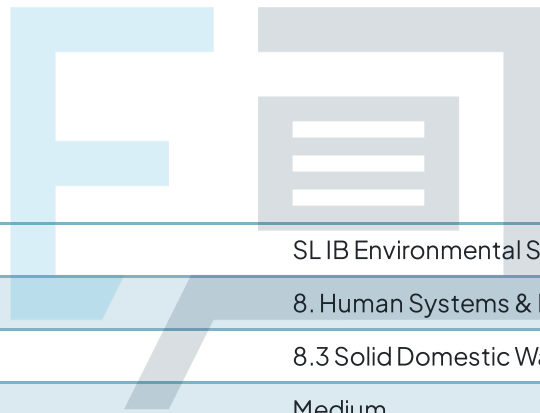




8.3 Solid Domestic Waste

Mark Schemes



Course	SL IB Environmental Systems & Societies (ESS)
Section	8. Human Systems & Resource Use
Topic	8.3 Solid Domestic Waste
Difficulty	Medium

Exam Papers Practice

To be used by all students preparing for
SL IB Environmental Systems & Societies (ESS)
Students of other boards may also find this useful

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Indicative Content	Commentary
<p>Recycling and re-use as methods for dealing with solid domestic waste can be evaluated as follows:</p> <p><i>Recycling:</i></p> <p>Any two from the following:</p> <p><i>Advantages:</i></p> <ul style="list-style-type: none">• Less energy is required to recycle metal/paper/glass than to generate new materials; [1 mark]• Reduces the amount of resources used/consumed; [1 mark]• Maintains stocks of non-renewable resources; [1 mark] <p><i>Disadvantages:</i></p> <ul style="list-style-type: none">• Uses (significant amounts of) energy; [1 mark]• Causes some pollution; [1 mark]• Affected by economic demand and supply factors (and so is sometimes uneconomic / economically not viable); [1 mark]• Requires collection/sorting/processing / significant time/effort; [1 mark]	<p>The command term 'evaluate' requires you to make an appraisal by weighing up the strengths and limitations of a particular topic or issue</p>

<p>AND</p> <p><i>Re-use:</i></p> <p>Any two from the following:</p> <p><i>Advantages:</i></p> <ul style="list-style-type: none"> • Little energy used; [1 mark] • Provides cheap resources for people of limited means / in poorer countries/regions; [1 mark] <p><i>Disadvantages:</i></p> <ul style="list-style-type: none"> • Requires energy to clean waste items/materials; [1 mark] • Can be heavy to transport e.g. reusable milk bottles; [1 mark] • Items/materials will eventually wear out/must be disposed of; [1 mark] 	
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Exam Papers Practice

Indicative Content	Commentary
<p>Composting and incineration as methods for dealing with solid domestic waste can be evaluated as follows:</p> <p><i>Composting:</i></p> <p>Any two from the following:</p> <p><i>Advantages:</i></p> <ul style="list-style-type: none"> • Produces fertiliser / can be used to promote plant growth; [1 mark] 	<p>The command term 'evaluate' requires you to make an appraisal by weighing up the strengths and limitations of a particular topic or issue</p>

- Reduces the volume of waste / reduces volume/space required by landfill; [1 mark]
- Reduces use of (polluting) chemical fertilisers; [1 mark]

Disadvantages:

- Unpleasant smells / can attract vermin if not done properly; [1 mark]
- Requires (significant) effort/space; [1 mark]
- Takes time / decomposition of some materials is (very) slow; [1 mark]

AND

Incineration:

Any **two** from the following:

Advantages:

- Reduces the volume of waste; [1 mark]
- Heat produced can be used as energy source / in place of burning fossil fuels; [1 mark]
- Kills pathogens; [1 mark]
- Produces ash for construction; [1 mark]
- Capable of neutralising hazardous substances; [1 mark]

Disadvantages:

- Toxic chemicals released / incomplete combustion releases dioxins; [1 mark]

- Produces greenhouse gases; [1 mark]
- Ash still needs disposal; [1 mark]
- Expensive; [1 mark]
- Considerable community resistance to the building of new incinerators; [1 mark]
- Incinerators require substantial investment/money for construction/upkeep; [1 mark]

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Indicative Content	Commentary
<p>Landfill and dumping at sea as methods for dealing with solid domestic waste can be evaluated as follows:</p> <p><i>Landfill:</i></p> <p>Any two from the following:</p> <p><i>Advantages:</i></p> <ul style="list-style-type: none"> • Landfills can be less expensive to establish/manage compared to other waste disposal methods; [1 mark] • Landfills allow for the disposal of a large volume of waste in a relatively compact area, making them suitable for densely populated regions with limited available space; [1 mark] • Landfills can effectively handle hazardous waste that may pose risks to human health / the 	<p>The command term 'evaluate' requires you to make an appraisal by weighing up the strengths and limitations of a particular topic or issue</p>

environment, preventing direct exposure / minimising potential contamination; [1 mark]

Disadvantages:

- Landfills produce methane gas, a potent greenhouse gas that contributes to climate change; [1 mark]
- The process of decomposition in landfills also generates leachate, a liquid that can contaminate groundwater / surface water; [1 mark]
- Landfills have a finite capacity / once they are filled to capacity, new sites need to be identified/developed, which can lead to habitat destruction / land use conflicts; [1 mark]
- Landfills do not encourage resource recovery/recycling, as waste is disposed of without extracting valuable materials that could be recycled/reused, contributing to resource depletion / increased waste generation; [1 mark]

Dumping at sea:

Any **two** from the following:

Advantages:

- No smells; [1 mark]
- Land is available for other purposes; [1 mark]
- No problem with vermin; [1 mark]

Disadvantages:

- Damage/disruption of marine ecosystems; [1 mark]
- Waste may be washed up on beaches; [1 mark]
- Encourages algal blooms; [1 mark]

4a

Indicative Content

Non-biodegradable pollution can be defined as follows:

Any **two** from the following:

- Waste materials/substances / human-produced materials/substances that do not naturally decompose/breakdown into simpler/harmless substances through biological processes; [1 mark]
- Within a reasonable timeframe **OR** these materials/substances persist in the environment for extended periods; [1 mark]
- Leading to accumulation / potential environmental issues; [1 mark]

4b

Indicative Content

Environmental impacts of non-biodegradable pollution in solid domestic waste include:

Any **three** from the following:

- Non-biodegradable pollutants e.g. plastics / batteries / e-waste have significant/long-lasting environmental consequences; [1 mark]
- Plastics persist in the environment for extended periods, leading to the presence of plastic pollution in oceans/soil/ecosystems; [1 mark]



- Plastic waste can trap/entangle/ensnare wildlife / disrupt food chains / release harmful chemicals; [1 mark]
- Microplastics can enter food chains / body tissues / affect aquatic life; [1 mark]
- Batteries contain / utilise heavy metals that can leach into soil/water, contributing to pollution / harming organisms; [1 mark]
- E-waste often contains hazardous substances e.g. lead/mercury, which pose threats to both human health and the environment; [1 mark]
- Inappropriate e-waste disposal can result in the release/spread of these toxins into air / water / soil; [1 mark]
- Non-biodegradable pollutants can contribute to greenhouse gas emissions when incinerated; [1 mark]



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