LCAs – Life Cycle Assessments

Starter (p41)

Which type of digestion is used to treat solid waste from waste water?

Explain why water which has gone through the first 3 stages of treatment may not be potable.

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Starter (p41)

Which type of digestion is used to treat solid waste from waste water?

ANAEROBIC digestion (bacteria that live without oxygen.

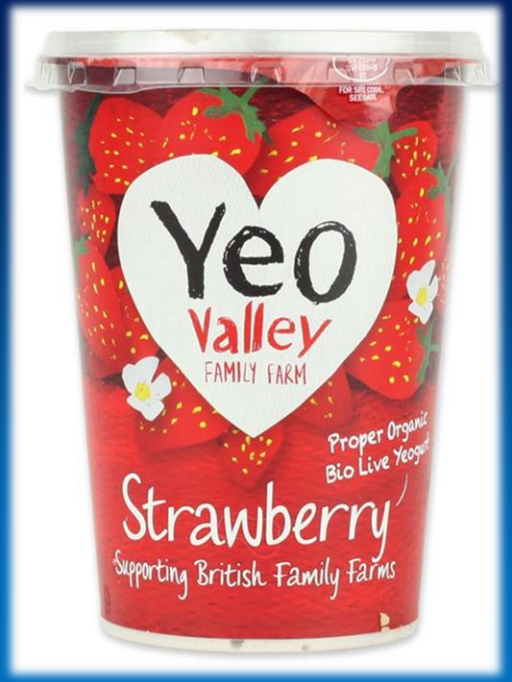
Explain why water which has gone through the first 3 stages of treatment may not be potable.

The water would not have been disinfected, so could contain pathogens.

Strawberry Yoghurt

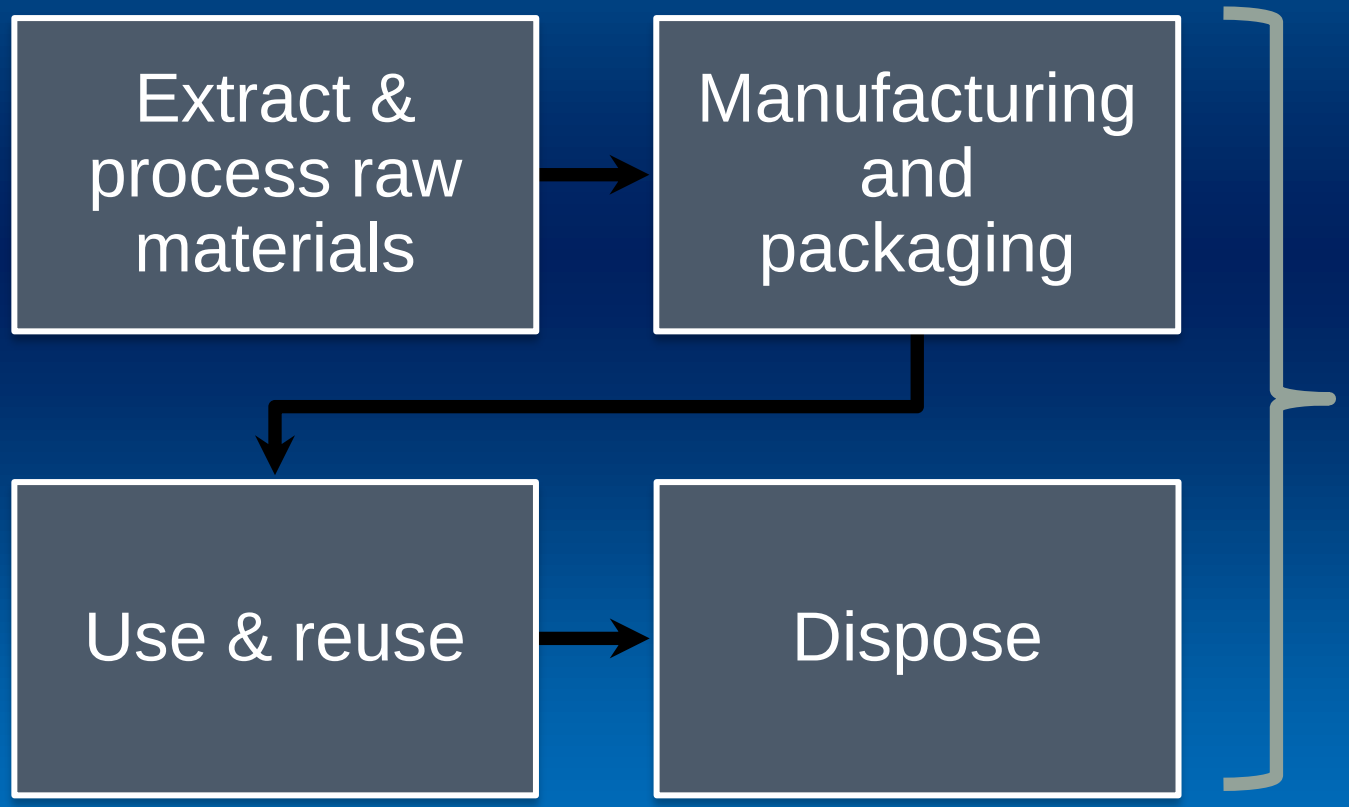
Write down as many materials/ingredients as you can think of that go into making this product – where does each come from?

e.g. where does the plastic for the container come from?



LCAs – Life Cycle Assessments

An LCA works out the environmental impact of each of these stages of a product's life:



Including transport and distribution at **each** stage

Plastic or paper?

Class Vote

Which bag has a greater environmental impact (over the course of its life)?

Comparing LCAs of plastic/paper bags

Task

- In pairs, you will complete an LCA – one person for a plastic bag, the other for a paper bag.
- Find the info sheets around the room. Each sheet has info on one stage of the product's life cycle. There are 5 sheets for each type of bag.
- Summarise the key information in your table.
- Copy up your partner's notes so you have a complete table.
- Give each stage a score (1-10) for environmental impact.
  (10 = most serious impact.)
- Calculate the total score for each type of bag.

LCA Stage	Plastic bag		Paper bag	
	Description	Score (1-10)	Description	Score (1-10)
Extraction and processing of raw materials				
Manufacturing and packaging				
Use and reuse				
Disposal				
Transport and distribution at all stages				
	Total:		**Total:**	

Comparing LCAs of plastic/paper bags

So plastic bags have a lower environmental impact.

Even though plastic bags aren't biodegradable, they take less energy to make than paper bags – this is because so much energy is used to pulp the amount of timber needed.

Even though crude oil extraction and processing uses a lot of energy, there is little waste unlike paper production, and **a lot of wood** is needed to make paper bags strong

Finally: plastic bags have a longer lifespan as they can be reused.

Problems with LCAs

allocate a numerical value to

- Unlike in this task, in the real world it is easy to quantify:
  - Use of water
  - Use of resources
  - Amount of energy used
  - How much waste is produced

- But it is not easy to quantify the effects of pollutants. Why?

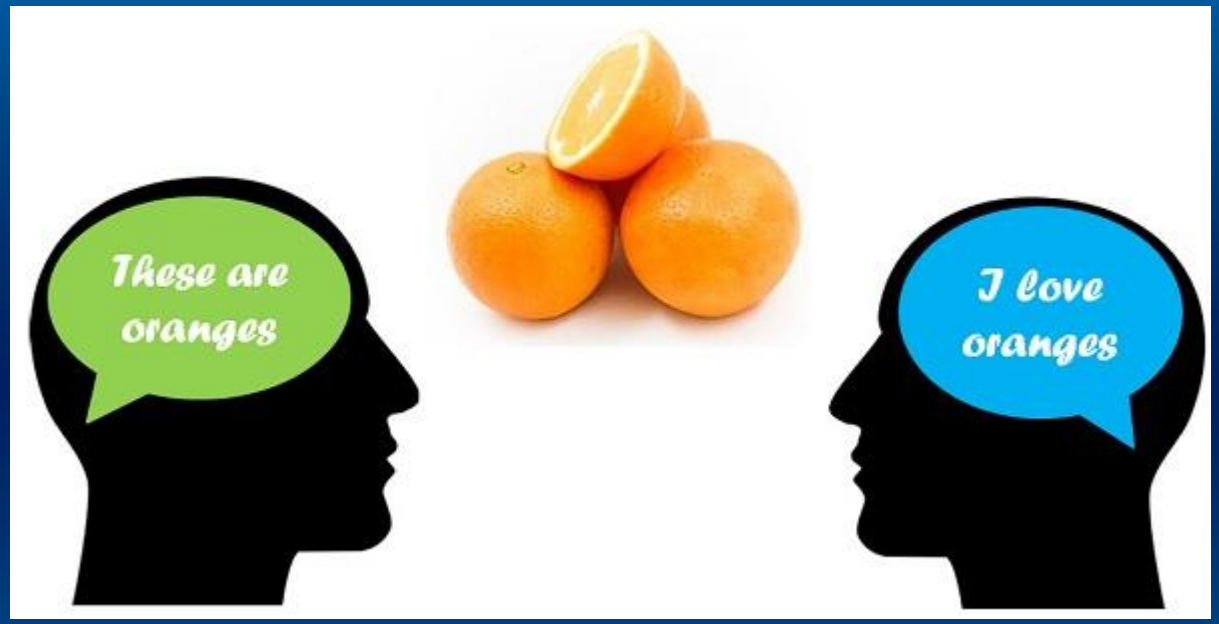
  We can't be sure what the overall total effect will be.
- This means we have to use value judgements

The scores you came up with in the task.

- What is the problem with using value judgements?

Problems with LCAs

- Value judgements are subjective.



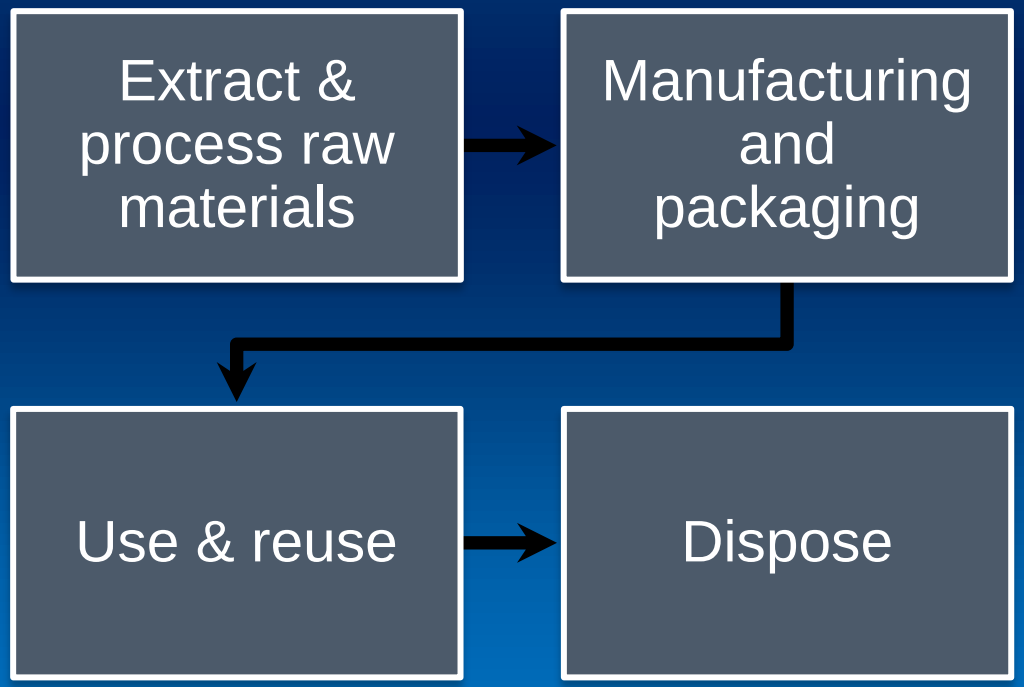
Objective
= fact

Subjective
= opinion

- Because LCAs use a mix of numerical values and value judgements, LCAs are <u>not</u> a purely objective process.

Selective/Abbreviated LCAs

- If a paper bag manufacturer wanted to advertise their product, they might use a selective/abbreviated LCA – which only shows some of the impacts of the product on the environment.



So unless an LCA has been peer-reviewed, beware that it may have been misused to reach a pre-determined conclusion.

e.g. they might "approximate" the raw material processing impact and use a value judgement to make it seem less than it is…