Life cycle assessment: shopping bags

Learning objectives

1. Understand how the overall environmental impact of a product is assessed using a life cycle assessment.
2. Evaluate the use of three different types of shopping bag using a life cycle assessment of each one.

Introduction

A life cycle assessment looks at every stage of a product’s life and assesses the impact it has on the environment.

In 2008, supermarkets in the UK gave away approximately 10 billion lightweight single-use carrier bags. This is around 10 bags a week per household.

In 2011, the Environment Agency conducted a life cycle assessment of carrier bags used in supermarkets in England. This provided the evidence for the government to act on single-use plastic waste.

Your task

1. Complete a life cycle assessment (LCA) using the table for three different types of supermarket carrier bag:

* Single-use plastic bag
* Reusable plastic bag
* Cotton bag

1. Make a recommendation to the Department for Food and Rural Affairs (DEFRA) based on your assessment.

* Which of the bags do you think has the least overall environmental impact?
* Use evidence from your completed LCA to support your suggested action.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stage of life cycle** | **Key questions** | **Single-use plastic bag** | **Reusable plastic bag** | **Cotton bag** |
| **Raw materials** | What is the bag made from? What is the source of the raw material? How much is needed to make one bag? |  |  |  |
| What pollution and energy use are linked with the raw materials? |  |  |  |
| Are the raw materials sustainable? |  |  |  |
| **Manufacturing and processing** | What is the process of turning the raw material into a bag? |  |  |  |
| How much pollution and energy use are linked with the bag’s manufacture and processing? |  |  |  |
| **Transport** | Where is the geographic location of the raw materials? |  |  |  |
| What is the method of transport? |  |  |  |
| **Consumer use** | How many bags are needed for a month’s shopping? |  |  |  |
| How many times is the consumer likely to reuse the bag? |  |  |  |
| **Disposal** | How is the bag disposed of at the end of its useful life? Can it be recycled? |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Stage of life cycle** | **Single-use plastic bag** | **Reusable plastic bag** | **Cotton bag** |
| **Raw materials** |  |  |  |
| **Manufacturing and processing** |  |  |  |
| **Transport** |  |  |  |
| **Consumer use** |  |  |  |
| **Disposal** |  |  |  |