



# What is a Life Cycle Assessment?

LCA is a tool that can be used to assess the **environmental impacts** of a product, process or service from design to disposal i.e. across its entire lifecycle, a so called cradle to grave approach. The impacts on the environment may be beneficial or adverse. These impacts are referred to as the “environmental footprint” of a product or service.

# How does an LCA work?

LCA involves the **collection and evaluation of quantitative data** on the inputs and outputs of material, energy and waste flows associated with a product over its entire life cycle so that the environmental impacts can be determined.

# The assumptions

**In order to carry out an LCA it is necessary to:**

- compile an inventory of relevant inputs and outputs
- evaluate their potential environmental "aspects"
- interpret the results of the inventory and "aspects" in relation to the specific objectives of the study

# The assumptions

**The LCA for a product is an addition of the "aspects" of:**

- extraction of the relevant raw materials
- refinement and conversion to process materials
- manufacturing and packaging processes
- transportation and distribution at each stage
- operation or use during its lifetime and at the end of its useful life
- final transportation, waste treatment and disposal



## BENEFIT ARGUMENTATION

# Benefits – some aspects

## **Resources and raw materials**

On the raw material side, moulded fibre is in a good position, because it is made of renewable wood fibre and only very small amounts of non-renewable resources, e.g. minerals, are used.

Moulded fibre packages are ensuring an efficient use of raw materials.

## **Use, recycling and recovery**

- The areas use, recycling and recovery have been divided into two sets of modules:
- on the one hand, we have paper use and recovered paper sorting.
- on the other hand, we have paper collection and sorting linked directly to moulded fibre production and end use at consumer.

# Moulded fibre: reuse and recyclability?

The Packaging & Packaging Waste Directive 94 / 62 / EC is concerned with minimising the creation of packaging material and promotes energy recovery, reuse and recycling of packaging.

Moulded fibre packages are **efficient use of raw materials**.

They are made of recovered paper. The material has been used at least once before and can be used several times again. Also moulded fibre can be recycled several times.

Moreover, there is the possibility for a combination of reuse and reprocessing: egg trays can be used over again for 5 – 10 times before returning them into moulded fibre production. This "double loop" is unusual even among paper products.



# Moulded fibre and composting?

Most of the moulded fibre products are compostable.

Composting means the biological degradation and transformation of organic, solid waste **under controlled conditions** designed to promote aerobic decomposition.

The **European norm EN 13432** defines the characteristics a material must own in order to be claimed as compostable and, therefore, recycled through composting of organic solid waste.

The definition of the compostability criteria is very important because materials not compatible with composting (traditional plastics, glass, materials with heavy metals etc.) can decrease the final quality of compost and make it not suitable for agriculture and, therefore, commercially not acceptable.

# Moulded fibre and composting?

According to the **European Norm for Compostability EN 13432** the characteristics a compostable material must show are:

- **Biodegradability**, namely the capability of the compostable material to be converted into CO<sub>2</sub> under the action of micro-organisms (Standard test method: EN 14046).
- **Disintegrability**, namely fragmentation and loss of visibility in the final compost (absence of visual pollution).
- **Absence of negative effects** on the composting process.
- **Low levels of heavy metals.**

Some of the moulded fibre products are certified as compostable according to EN 13432. The resulting humus can be used as a soil conditioner or in landscaping.

Link: [www.biobags.co.uk/resouces\\_certific/description.pdf](http://www.biobags.co.uk/resouces_certific/description.pdf)



# End-of-life of moulded fibre?

After the studied 1 kg of European grey moulded fibre is used and often also reused, it can end up in landfill, incineration, composting or recycling. Because there are no European level moulded fibre figures available, the shares of these different end-use options have been estimated in the following way:

- recycled: 16%
- composted: 12 %
- incinerated: 35%
- landfill: 37%

(Average values for European 27 + NO, CH)

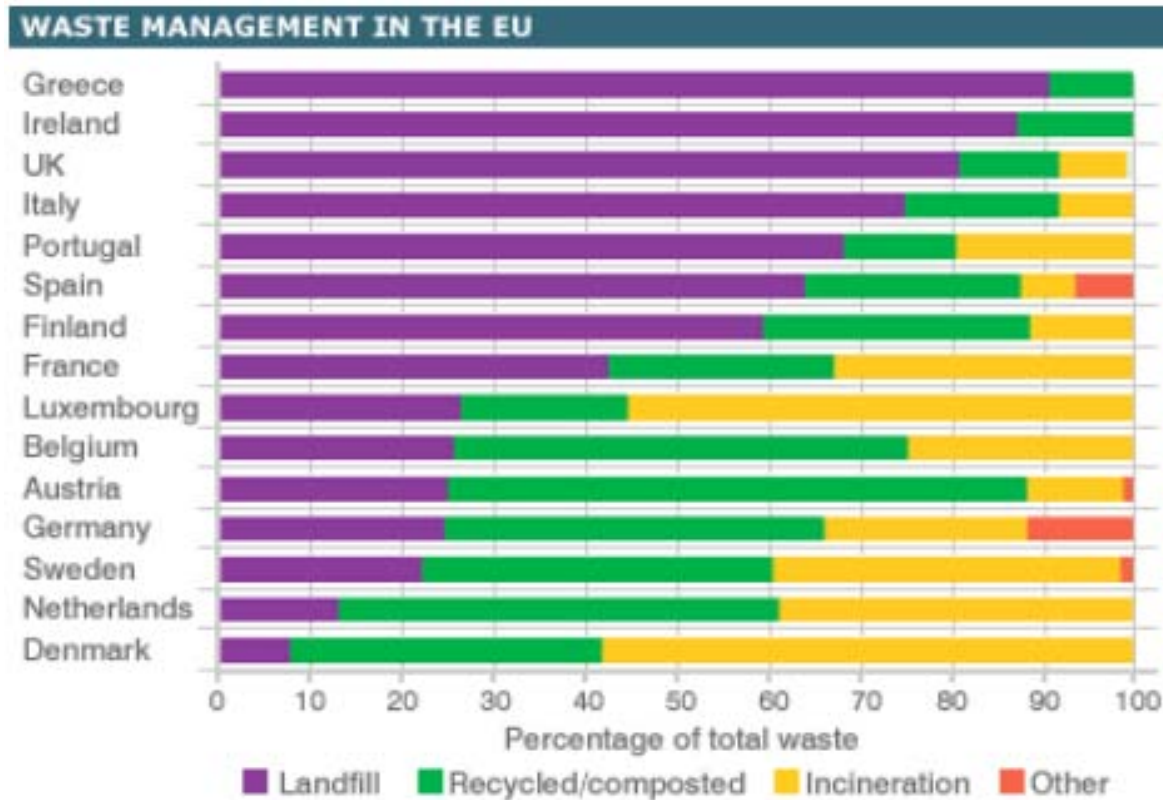
# End-of-life of moulded fibre?

It should be noted that conditions in Europe are not equal, and that there are much higher recycling rates for paper and carton in several countries:

<b>Netherlands:</b>	<b>80 %</b>
<b>Germany:</b>	<b>80 %</b>
<b>France:</b>	<b>85 %</b>
<b>UK:</b>	<b>78 %</b>
<b>Poland:</b>	<b>51 %</b>

With a higher recycling rate the **carbon footprint** will be strongly positively influenced in comparison to the official value in the LCA report.

# End-of-life of moulded fibre?



SOURCE: Defra, 2004

# Avoiding landfilling?

Landfill is the **least favourable end-of-life option**. It is also possible that landfilling of biodegradable material will be banned. This is an option in a European Commission consultation paper on the Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste.

Compared to alternatives, moulded fibre as a material is well suited for several different recovery (reuse, recycling, composting, incineration) options when landfills finally are closed for biowaste.

The ease of recycling and reusing is one of the strongpoints of moulded fibre.

# Methane and moulded fibre landfilling?

If moulded fibre is disposed of in landfills, it will generate methane gas. Methane is among the greatest contributors to global warming. While landfilling is still an option, it is a special problem.

## **How can moulded fibre help in bringing an inspired solution to this?**

By landfill gas control methane emissions can be reduced down to 10%. This means a reduction of 80 % of the emissions resulting from landfilling of moulded fibre. With landfill gas control the emissions can also be turned into clean energy. Even though emissions from landfills can be significantly lowered, the best option is to reuse and recycle the valuable material.

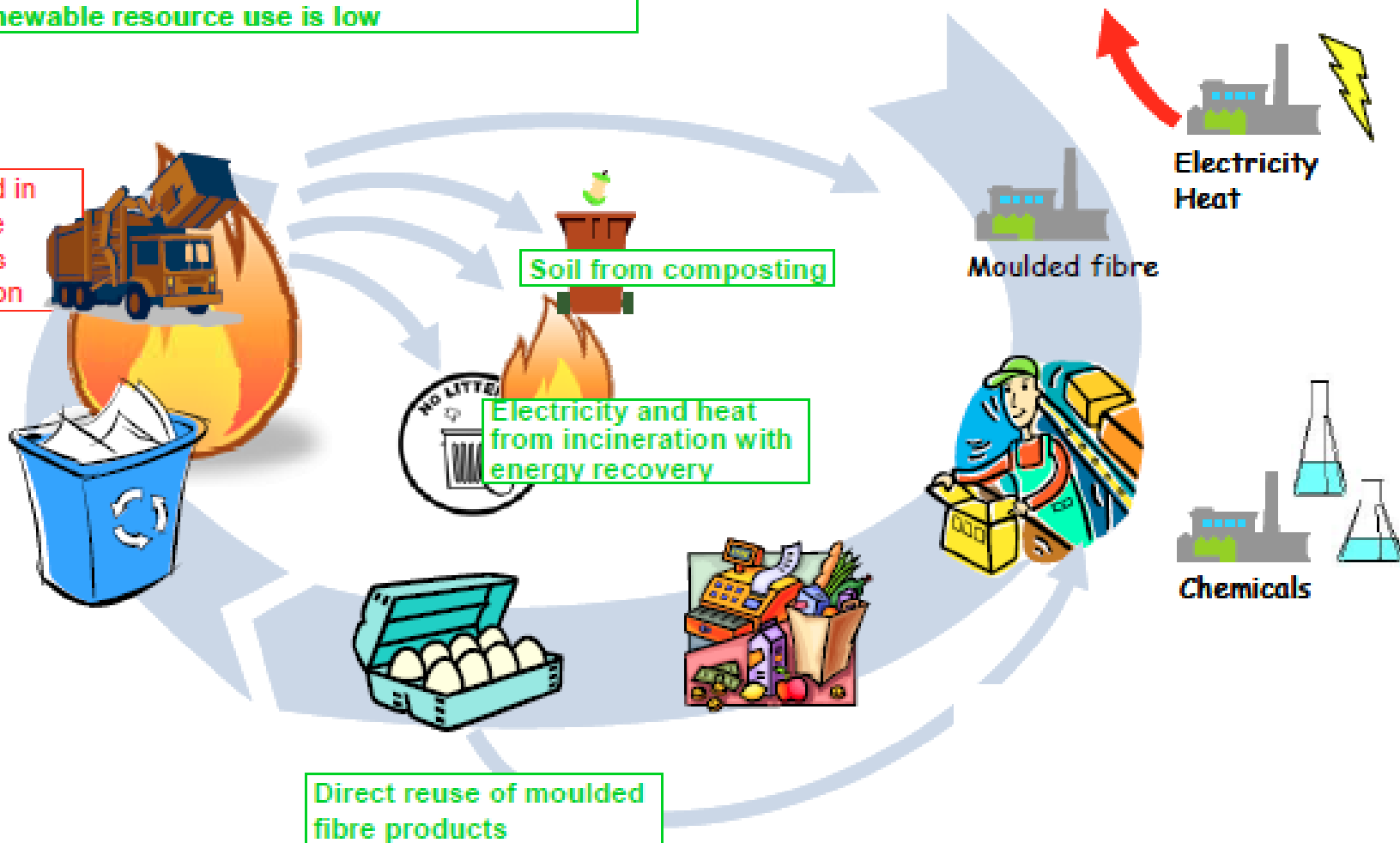
**Main raw material recycled renewable wood fibre**

- Very small amounts of non-renewable resources used
- Even renewable resource use is low

**Fossil fuels used in energy generation**

- Consumes non-renewable resources
- Causes acidification and eutrophication damaging ecosystem quality
- Generates emissions causing respiratory effects and global warming damaging human health

Fossil fuels used in transports have similar effects as energy generation





# Conclusion

**The three basic aspects behind the choice of packaging material are**

- **functionality:** food protection, ease of transportation, appeal to the consumer
- **proper disposal:** diverting waste from landfill and increasing the recovery of various packaging materials, use of recycled raw materials and production of recyclable packaging
- **sustainability:** achieving a balance between consumption and regeneration of the natural resources.

**Moulded fibre performs well in ALL THESE ASPECTS – both in the independent LCA analysis and especially in comparison to other materials.**

# EMFA Carbon Footprint policy

## **Statement**

It is the stated policy of all the EMFA members to reduce their environment impact wherever practical. The raw material of moulded fibre packaging is CO<sub>2</sub> neutral when incinerated, with energy recovery. All carbon reducing measures form an integral part of our strategy helping to improve both operational performance and a reduction in potentially harmful emissions to land, water and air.

## **To help achieve this, EMFA members will:**

- comply with all current energy legislation, seeking to meet or exceed legislative targets
- minimise waste, promote recycling and the use of recycled products to help reduce the burden of landfill and therefore methane generation
- promote environmental awareness and responsibility amongst partners, contractors, producers and consumers
- seek continuously improve environmental performance
- encourage partners, contractors, producers to reduce their carbon footprint
- consider further investments in their productions to reduce the carbon footprint
- expect partners and suppliers to have credible, measurable carbon footprint policies

## **Actions taken to date include:**

- the supplying of the most up-to-date energy efficient moulded fibre packaging
- the integration of environmental issues into all aspects of the decision making processes.
- the assessment and procurement of fuel efficient vehicles

**This policy clearly identifies the responsibilities and procedures for achieving EMFA stated objectives in all aspects of our activities leading to improved environmental performance, including reductions in both CO<sub>2</sub>, and methane.**

**This policy is reviewed at least annually.**

**Dated: March 2010**

