

A green business model

Greens/EFA meeting

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Presented by

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The leading – and largest – scrap tyre recycler in the world

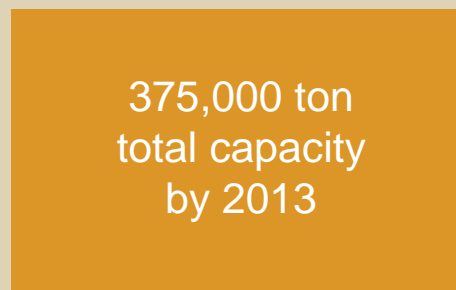
70,000 tons plant
Viborg, Denmark, in operation since 1990

65,000 tons plant
Oranienburg, Berlin, Germany, operation since 2003

70,000 tons plant
Dorsten, NRW, Germany, in operation since 2008

70,000 tons plant
Mindelheim, Bavaria, Germany, in operation 2010

100,000 tons plant
First U.S. plant to be opened in
Houston, Texas in 2013



375,000 ton
total capacity
by 2013



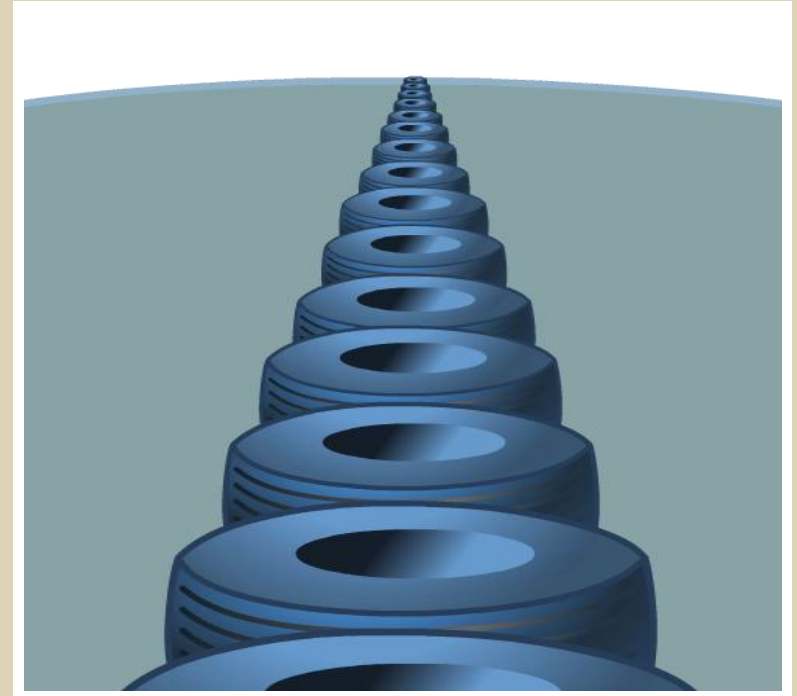
We believe that all the world's scrap tyres should be recycled

**Our goal is to turn 10% of the world's scrap tyres
into new virgin material using Genan technology**

The scrap tyre challenge

A growing environmental problem, or an opportunity to reduce the consumption of our fast diminishing natural resources?

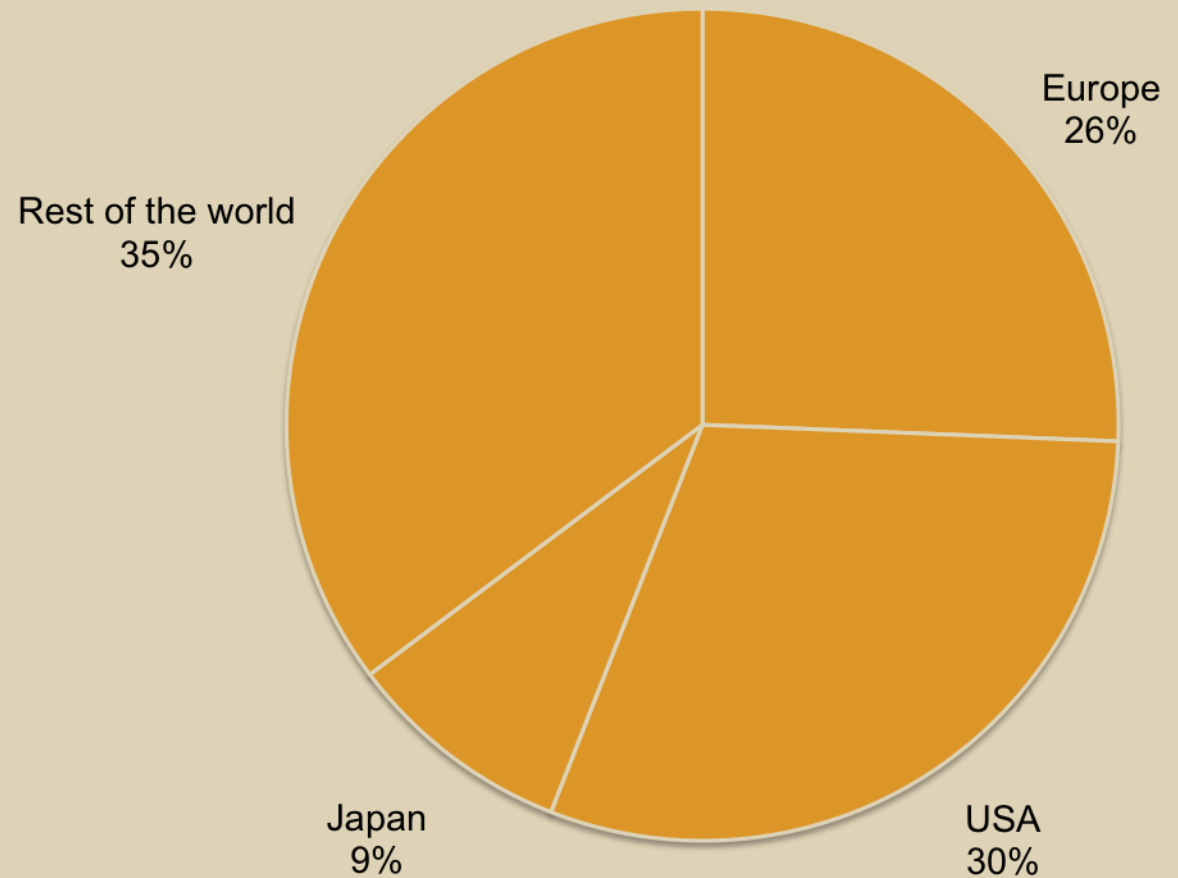
**13.5 million tons of tyres
are scrapped every year worldwide**



They reach 22 x
around equator

Global distribution of scrap tyres

Most growth is in rest of the world



Problem or opportunity?

The problem:

Waste

Pollution and health risks

No organised collection system

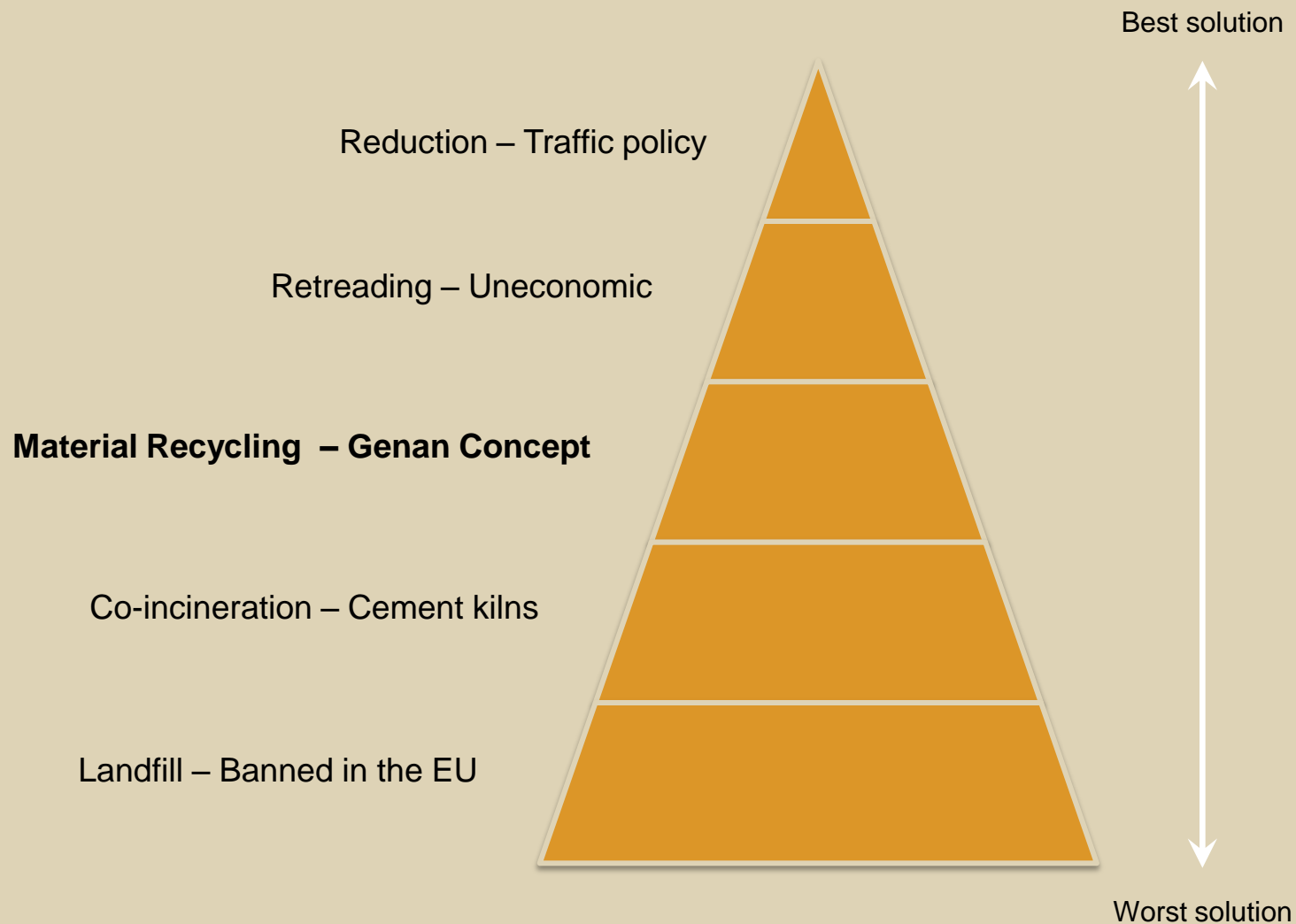
The opportunity:

New raw material

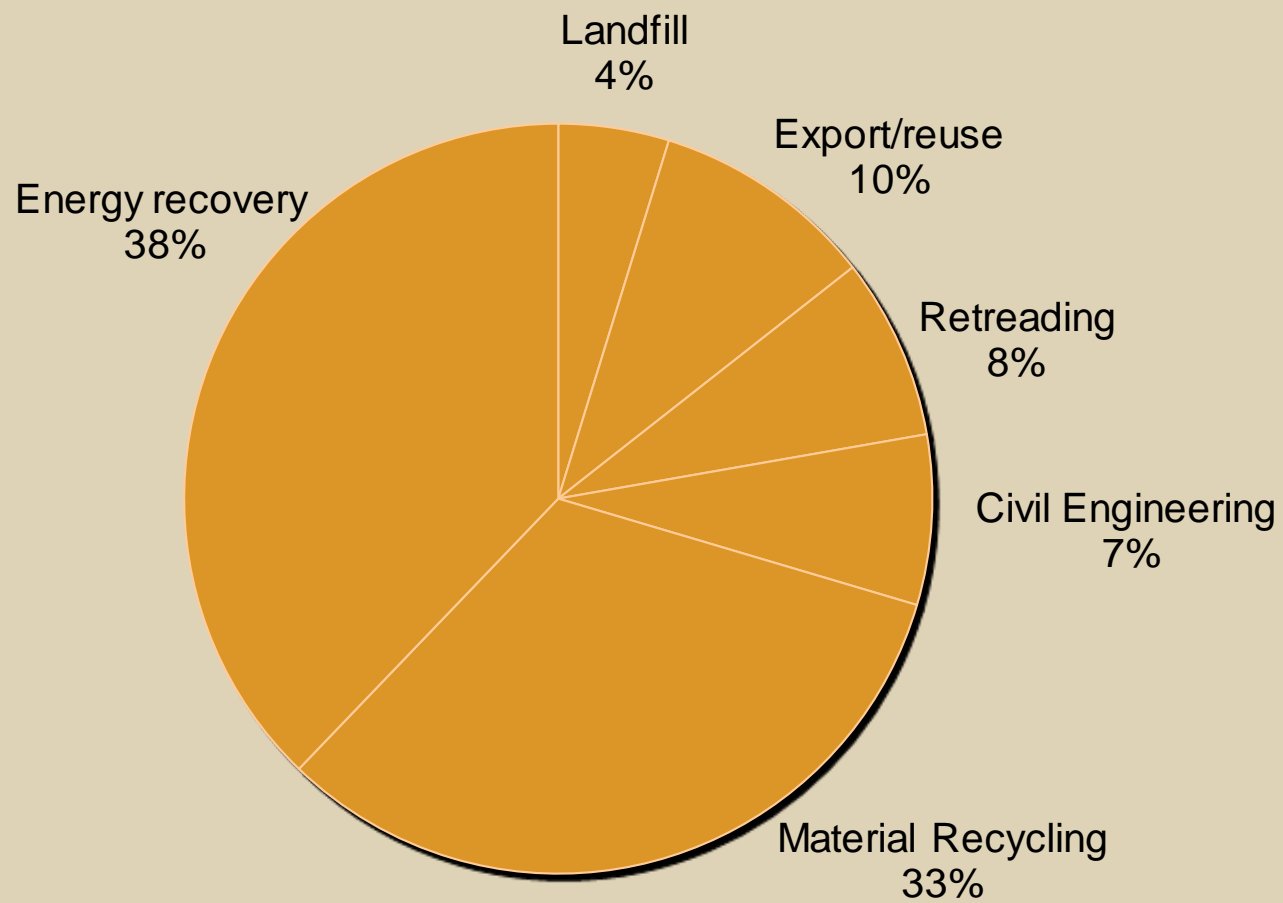
CO₂ savings

Legislation required to encourage true material recycling

Waste hierarchy



Scrap tyre treatment in the EU 2010



Source: ETRMA, October 2011

Co-incineration

Only every sixth litre of the oil used in manufacturing the tyre is reclaimed.



Although co-incineration of scrap tyres has been increasing, technical constraints and environmental concerns will limit growth in the future.

Civil engineering applications

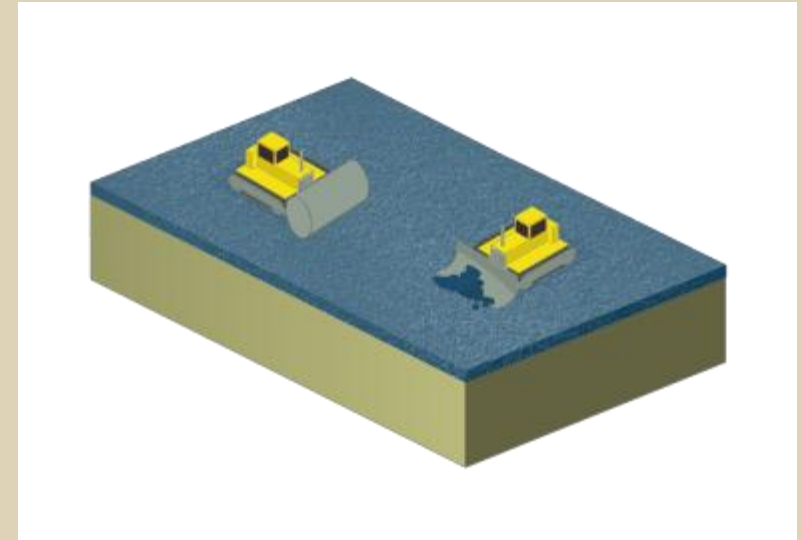
Sub-layer in roads

Drainage layer in landfills

Stabilization layer in building projects

Artificial reefs

No material recovery of rubber, steel and textile



Landfill in disguise, civil engineering applications provide no opportunity for virgin material substitution

Export to developing countries

Receiving countries end up with a disproportionate amount of scrap tyres and traffic safety problems

Pressure from environmental organisations and new legislation will limit export in future



Export doesn't deal with the scrap tyre problem, it only relocates it.

Material Recycling

Creates new raw material in an environmentally responsible way

Reduces the demand for virgin raw material



Material recycling – turning scrap tyres into new raw material – saves virgin resources.

Scrap tyre treatment possibilities

Retreading = uneconomic

Co-incineration = environmentally inefficient

Civil engineering applications = landfill

Landfills = bad for the environment

Export = problem relocated, not solved

All factors taken into account,
the best available solution is
material recycling

Genan

Material recycling: What's important

Production flexibility

Uniformity of rubber granulate and powder

Purity of rubber granulate and powder

Purity of recovered steel

Economy of scale



Material Recycling: Output

Rubber granulate/powder	67%
Steel	18%
Textile	14%
Waste	<1%

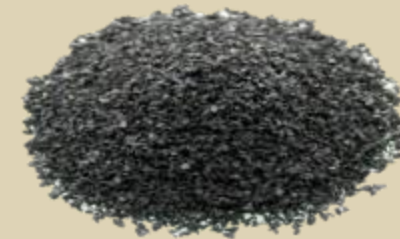


LCA

Life cycle assessment

Evaluates and measures all known environmental impacts of all steps of a specific choice in the complete life cycle of a particular product

The use of LCAs helps politicians make a more informed decision



Material recycling is more beneficial than co-incineration and civil engineering applications

Material recycling compared to co-incineration

Reduction in Global Warming Potential (GWP)

GWP Base case	1.1 ton/ton
GWP Waste subst.	2.6 ton/ton
Acidification	5.3 kg/ton

Approximately 1,098,000 tons of scrap tyres are incinerated annually in Europe

Applying material recycling instead of co-incineration would result in a 2.9 million ton reduction in CO₂ emissions in Europe alone



1.1
ton CO₂ / ton tyres

Material recycling compared to civil engineering applications

GWP savings approx. 1.8 tons CO₂/ton scrap tyre input

The savings in comparison with civil engineering applications are even higher than the savings in comparison with co-incineration as the scrap tyres are mainly used as filling material

1.8

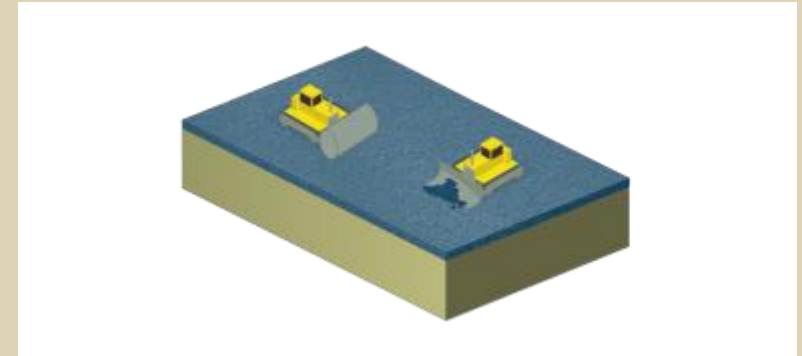
ton CO₂ / ton tyres

LCA conclusions:

Civil Engineering applications are filling operations with no environmental benefits

Co-incineration in cement kilns is preferable to civil engineering applications and landfill

Material recycling is by far the best available option



Legal framework

- collection and legislation

Current international regulations

European Waste Directive 2008/98/EF:

Linked to waste hierarchy. Landfill ban.

Basel Convention Technical Guidelines on the Environmentally Sound Management of Used tyres:

Currently under negotiation



Interpretation of the waste framework directive for tyres

- **Stop for filling operations (civil engineering)**
- **Setting a target for recycling vs co-incineration in cement kilns**



Interpretation of the waste framework directive

How could the interpretation by the EU Commission of the waste framework directive (2008/98) increase high quality recycling of scrap tyres in the EU?

Interpretation of the definition of tyre recycling

Art. 3.17. “ *‘Recycling’ means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.*”

The definition of the word “recycling” in Article 3.17 should be clarified by the EU Commission when it concerns tyres. The text states that backfilling operations are not considered recycling. Therefore, it is important for the Commission to clarify that the so-called “civil engineering operations”, where shredded tyres are substituting gravel, sand, soil and/or stone, *should be considered backfilling and not recycling.*

Setting a recycling target for tyres in 2014

Art. 11.4. “*By 31 December 2014 at the latest, the Commission shall examine the measures and the targets referred to in paragraph 2 with a view to, if necessary, reinforcing the targets and considering the setting of targets for other waste streams. The report of the Commission, accompanied by a proposal if appropriate, shall be sent to the European Parliament and the Council. In its report, the Commission shall take into account the relevant environmental, economic and social impacts of setting the targets.*”

In order to increase the high-quality recycling of used tyres in the EU at a level where the output substitutes virgin raw materials (which leads to avoided production), the EU Commission *should set a recycling target for scrap tyres.* According to Article 11.4, the EU Commission has the competence to do so by examining so-called “other waste streams” such as scrap tyres and propose a target by 31st December 2014 at the latest.

Thank you for your attention

"True recycling requires processing at a level where the output substitutes virgin materials.

Consequently this leads to avoided production and a profound saving of resources."