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The Sustainable Packaging Solution that fits

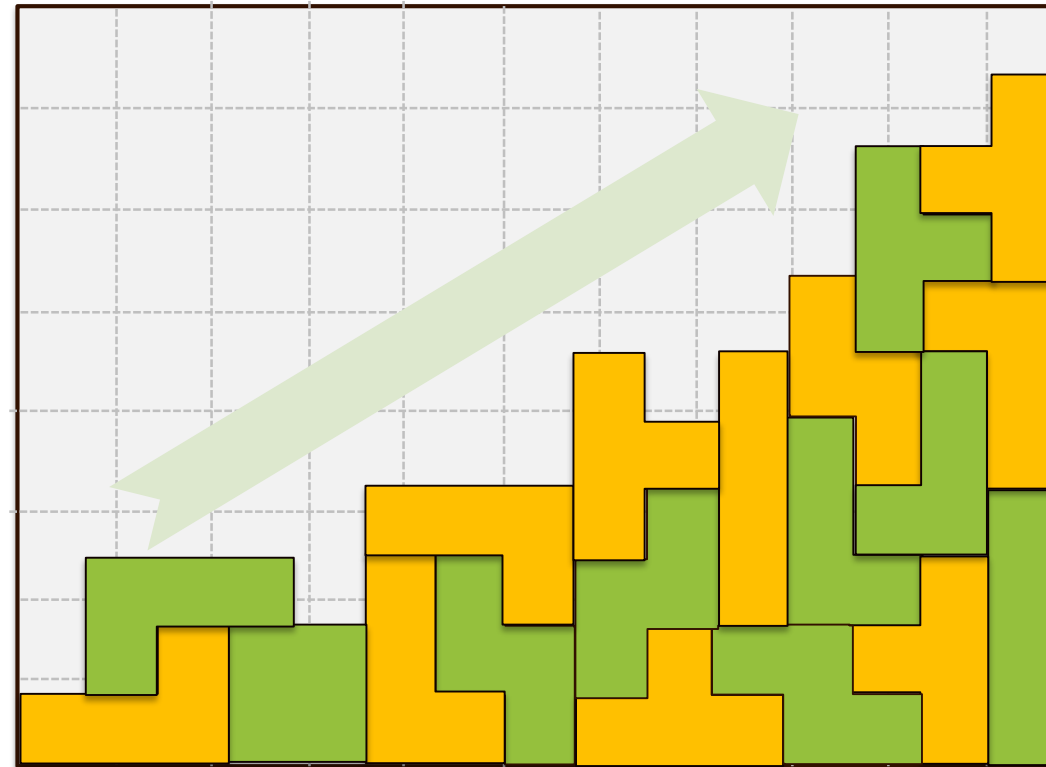
Sophie Kieselbach
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Senior Consultant

The changing status of packaging

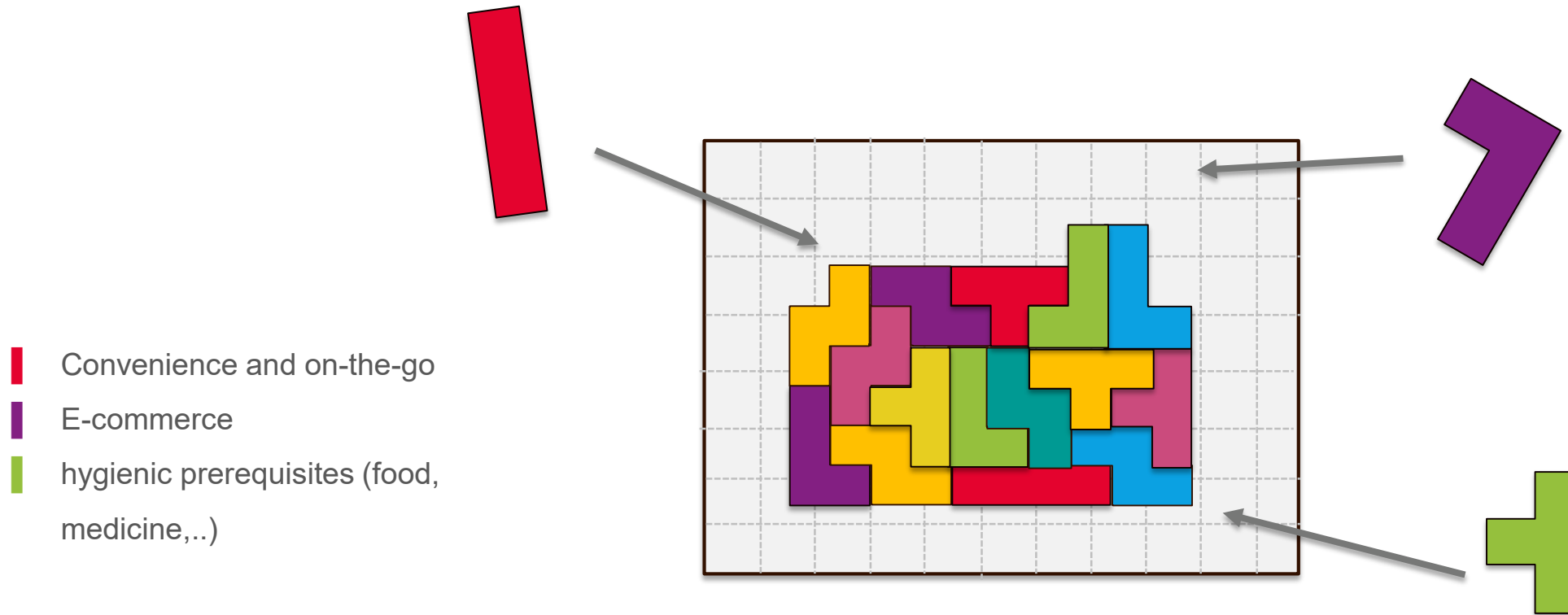


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- GDP growth and rising consumer disposable income
- Growth in global trade

The changing status of packaging



Take



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Make



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Waste



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Packaging under pressure



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Compliance



Industry Standards



Government Regulations



Business Drivers



Market access



Scarce resources & rising cost



Risk



Competition

Stakeholder Pressure



Customers



NGOs & Public



Employees



Investors & Analysts



Common EU target for recycling (by 2030):

- 65% of municipal
- 75% of packaging waste
- Simplified definitions & harmonized calculation methods for EU recycling rates



Binding landfill target (by 2030): to reduce landfill to max. of 10% of municipal waste



Ban on landfilling of separately collected waste

Source:



Statistics

Recycling targets per EU Member State



2025

50% of plastic

25% of wood

70% of ferrous metals

50% of aluminium

70% of glass

75% of paper and cardboard

Source: Directive 94/62/EC of the European Parliament

2030

55% of plastic

30% of wood

80% of ferrous metals

60% of aluminium

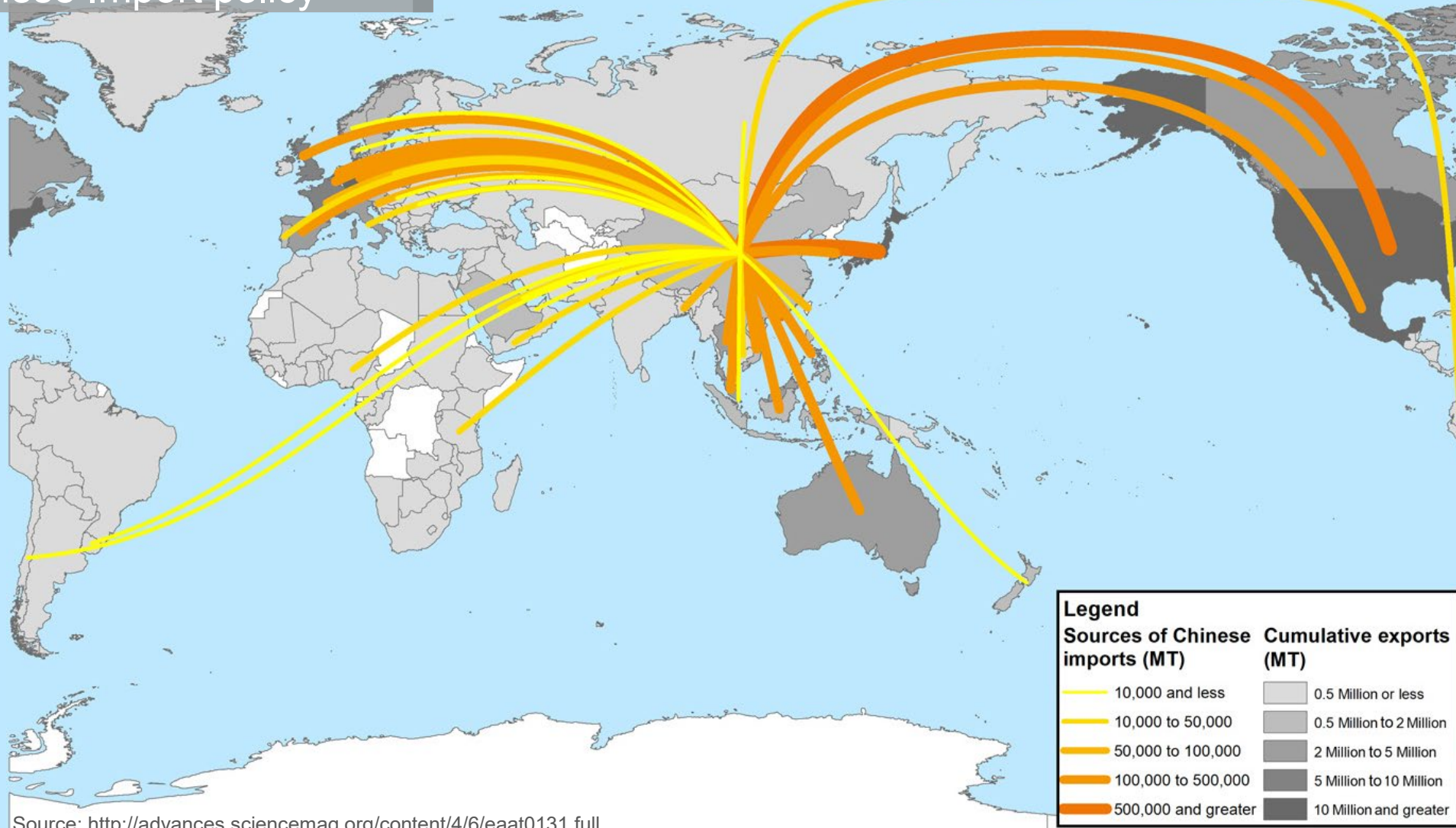
75% of glass

85% of paper and cardboard

Source: Directive 94/62/EC of the European Parliament

Compliance

Chinese Import policy



Source: <http://advances.sciencemag.org/content/4/6/eaat0131.full>

Packaging under pressure



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Compliance



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Competition

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Investors & Analysts

Rising public demand for sustainable packaging





Seeing is believing

Seeing is believing

Plastics



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Technical properties



Plastics



Microplastic



Seeing is believing

Paper

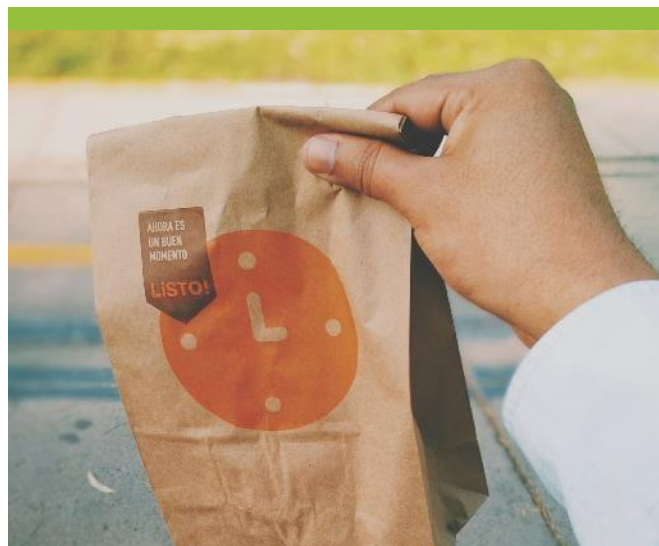


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Renewable material



Paper



Deforestation



Emotional arguments



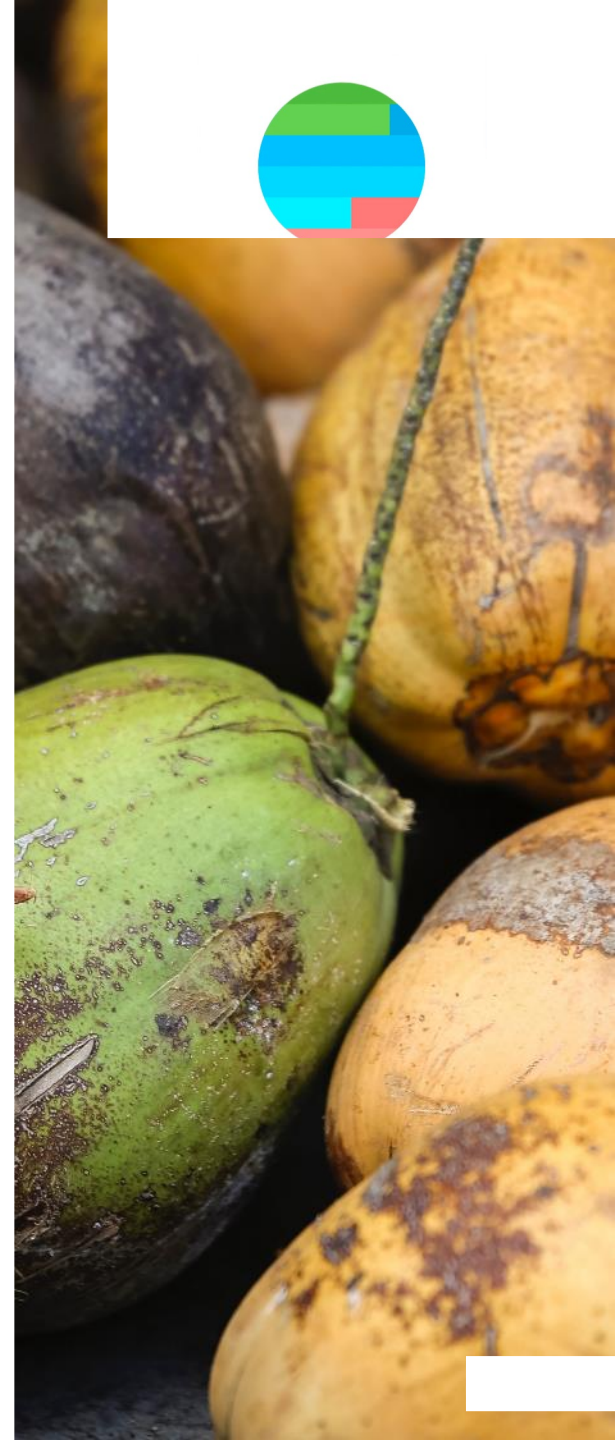
Rational arguments




Packaging under pressure

Summary

- Function is priority
- There is no 'one-fits-all' solution regarding sustainability
- New designs and new ideas are needed
- How can you tell what is more sustainable?





Simply calculate your
packaging's sustainability!

Life Cycle Assessment (LCA)



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- Considers raw materials, production, distribution, use, and end of life
- Based on internationally established, scientific approach



Life Cycle Assessment (LCA)

Environmental impacts such as:

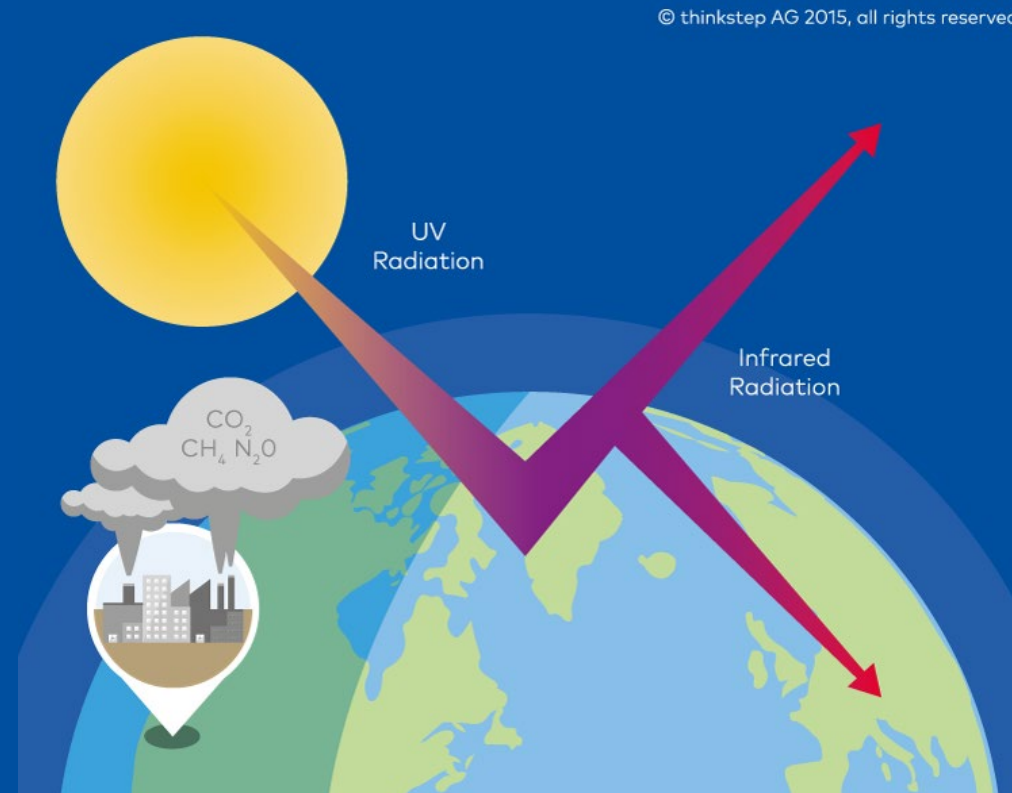
- Carbon footprint

- Photochemical Ozone depletion potential

- Primary energy demand from fossil fuels

- Water consumption

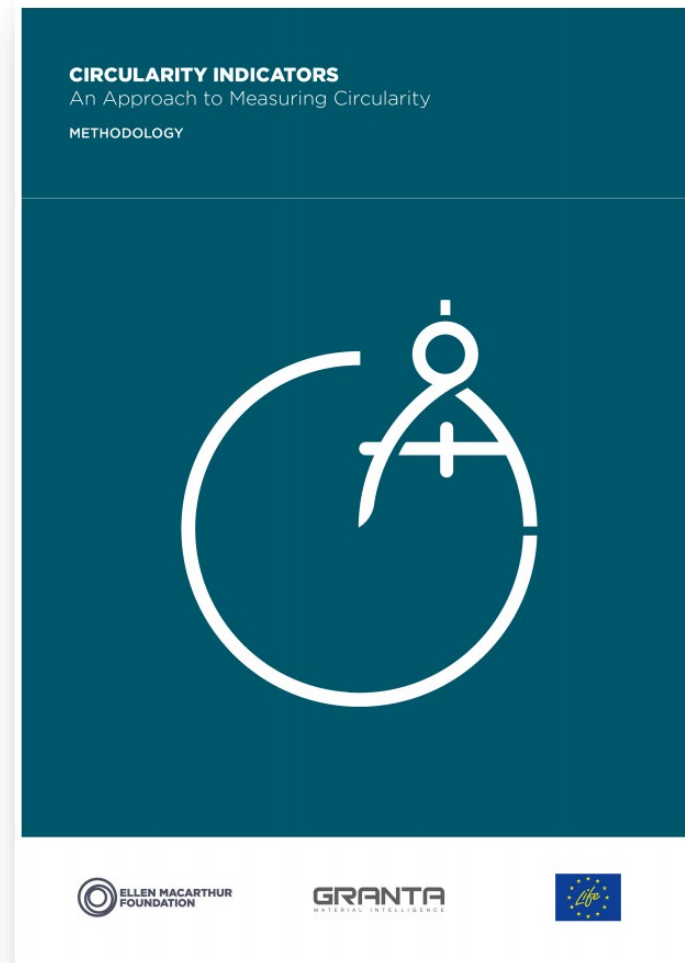
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Material Circularity Indicator (MCI)

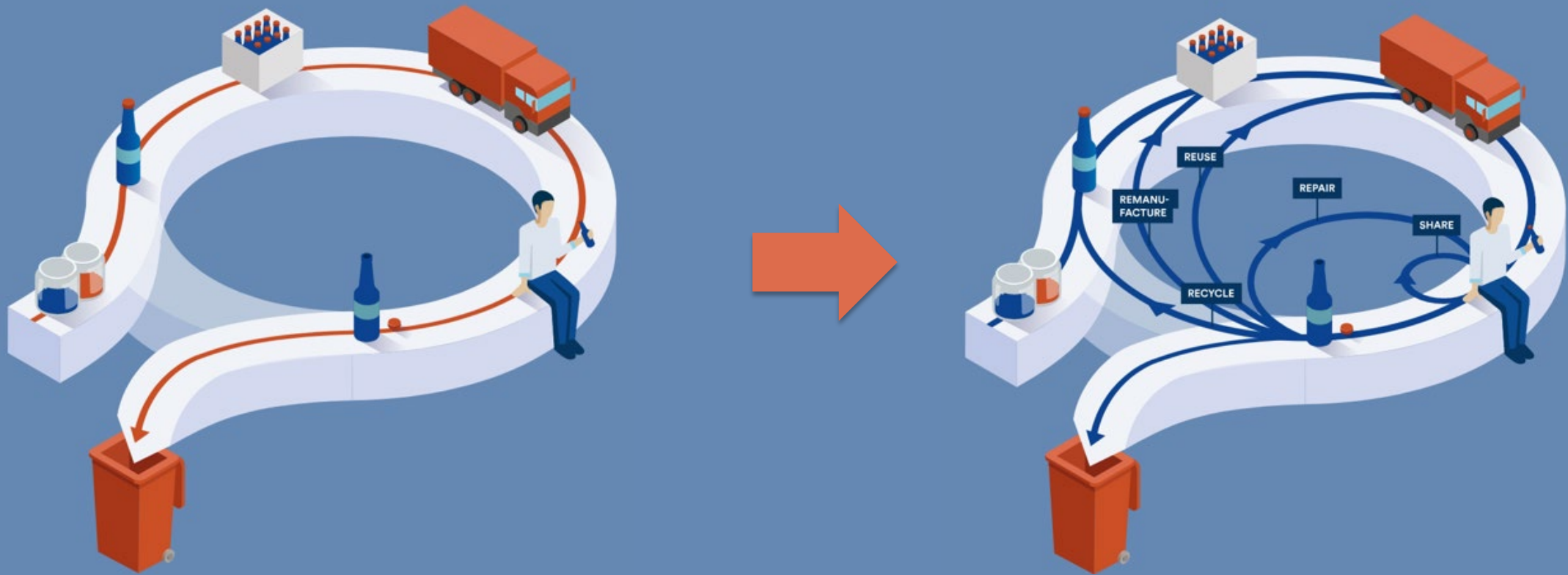


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https://www.ellenmacarthurfoundation.org/assets/downloads/insight/Circularity-Indicators_Methodology_May2015.pdf

Material Circularity Indicator (MCI)






Solution

Our answer

GaBi Packaging Calculator











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**GaBi Envision**


REPORTSADMINISTRATIONHELP ▾

Flora D'Souza ▾

GLO_ Life Cycle of Packa... 

Calculation status: **finished**




Text Variables

Scenarios 

Parameter ▾	Baseline	Alternative
General overview		
Consumer packaging		
Display packaging		
Shipment packaging		
Packaging & filling		
Product distribution		


Tables and Charts

Resize / Close

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GaBi Packaging Calculator
- a thinkstep solution

thinkstep Packaging Calculator



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Demo

Characteristics

Full LCA Model built using the latest GaBi Databases

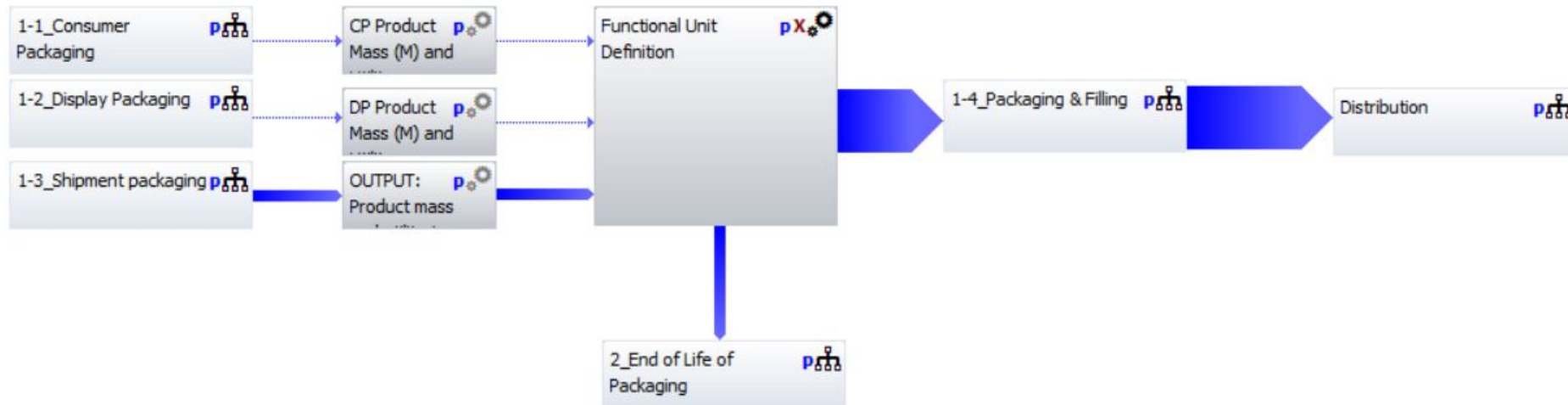


Life Cycle of Packaging 2018

GaBi Prozess-Plan: Mass [kg]

p

Selection: Life C



Online packaging calculator



GaBi Envision REPORTS ADMINISTRATION HELP ▼ Sophie Kieselbach ▼

Packaging Calculator_ts_Version1....

Global Settings
Text Variables
Scenarios

Parameter ▼	Baseline	Alternative	Comment
General overview			
Consumer packaging			
Display packaging			
Shipment packaging			
Packaging & filling			
Product distribution			
End-of-life of packaging			

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Packaging Sustainability Calculator

A thinkstep Solution

Comparison of two packaging alternatives

= Report =

< Inputs and results >
side by side

Out-of-the-box tool today

OR

*Customized tool tomorrow**

**Delivery timing a function of project scope :-)*

Comprehensive parameter choices

42 raw materials, 16 manufacturing processes, 7 geographic regions, EoL



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Plastic	EVOH	Mass of plastic	50	Shipment packaging	
Manufacturing	EVOH	Plastic	PET	Region of manufacturing	EU28
Recycled content	HDPE	Manufacturing	Injection moulding	Plastics	EU28
Transport to pack site	LDPE	Recycled content	Blow moulding	Bioplastics	United States
Plastic 2	PA (nylon)	Transport to pack site	Extrusion	Foams	China
Plastic 3	PET	Air	Film uncoated	Natural materials	Japan
Bioplastics	PP	Rail	Film thermoformed	Metals	South America
Laminate	PP oriented		Film metalised		Australia
	PS		Injection moulding		India
	PU				
	PVC				

End-of-life of packaging			
Region of EoL treatment	EU28	EU28	Select location for end-of-life treatment
End-of-life plastics			
EoL EVOH			
Landfill	0	0	[0-100%] Plastics to landfill
Recovery	50	50	[0-100%] Plastics to incineration with energy recovery
Recycling	50	50	[0-100%] Plastics to recycling

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Track how
circular your
solutions are

Characteristics

Description and
Documentation included



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GaBi Packaging Calculator



User's Manual

A product by
thinkstep



Offerings & Pricing



Solutions

GaBi Packaging Calculator: Costs for Software

Tool sold as

- SaaS offering based on GaBi Envision, hosted by thinkstep, annual subscriptions
- Includes annual maintenance

€2,900 per year per named seat



Solutions

thinkstep's Packaging Consulting Offerings

Workshops

Workshop based on customer requirements and specifications: e.g. including general information about sustainability, LCA, Circularity and as well the GaBi packaging calculator

Training and support

Hands on training for the use of the GaBi Packaging Calculator and/or frame contract for further support

Projects

Your ideas, your specifications, our solution

→ Prices upon request



Summary

- Assess existing product portfolio
- Inform R&D, prototyping
- Respond to stakeholder inquiries
- Measure, manage, improve your product environmental impacts

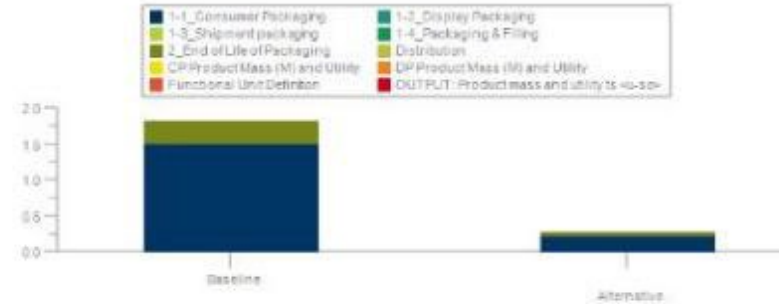
Rapid sustainability assessment for everyone on your team!



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2.2 Scenario Overview

Climate change midpoint excl. biogenic carbon (CO2 eq)



	Baseline	Alternative
Acidification midpoint (v1.09) [Mole of H+ eq.]	0.00265	0.000398
Climate change midpoint, excl. biogenic carbon (v1.09) [kg CO2 eq.]	1.82	0.273
Climate change midpoint, incl. biogenic carbon (v1.09) [kg CO2 eq.]	1.87	0.38
Eutrophication freshwater midpoint (v1.09) [kg P eq.]	1.81E-005	3.72E-006
Eutrophication marine midpoint (v1.09) [kg N eq.]	0.000678	0.000302
Eutrophication terrestrial midpoint (v1.09) [kg N eq.]	0.00648	0.000979
Ionising radiation [kBq U235 eq.]	0.0917	0.5133
Particulate matter [kg PM2.5 eq.]	8.36E-005	1.23E-006
Photochemical ozone formation midpoint, human health (v1.09) [kg NMVOC eq.]	0.00262	0.000993
Resource depletion, mineral, fossil and renewables, midpoint (v1.09) [kg Sb eq.]	1.76E-006	3.84E-007
Primary Energy Demand, Non-Renewable [MJ]	34.2	9.13
Primary Energy Demand, Renewable [MJ]	2.13	0.329
Primary Energy Demand, Total [MJ]	36.3	9.46
AWARE, OECD-BRIC average for unspecified water [m³ world equiv.]	0.558	0.0837
Blue water consumption [kg]	17.4	3.83

The fields in the above table are coloured in **GREEN** when an alternative has a value that is 20% lower than that of the product in the first column, and are coloured in **RED** when an alternative has a value that is 20% higher than that of the first product.

2.2.1 Equivalency Calculator

Impact Category	Equivalency in each Impact Category	Baseline	Alternative
GWP(100) [kg CO2 eq.]	driving a passenger car for [km] ^{a)}	9.63	1.44
Acidification Potential [kg SO2 eq.]	quantity of emissions is sufficient to damage [kg] of calcium carbonate-based minerals (used for construction of historical monuments or present in coral reefs)	0.00267	0.0004
Eutrophication Potential [kg Phosphate eq.]	emissions could make [l] of natural spring drinking water unhealthy to drink ^{b)}	99.7	10
POCP [kg Ethene eq.]	emissions value reported could bring this amount of [m³] of air from the safe level to dangerous level of air quality for outdoor sports ^{c)}	4.29E03	643
Primary Energy Demand, Total [MJ]	amount of energy with which you could power a laptop for this many hours [h] ^{d)}	14	2.59

a) Assuming that car complies with EURO6 emission standard and has engine size between 1.4 and 2 liters. Gasoline use for one km is 8.505 kg gasoline.
b) Maximum value for phosphate in drinking water in order to be still considered healthy is 5 mg/liter, according to German Water



Time for your questions

Upcoming webinars



GaBi Circularity Toolkit



- Guest Speaker:
Sven Herrmann, Programme Lead
Circularity Indicators Project,
Ellen Mac Arthur Foundation
- GTC tool covering both LCA and MCI
calculation → *unique on the market!*
- October 23rd, 10am – 11am CEST
- October 25th, 6pm – 7pm CEST

GaBi Carbon Composites Database



- Guest Speaker:
Robert Ilg, Chief Engineer Department Life
Cycle Engineering,
Fraunhofer Institute
- Database contains 137 LCI datasets related to
Carbon composites (CF) and carbon fiber-
reinforced plastics (CFRP)
- October 17th, 4pm-5pm CEST



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