

Green Value Materials for Eco-Design

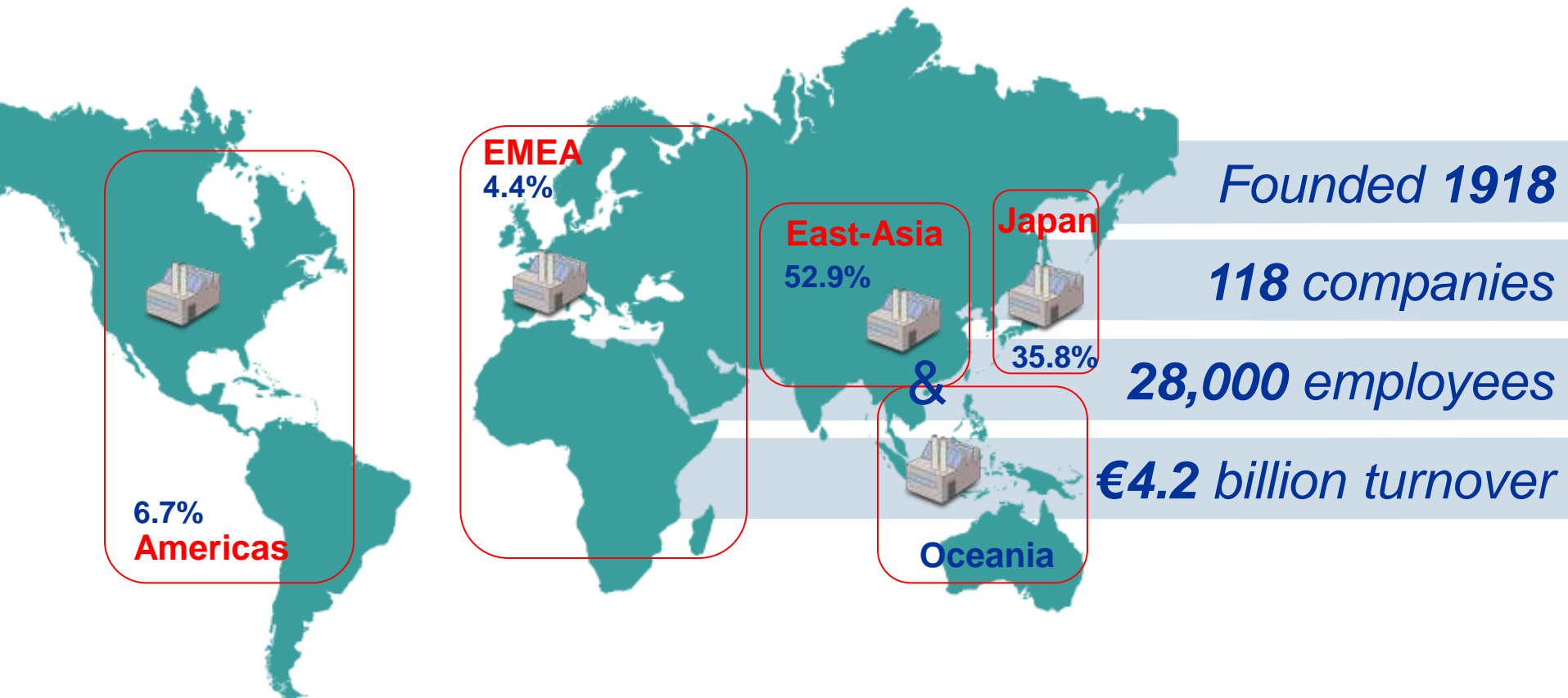
Nitto Europe's Sustainable Development activities

‘Milk the Green Cow’-seminar
1 April 2010, Maastricht (NL)

Eric F.A. Pass
Director Corporate Planning & Communications
Nitto Europe NV



Global Manufacturing & Sales Activities




Electronic Products

54.4%

Polarizing films



Industrial Products

36.2%

Adhesive tapes

Functional Products

9.4%



Medical
Transdermal patches



Membrane Modules

Strong history & expanding coverage



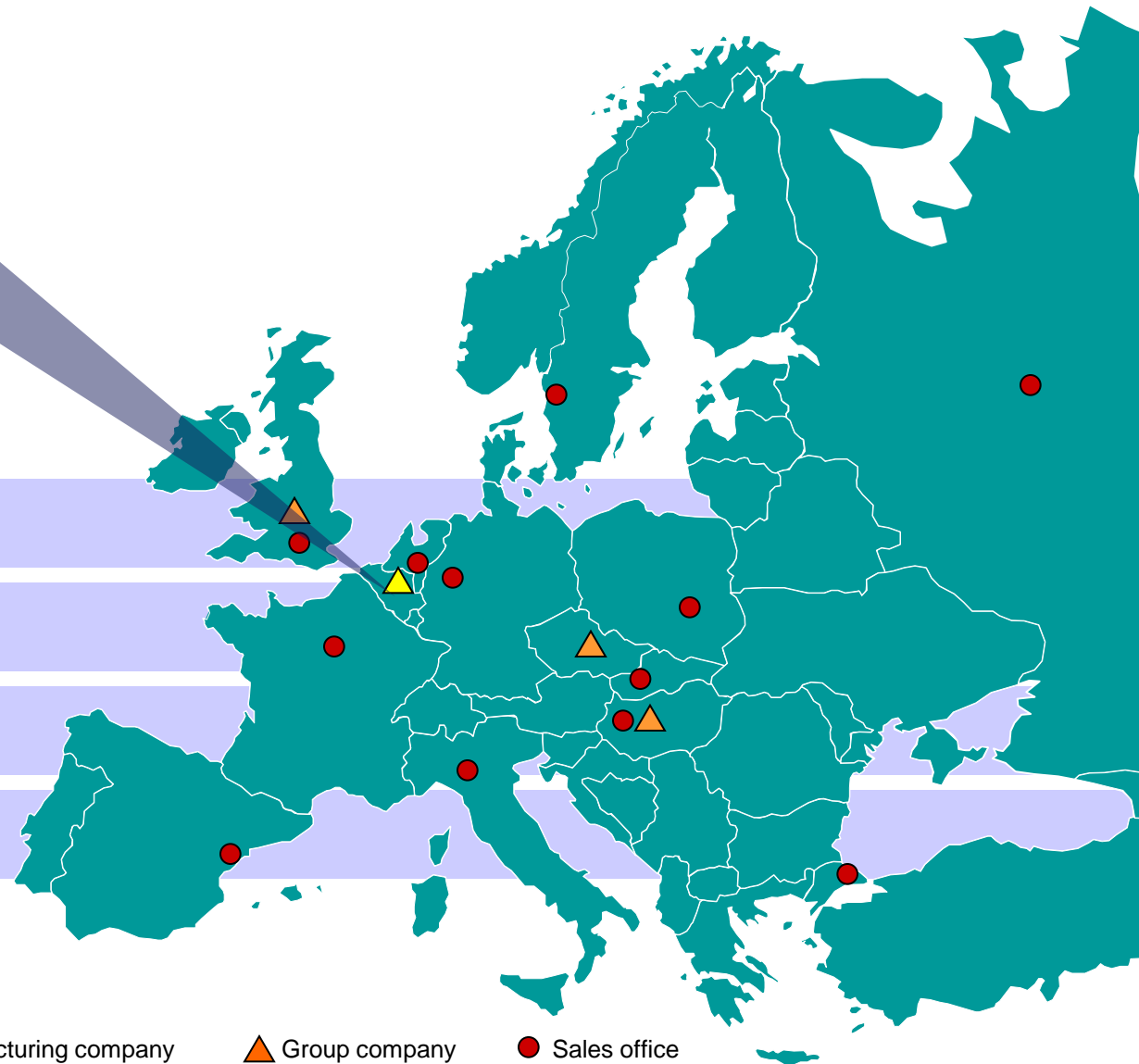
NITTO EUROPE NV

908 employees

€246 million turnover

4 production sites

12 sales offices



▲ Manufacturing company

▲ Group company

● Sales office

Global Niche Top Products for a technology-leading market segments

Segments with global reach



Automotive



Communications
Equipment



Paper & Printing



Flat panel display



Metal processing



Renewable energy

Global Niche Top Products



Polarization
conversion film



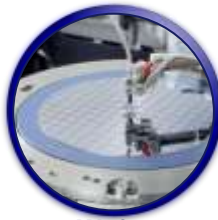
Polarizing film



Retardation film



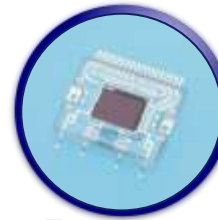
Transdermal patch



Wafer
protection tape



Thermal
release sheet



Transparent
encapsulating resin



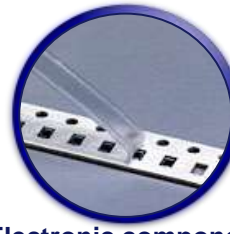
Printed wiring
material for HDD



Ceramic
barcode label



Protection film
for automobiles



Electronic component
carrier tape

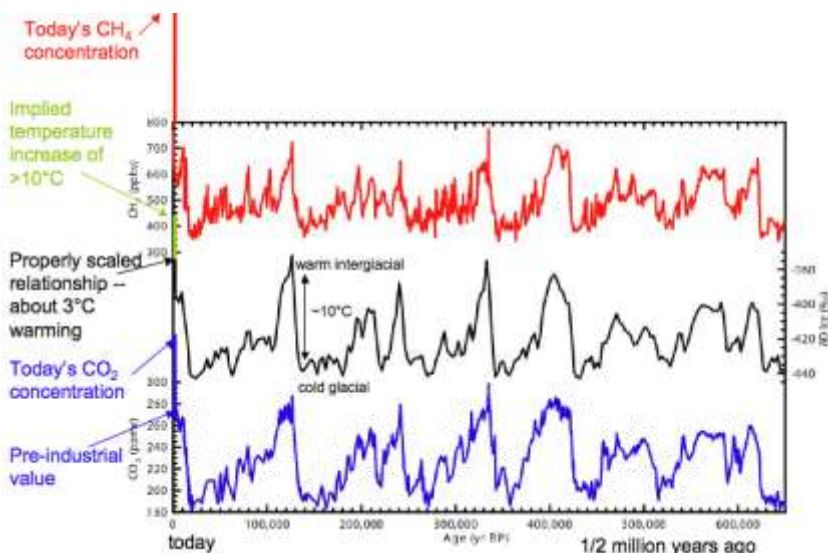


Reverse osmosis
membrane

Companies need to find answers in coming years

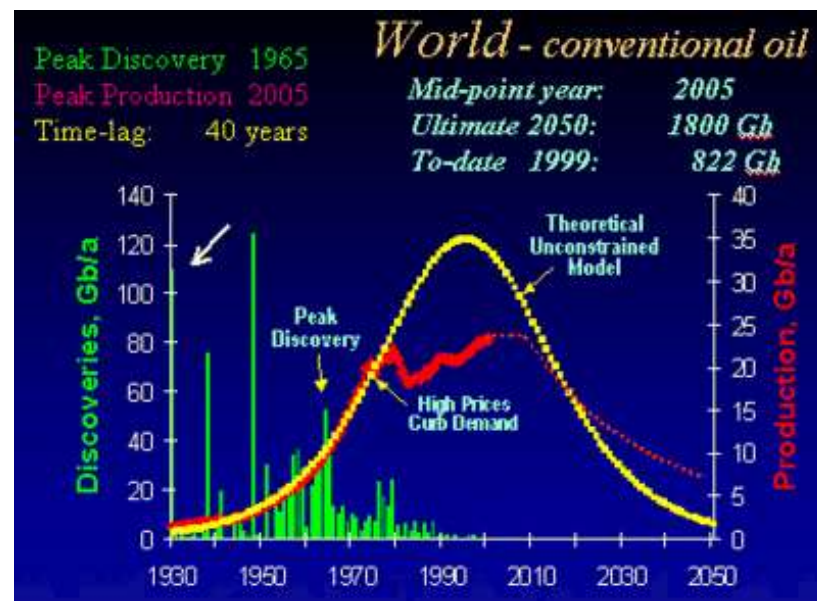
Climate Change

Earth's temperature is rising rapidly due to higher CO₂- & CH₄-emissions



Energy

The End of Oil: availability of conventional oil is becoming scarcer



Business should focus on Sustainable Development giving attention to :

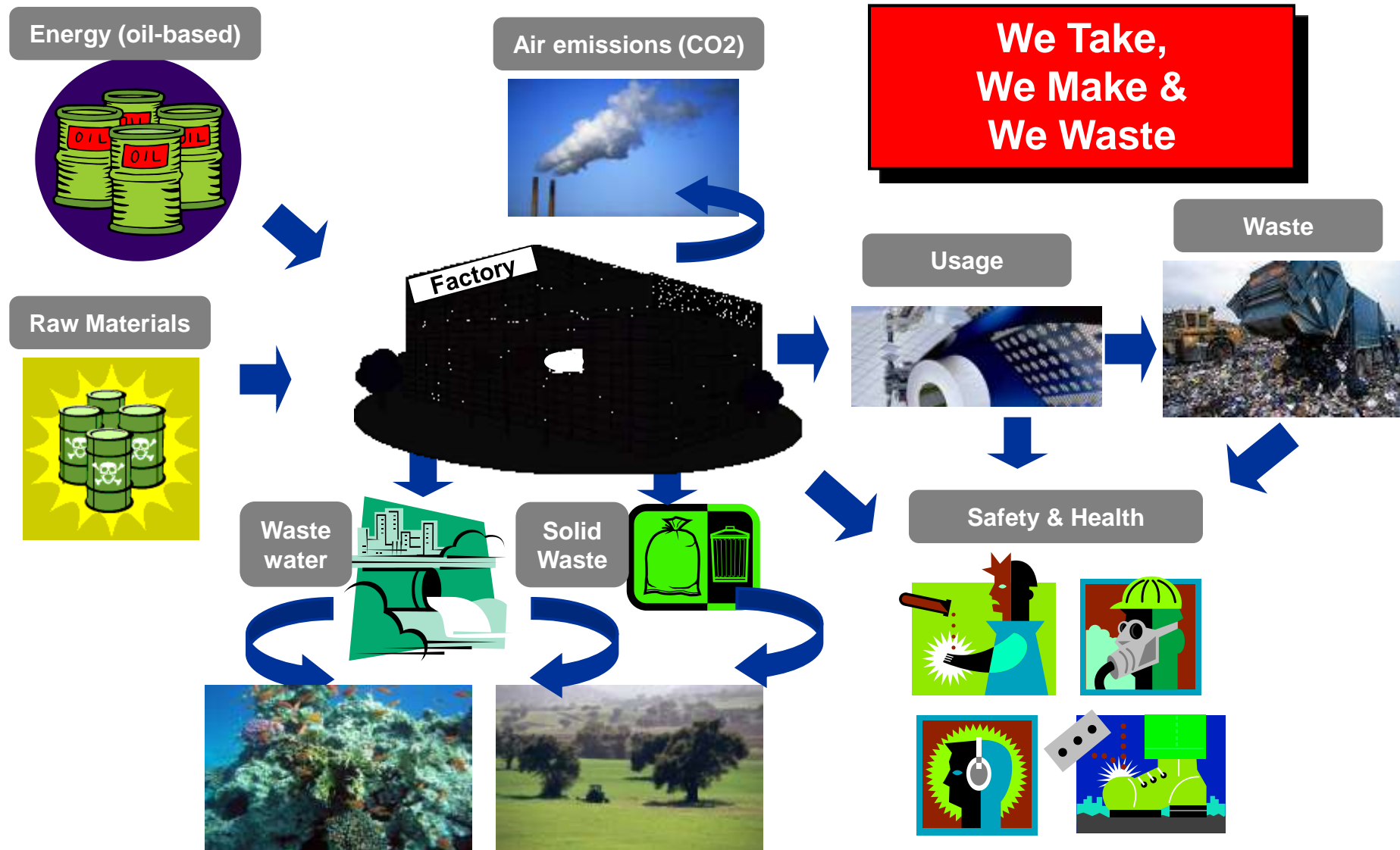
(1) Reduction of CO₂-emissions

(2) Reduction of energy-consumption

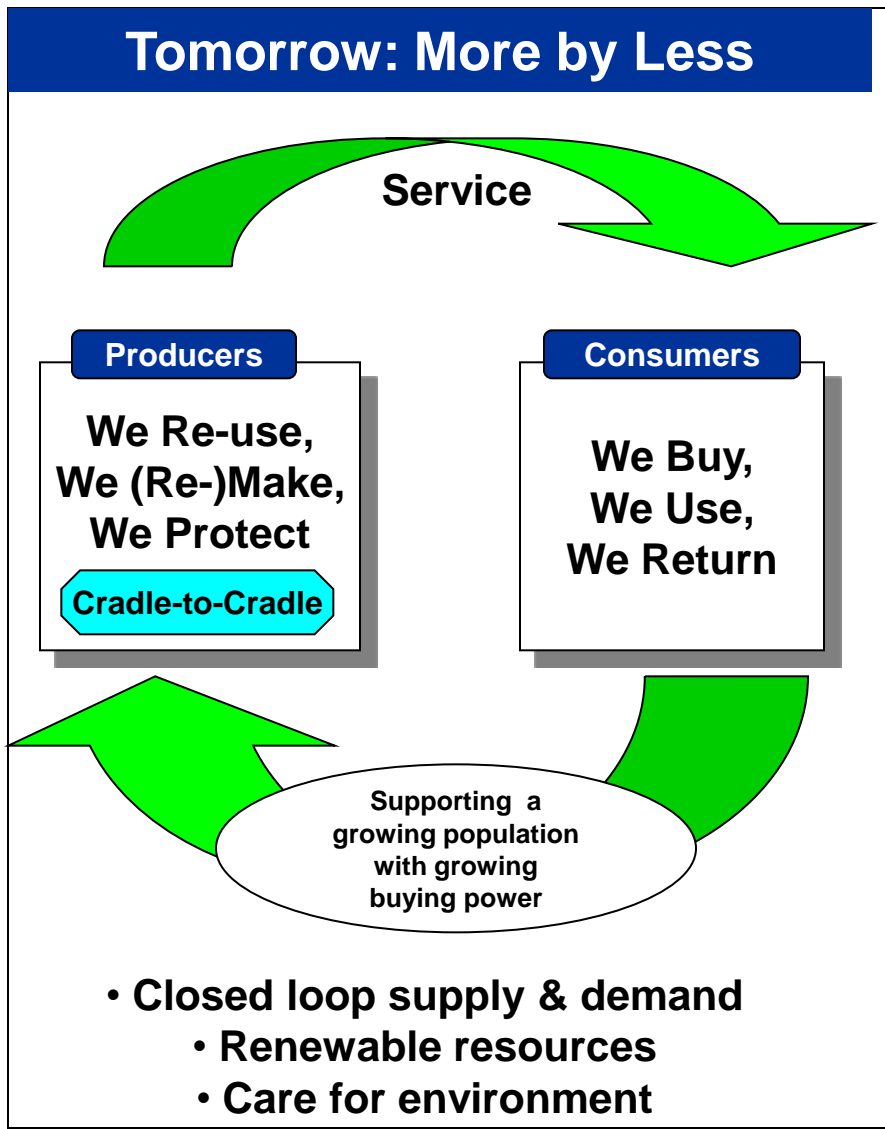
(3) More use of renewable energy-resources

Industry has reached the natural limitations of the way things are made

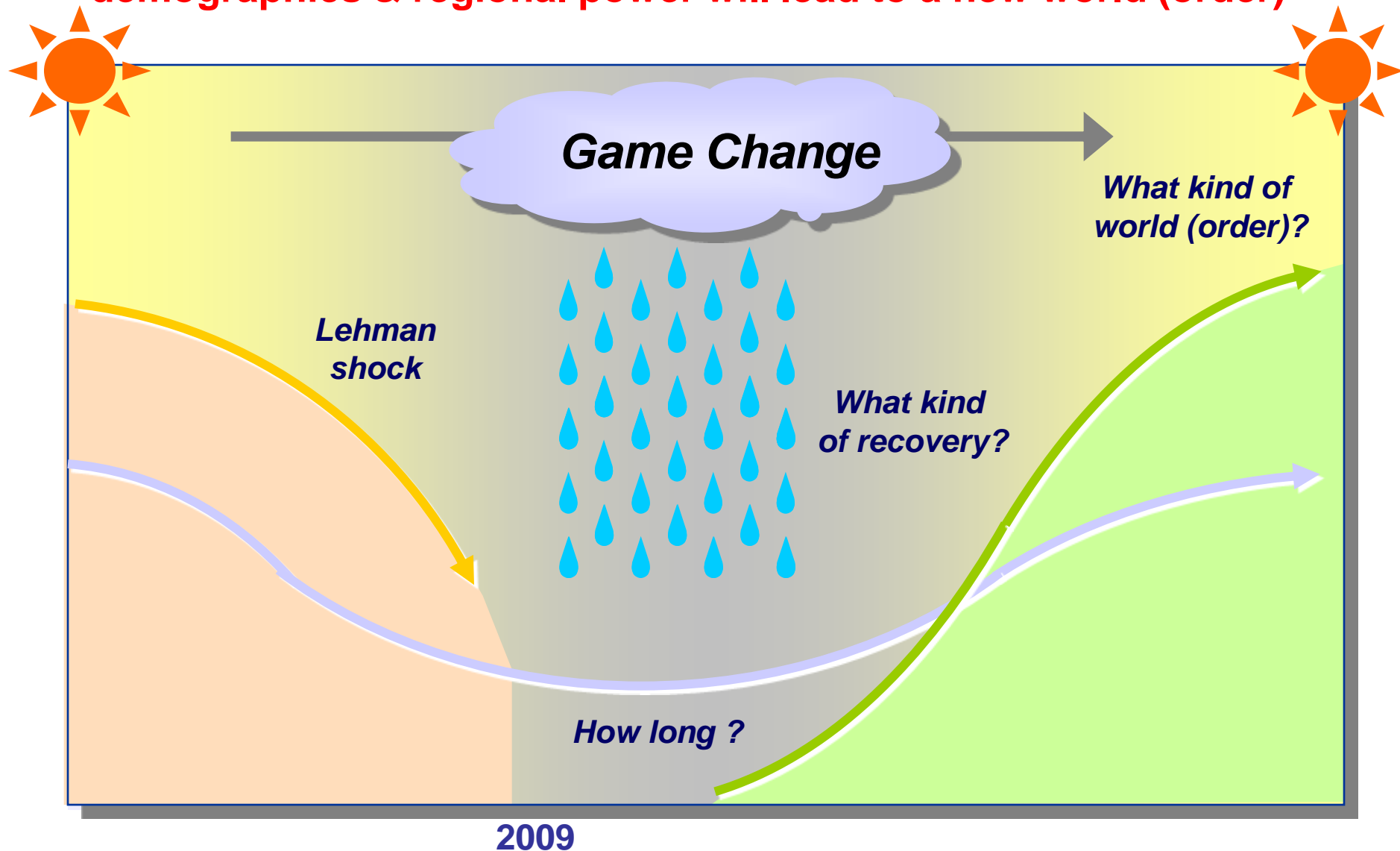
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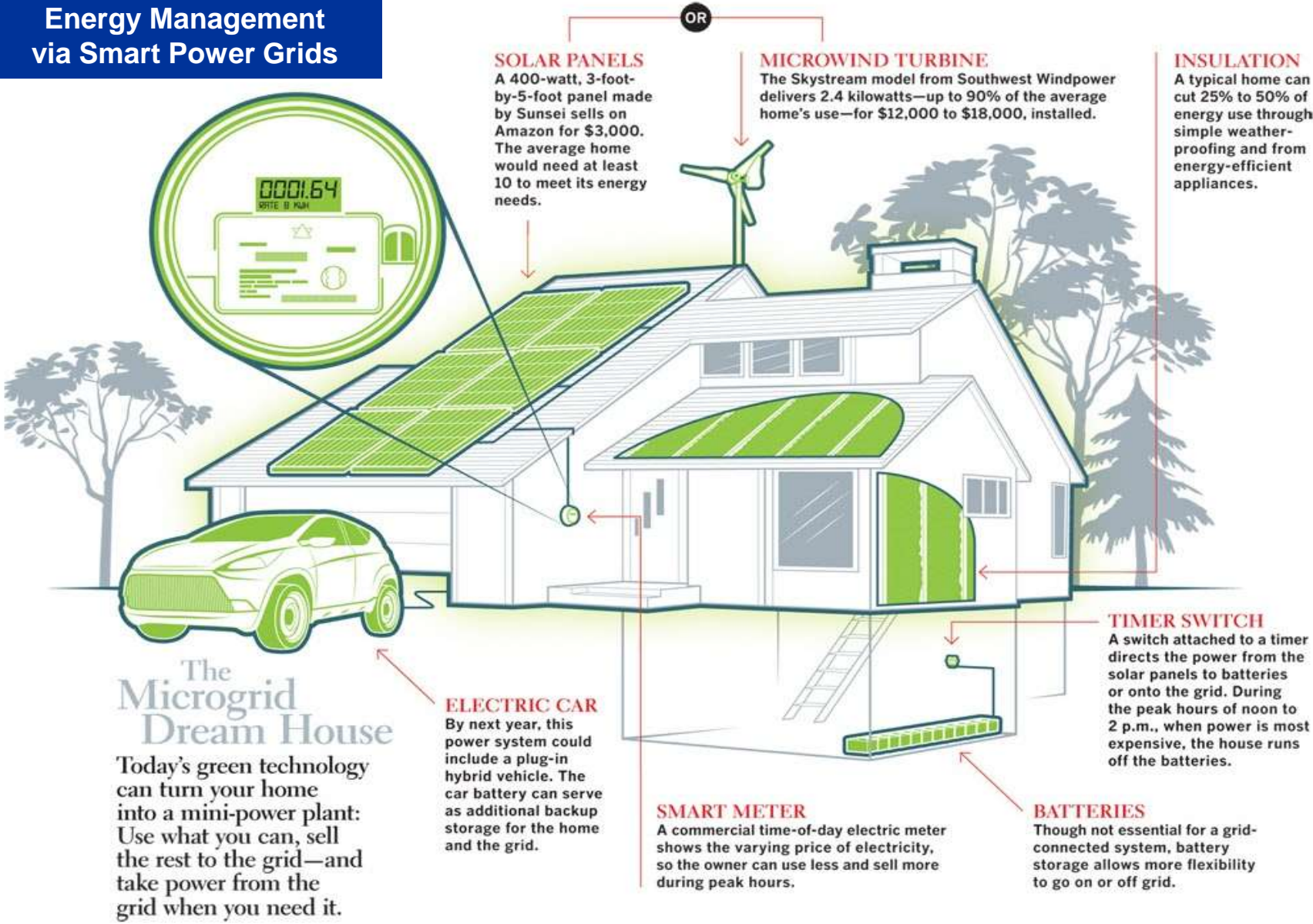
We need to re-think the way we produce and consume



Disruptive changes in environment, society, economy, technologies, demographics & regional power will lead to a new world (order)



Energy Management via Smart Power Grids



EU regulation aims at 'End-to-Waste'

The goal is to reduce GHG-emissions related to waste at End-of-Life

Landfills & incinerators are a major source for greenhouse gas emissions & health hazards



*From
Waste Management
to
Waste Prevention*

**Zero Waste for
Zero Warming**



**More & more
EU-directives
to end waste**

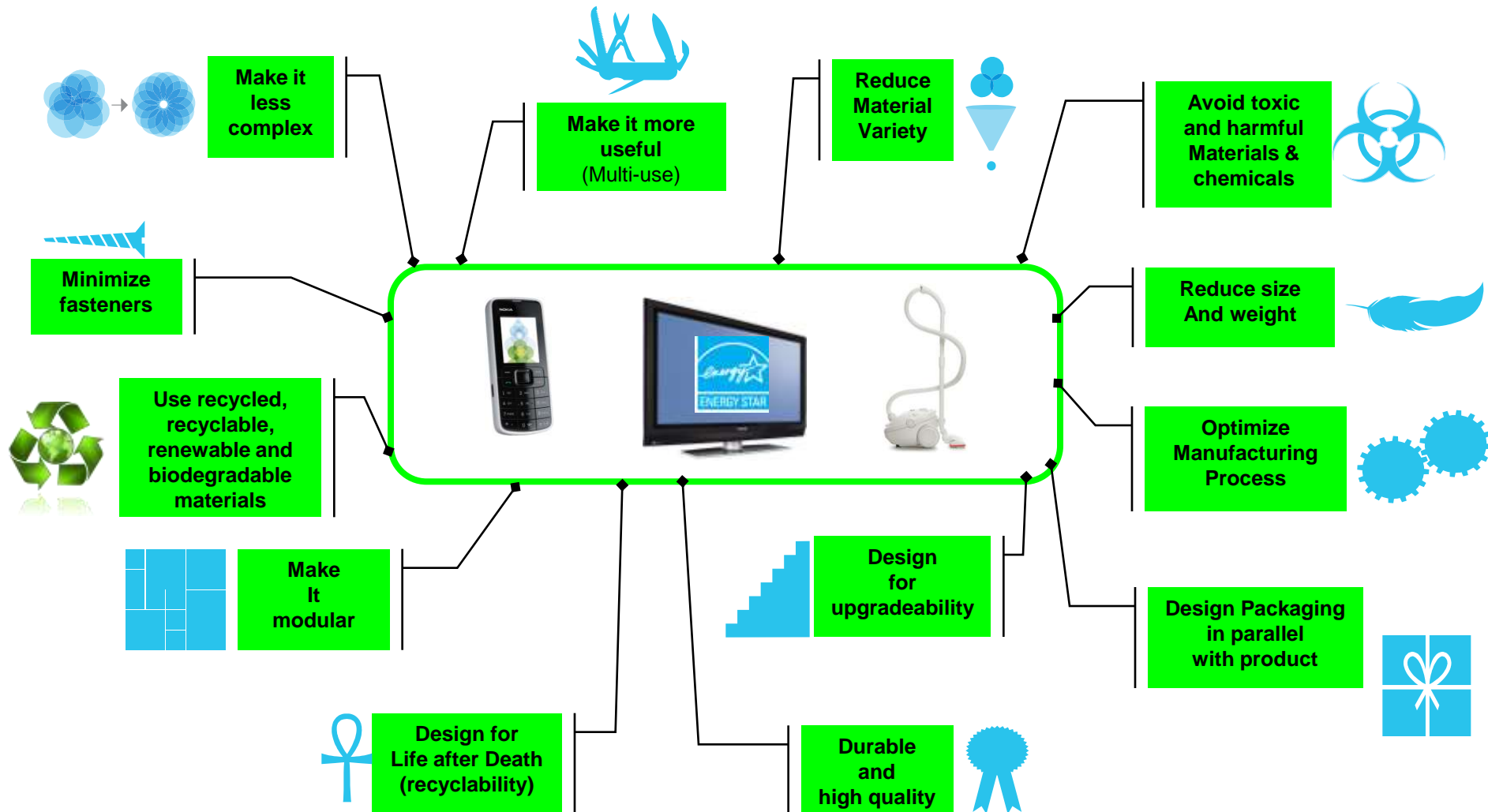
**Packaging and
packaging waste**

**End-of-life vehicles
2005/53/EC**

**Waste prevention and
Recycling strategy
COM (2005) 666**

Waste directive 2006/12/EC

Eco-Design = product design with features, materials and processes which have a low impact on environment, resources and health.



**Eco-designed products with low energy-consumption & low carbon footprint
made of renewable and/or recycled materials**

**Motorola
W233 Renew**



**Nokia
3110 Evolve**



Samsung's Blue Earth



Source: EcoDesign

The ASUS Bamboo notebook



The Hltachi Re-drive



Design FlatTV



The Dell Hybrid PC



**Sanwa Newtec
Paperless-printer**



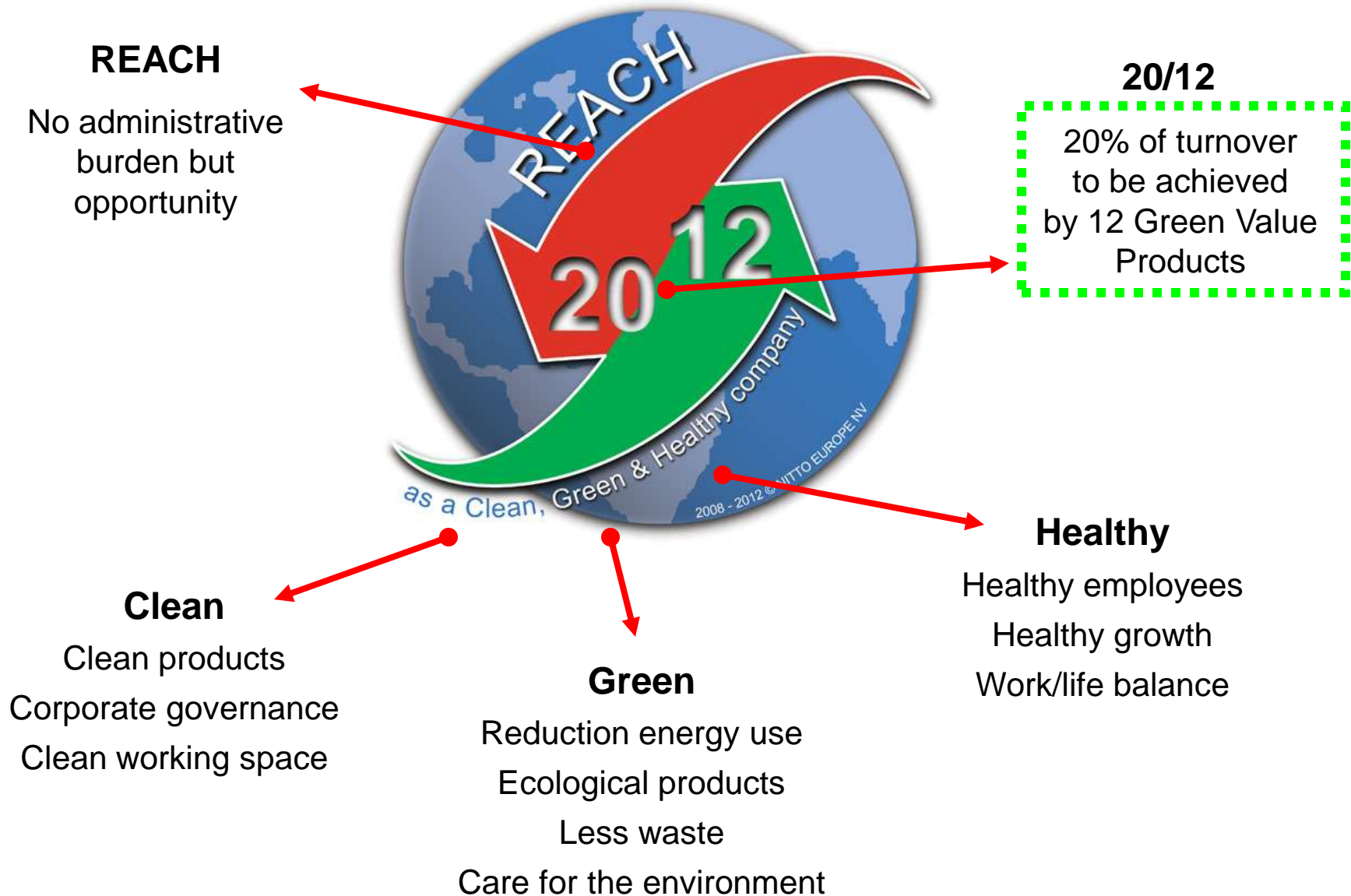
**Eco
Washing Machine**



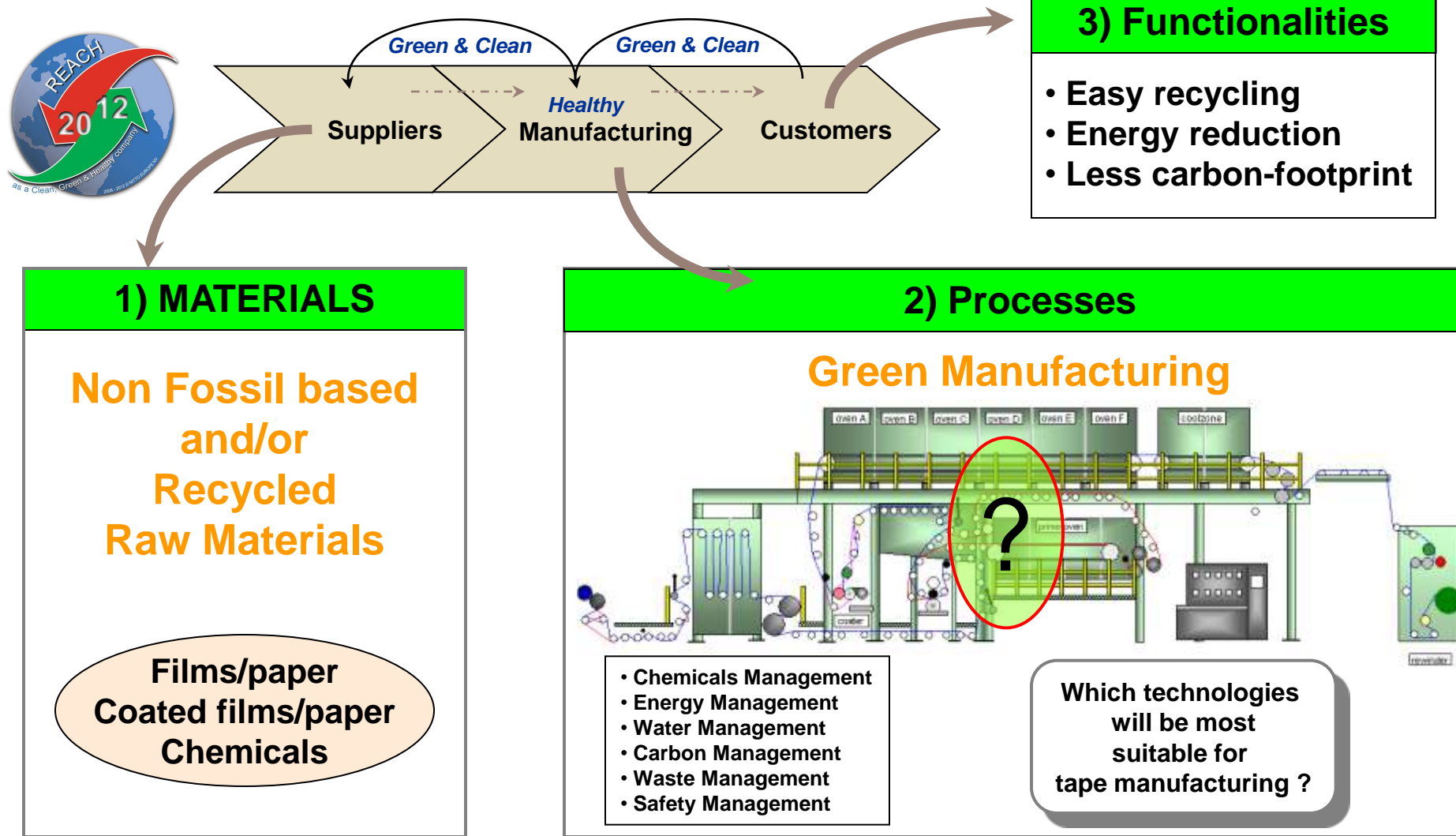
**Electrolux
'Ultrasilencer Green'**



Clean, Green & Healthy = Sustainable Development

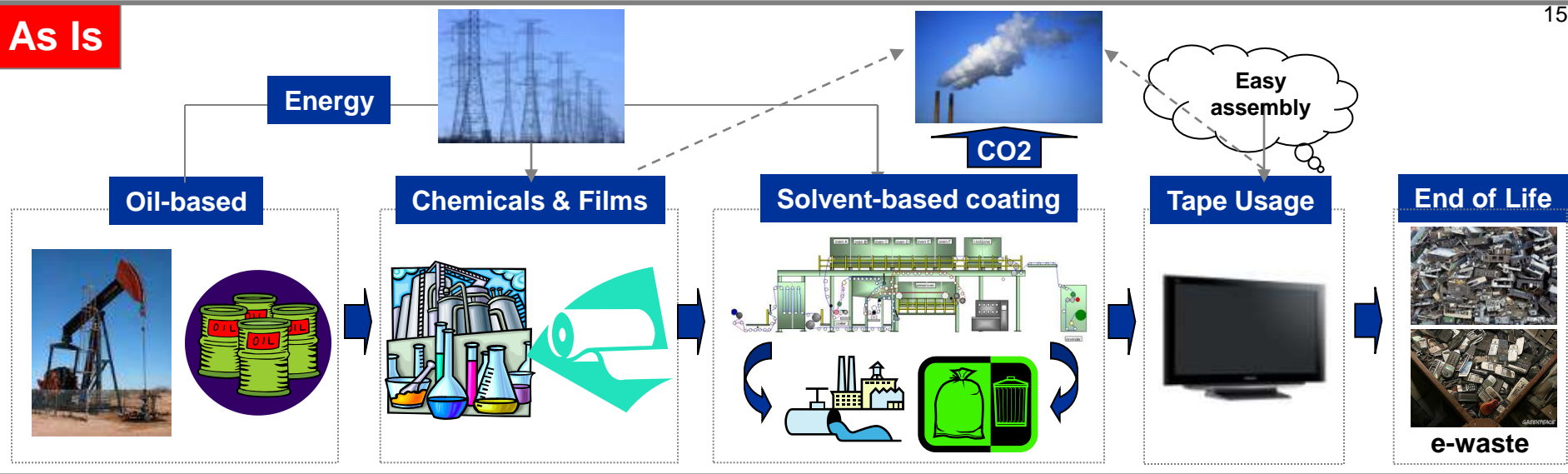


Look for materials and processes with lowest possible negative impact on planet and add product functionalities to facilitate sustainable usage & end-of-life

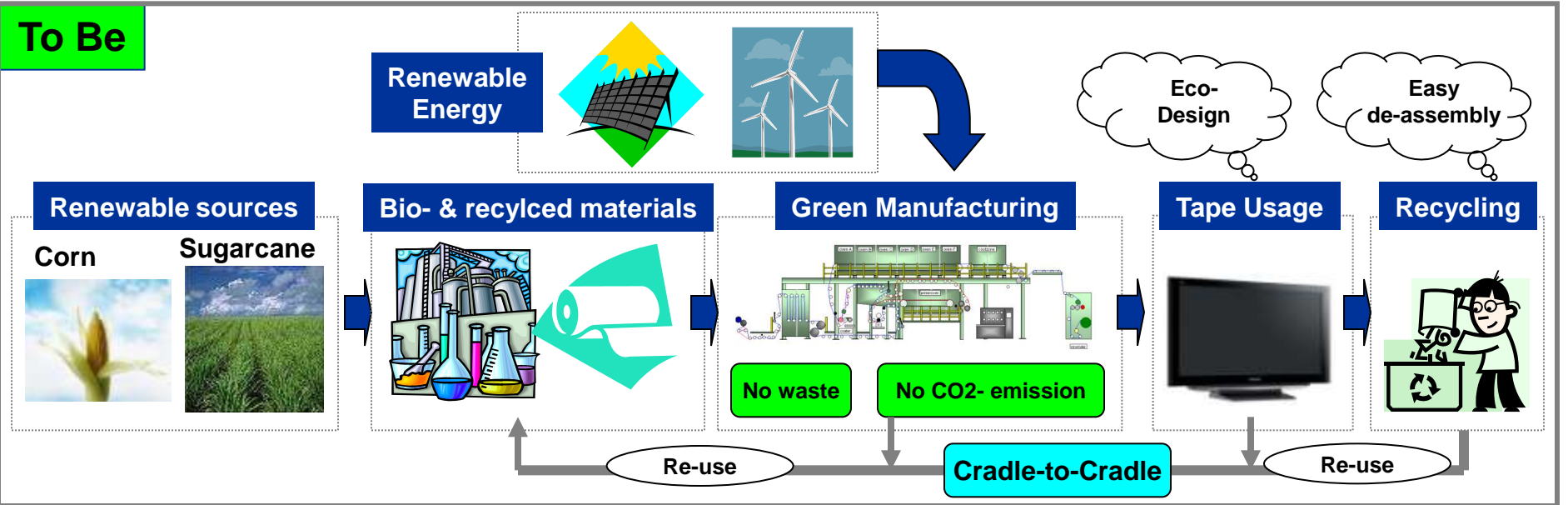


A Sustainable Future for PSA Tapes

As Is



To Be



We actively look for ways to develop & manufacture materials in a sustainable way

**Closed loop = avoid waste from
Total Life Cycle point of view**



**Apply 3R in a Responsible way
= Renew, Reduce, Recycle**



Green Value helps our customers to select materials in terms of sustainability



**Green Value refers to material features
for the protection of the environment &
humans and the efficient use of resources.**

Green Value is determined by the kind of materials & operations used and the functionalities offered

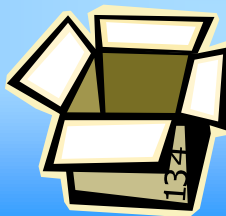
Raw Materials



Manufacturing



Packaging



Logistics



Usage



**Energy
efficiency**

End-of-Life



“Green Value” from Operations

Gradually we are introducing “Green Value” throughout all company activities

Since 1 January 2009
(NE) uses only
Green Electricity

2-year contract with
Green Energy Supplier ‘Eneco’

CO2 reduction
of +/- 12.000 ton
CO2-emissions
Per year

Green Logistics

Replace road transportation
by water transportation

For container shipment from Genk <-> Antwerp

Use trucks with low(er)
CO2-emissions

Company Cars Policy

Maximum level of CO2-emissions
for each class of cars

CO2 emissions (g/km) and road tax	Vehicle Class
0-100 (BAND A E0)	Small white cars
101-120 (BAND B E5)	Small blue, yellow, and red cars
121-150 (BAND C E10)	Small grey, orange, and red cars
151-165 (BAND D E15)	Small grey and orange cars
166-185 (BAND E E20)	Small grey and orange cars
186-225 (BAND F E25)	Small grey car
226+ (BAND G E400)	Small red car

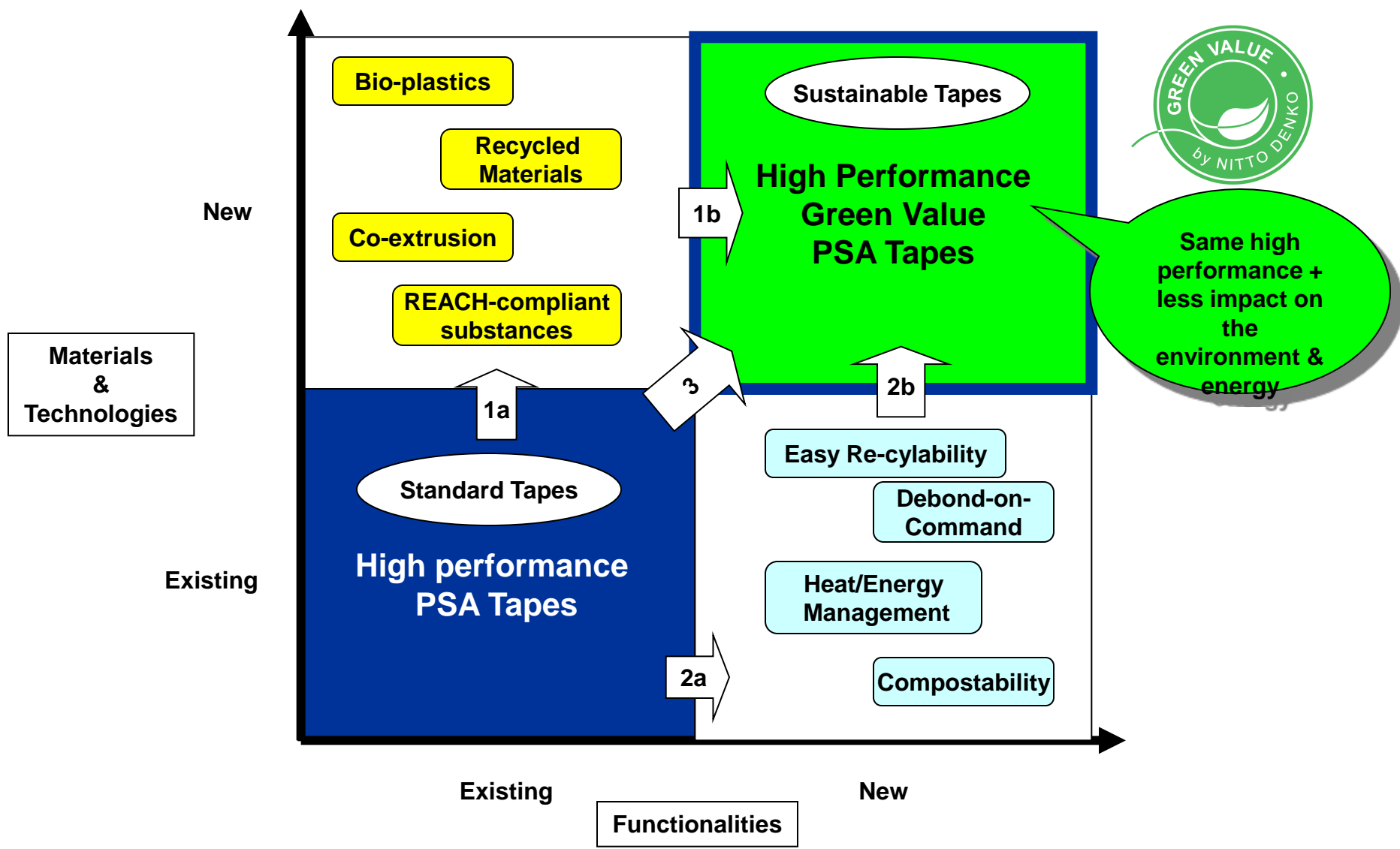
Transportation documents

Indication of CO2-emissions
for each shipment

Climate Protection with DHL

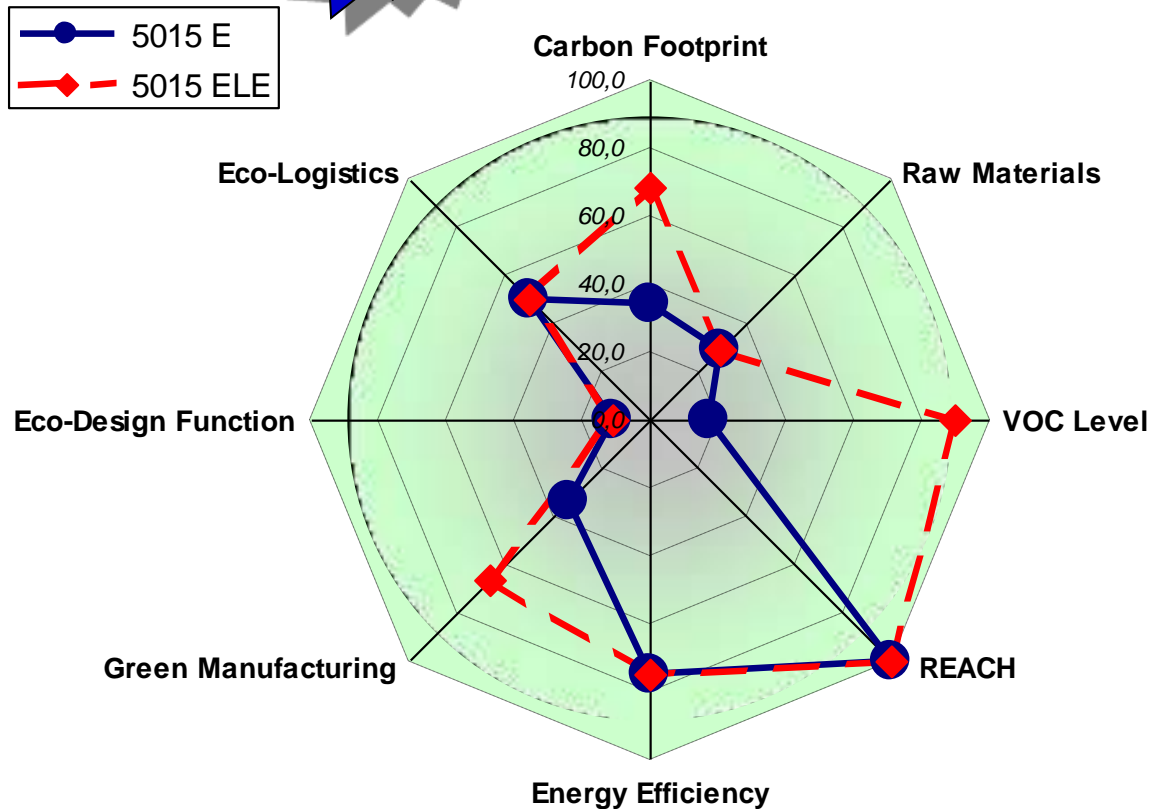
(example: DHL)

A new generation of tapes by changing materials and adding functionalities



**Green Value Score of 5015ELE is '63' vs '45' for 5015E
thanks to replacing Toluene by EtAc as a solvent**

To be
finetuned



5015ELE vs 5015E

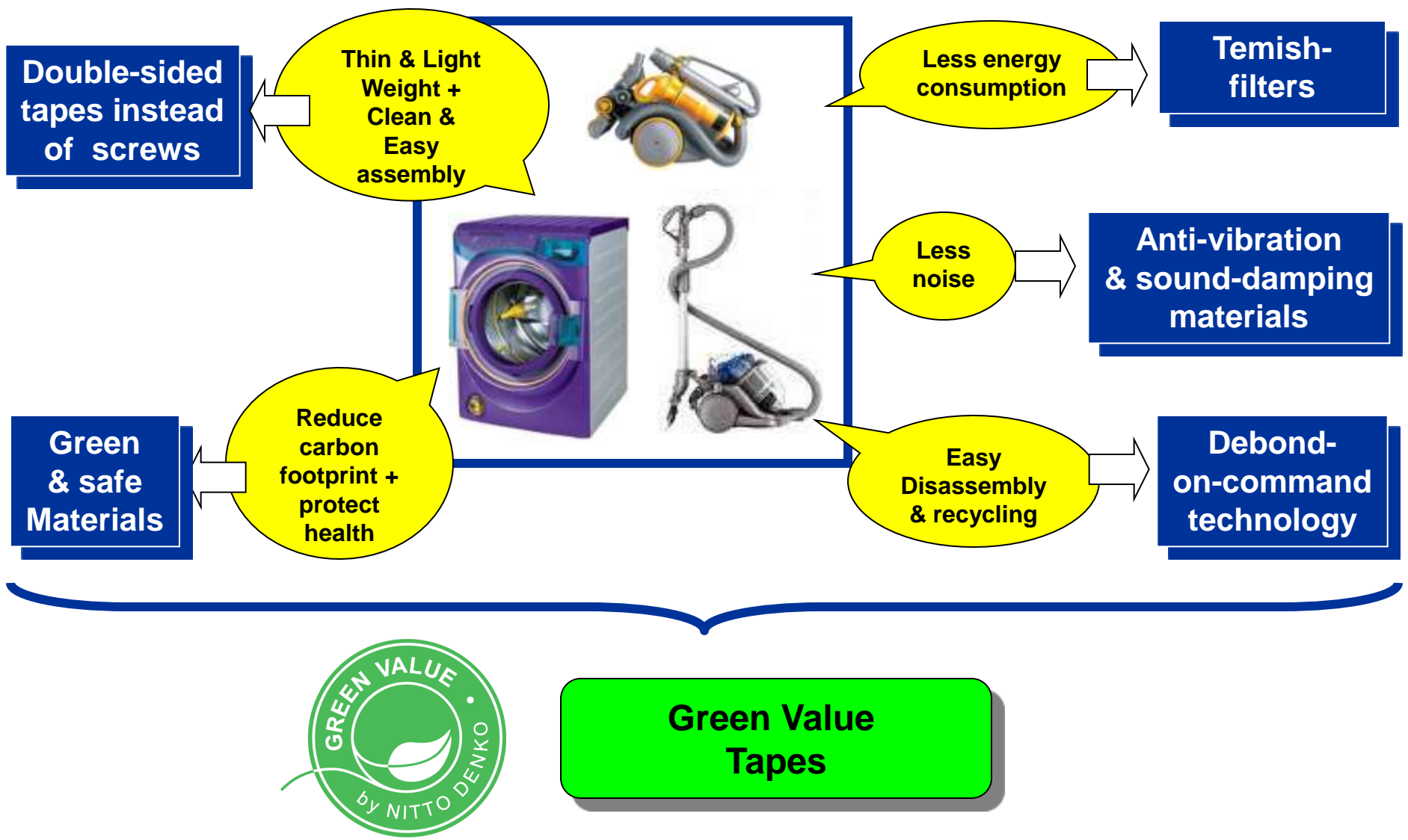


- Less CO₂-emissions

- Less VOC

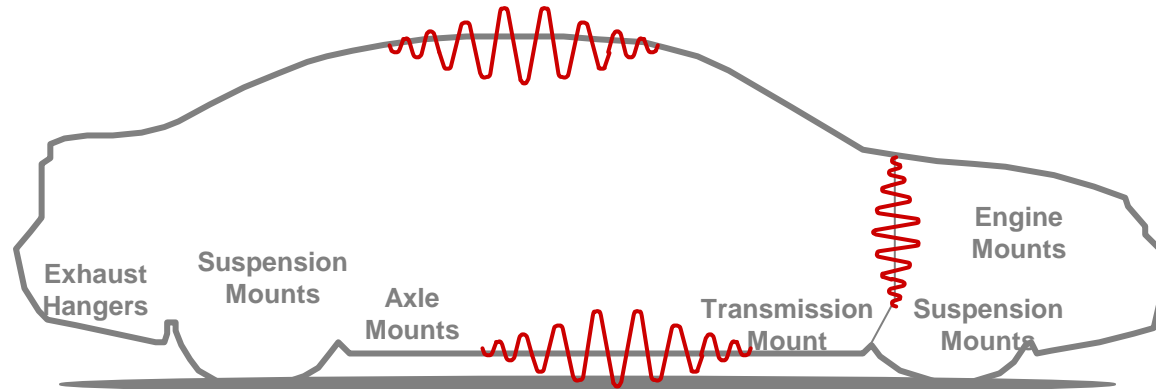
- More Healthy

PSA Tape technology can be used to make appliances more sustainable

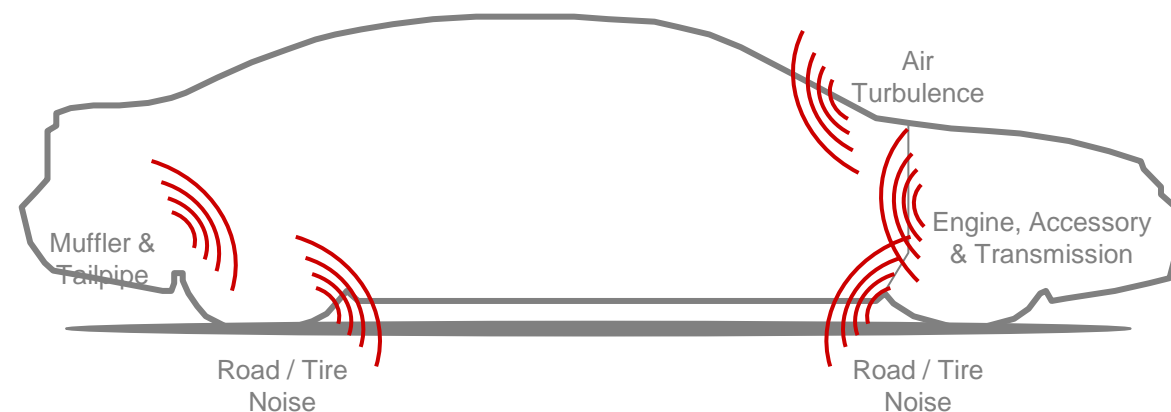


**Fuel saving => lighter cars => more vibrations, noise =>
[Nitto Materials & Service]**

Structure-borne noise sources



Airborne noise sources



**Nitto Denko supplies
NVH-materials
(Noise, Vibration, Harshness)**

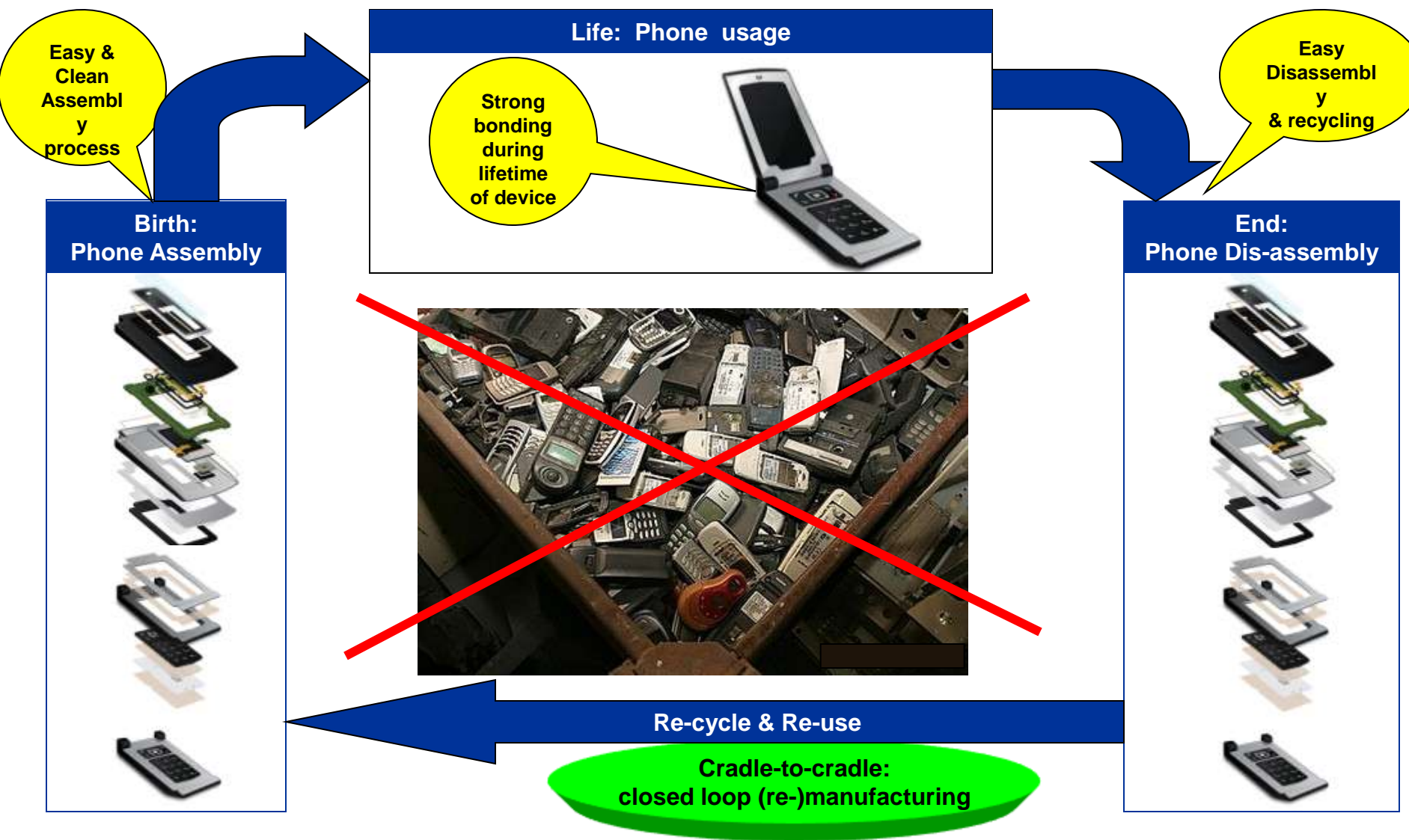


- Car body enforcement
- Noise reduction
- Vibration damping

“End-of-Life”-functionality

“Debond-on-Command” is a bonding solution that can easily be de-activated at End-of-Life for facilitating easy dis-assembly and recycling

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Bio-based materials

Companies are experimenting & introducing bio-based materials

E.g. Mobile Phone



Nokia
3110 Evolve



- 50% of bio-covers come from renewable sources
- Small packaging is made of 60% recycled materials
- 15 to 20% less energy consumption thanks to eco-charger

Automotive



**Hyundai
Blue-Will
Concept Car**
(using bio-plastics
& recycled plastics)



**Floor mats made with
Toyota Eco-Plastic**



**Toyota's spare tire cover
made of polylactic acid**




**Ford's soy-based foam
seat cushions**

**Next: door seals, floor
mats, gaskets & splash
shields**

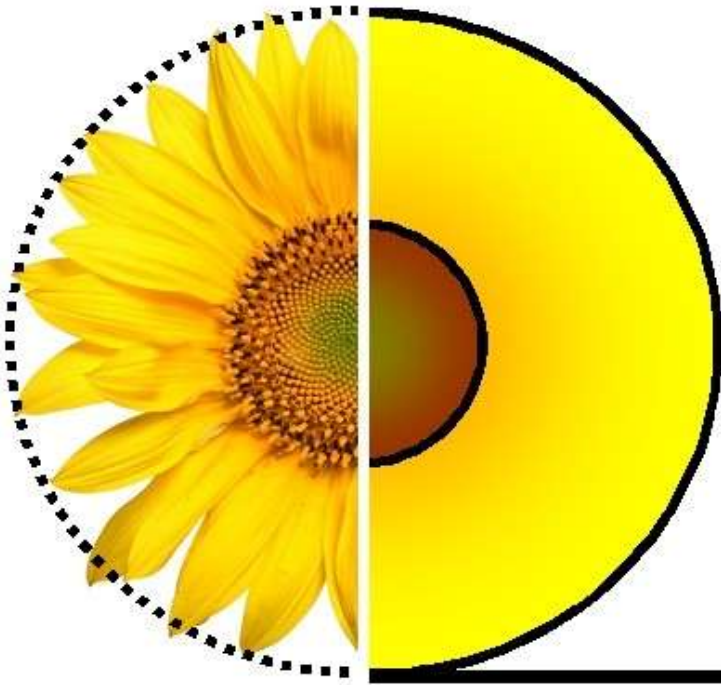
Nitto's Research & Development program for bio-based PSA Tapes

Nitto's Bio-based "Toolbox" = Technical Know-How + Patents
(Bio-based monomers and polymers, green cross-linking methods, solvent-free bio-based adhesive formulations, biodegradable adhesive materials...)



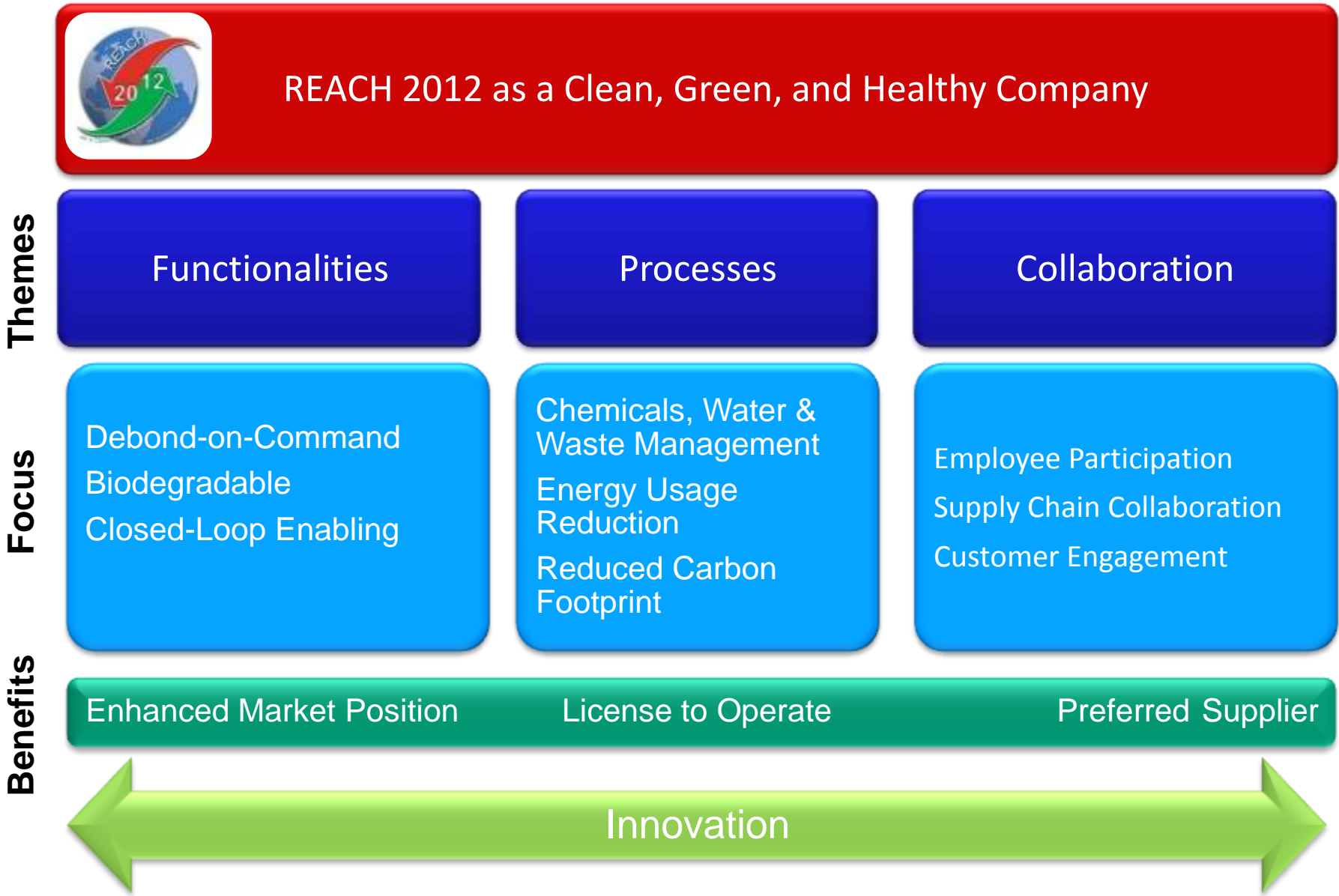
Renewable Resources

Bio-based Monomers and Polymers



Technical properties
(adhesion, biodegradability...)





Thank you !



 NITTO DENKO

A photograph showing the lower legs and feet of a person wearing grey trousers, standing on a patch of vibrant green artificial grass. The background shows a modern building with large glass doors.

Clean, Green & Healthy

Introducing Nitto Europe