

EcoDesign and Design for Residual value

COBALT Dialogue – Circular Economy

Anton Brummelhuis – Philips Lighting Sustainability
Brussels, February 27 2014

PHILIPS

Philips Lighting

End-user-driven lighting solutions → Creating customer value

Home



Industry



Healthcare



Office



Outdoor



Retail



Hospitality



Entertainment



Automotive



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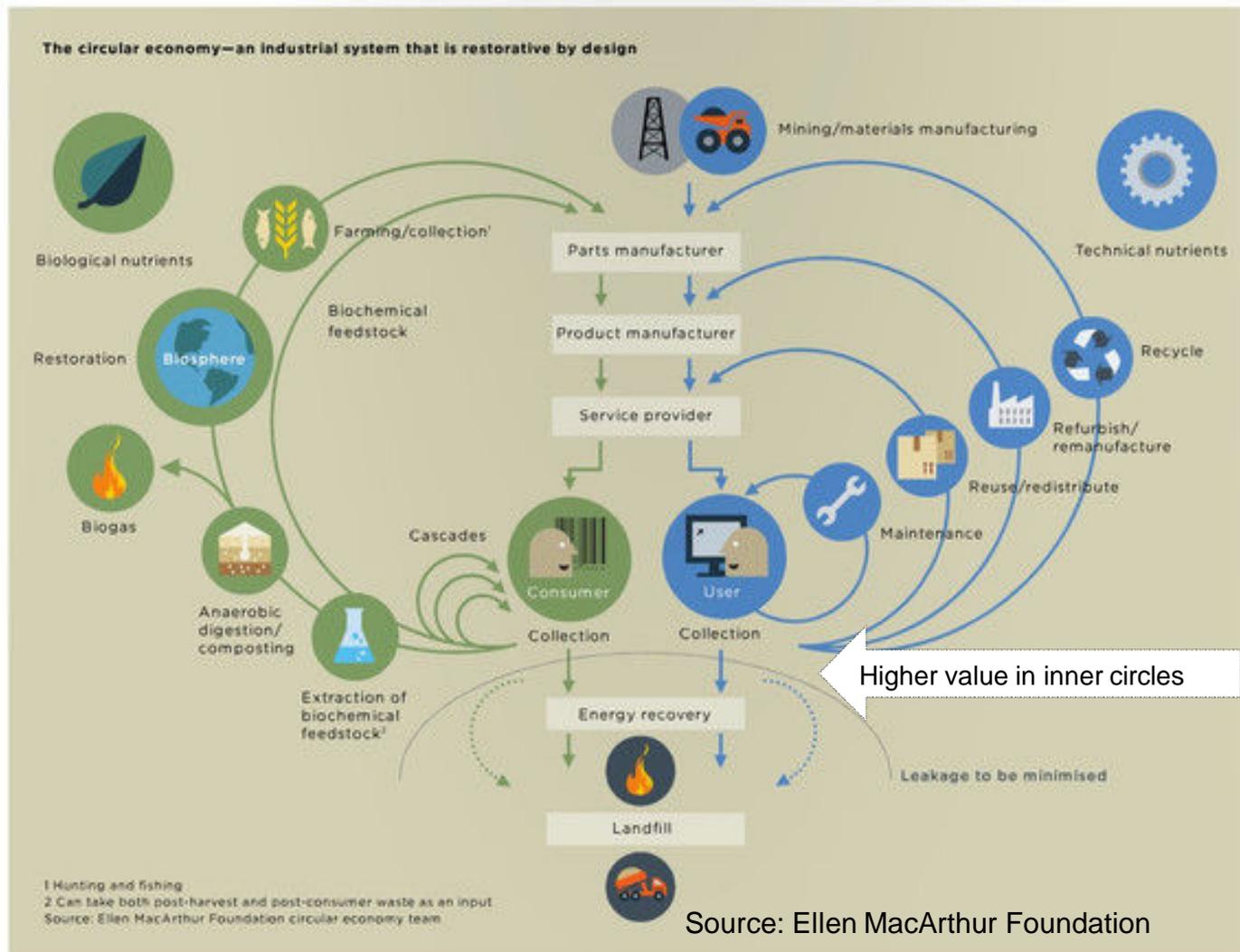
..”For a sustainable world, the transition from a linear to a Circular Economy is a necessary boundary condition. A circular economy requires innovation in the areas of materials, component and product reuse, as well as related business models.

By using materials more effectively, economic growth will eventually be decoupled from the use of natural resources and ecosystems. In such an economy, the lower use of raw materials allows us to create more value”

Frans van Houten, “Unleashing the Power of the Circular Economy” Report Circle Economy, April 2013

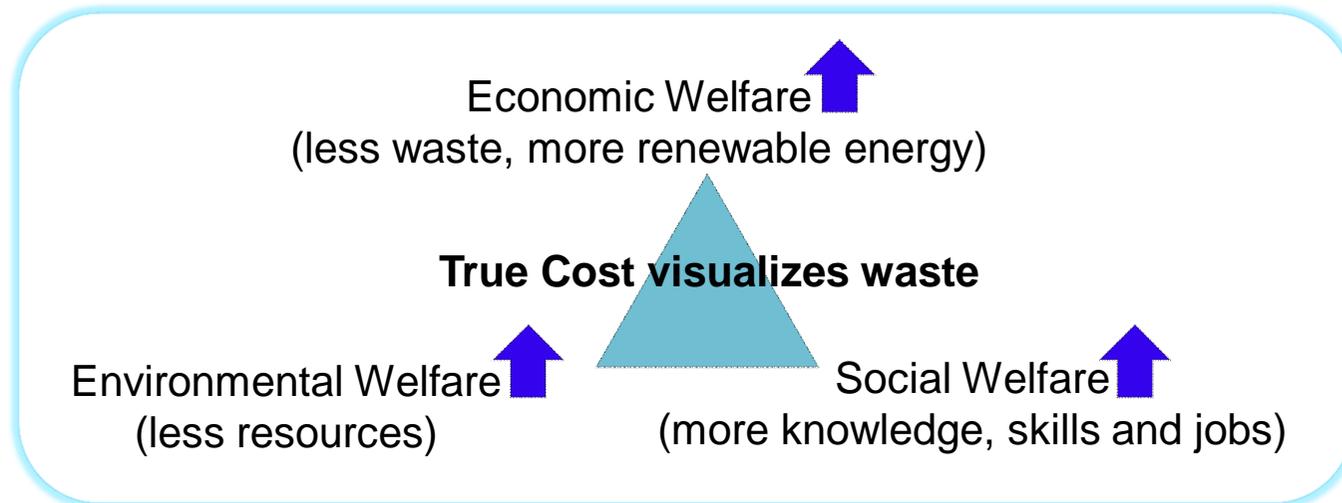
Towards a 'Circular Economy'

4 R's: Reduce, Reuse, Remake, Recycle



‘Circular Economy’ = ‘Performance Economy’

Walter Stahel: The sustainability triangle of the performance economy



Principle 1: The smaller the loops (activity wise and geographically) the higher the profit

Principle 2: Value maintained in loops replaces value added

Principle 3: Decreasing speed in loops enables better logistical performance

Principle 4: Continued ownership is cost efficient (no double transaction cost)

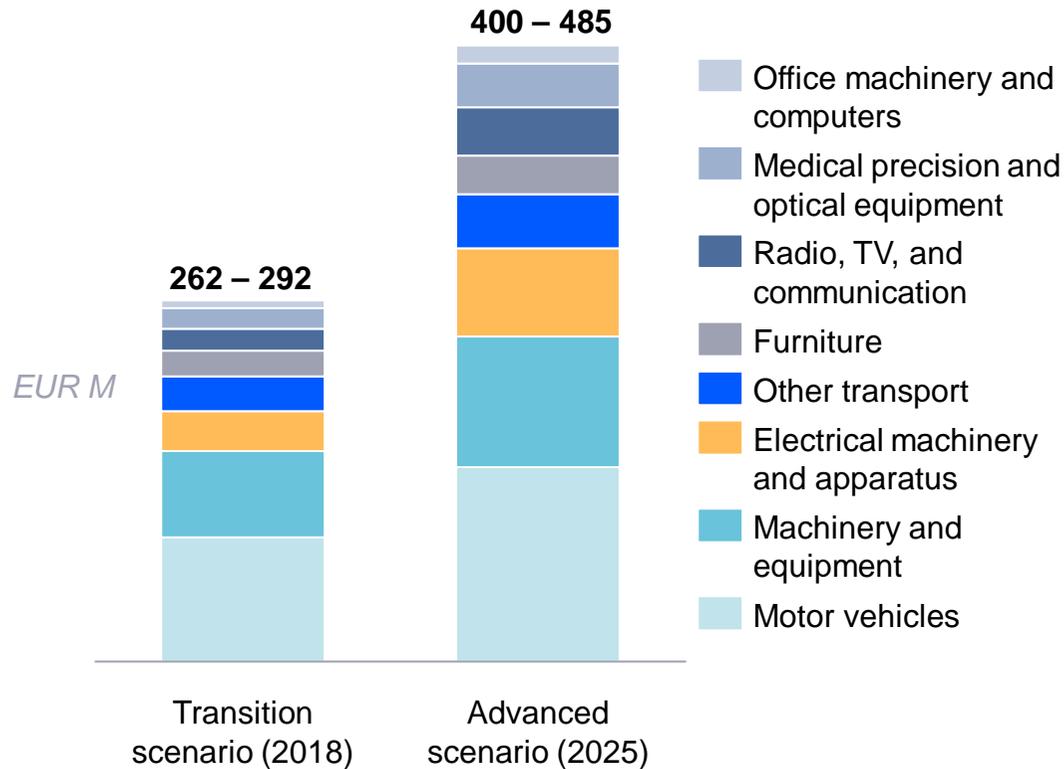
Principle 5: A circular economy needs functioning markets

Source: Ellen MacArthur Foundation

Circular models have economic potential

250-500 Bln Eur annually for Europe alone

*Net material cost savings in complex durables with medium life spans
EUR billions per year, based on current total input costs per sector, EU*



Key insights

- Circular economy requires new business models and can be source of innovation
- Levels: remanufacturing, refurbishment, spare parts, material reuse
- A shift from ‘owner’ to ‘user’ for customers and from transactional to relationship sales for companies

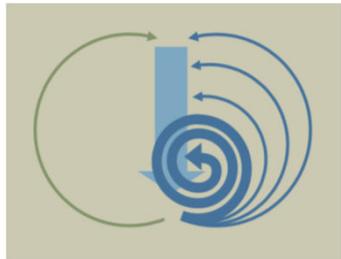
Ecodesign and Design for Residual value

Design for Reduction, Reuse, Remake and Recyclability



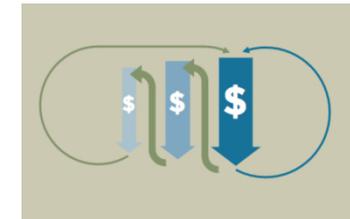
Reduction: Design for the lowest footprint (EcoDesign)

Reuse: Power of the Inner circles



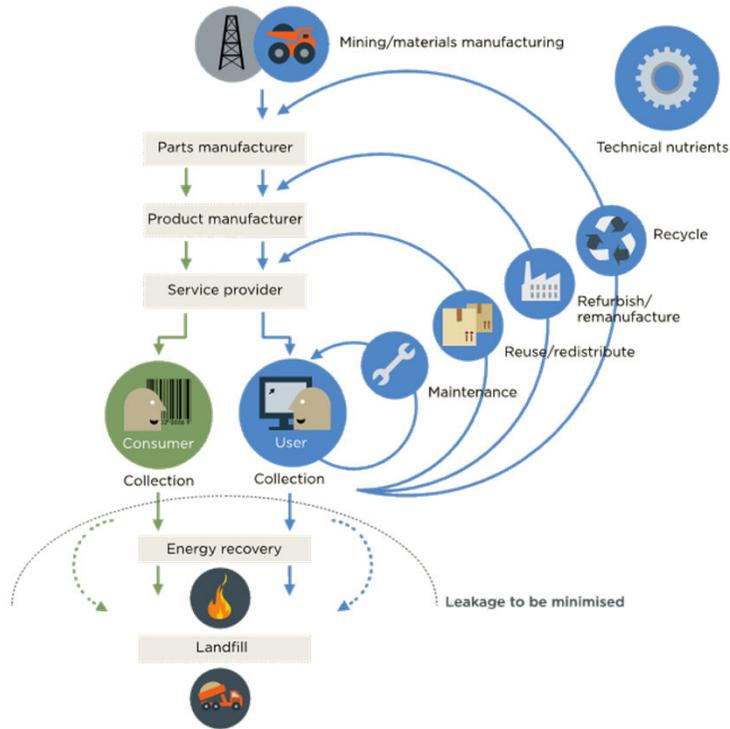
Reuse: Power of circling longer

Remake: Power of Cascaded Use



Recyclability: Power of pure and easy-to-separate designs

Resource Efficiency: GreenElec



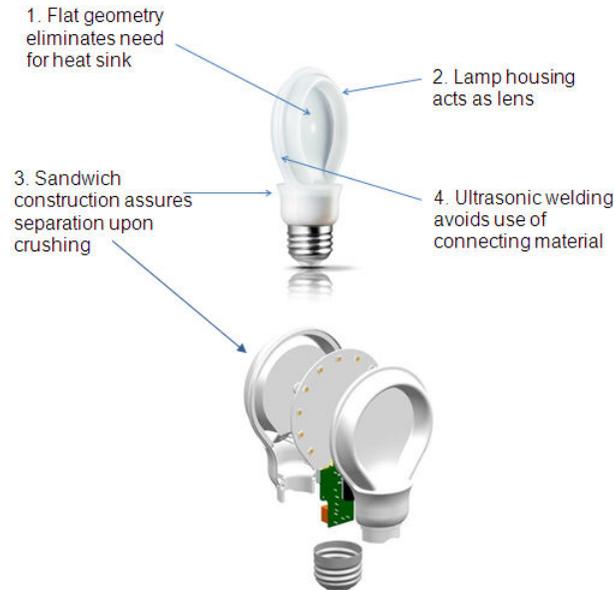
Aim

- Maximize recyclability
 - Enable remanufacturing and repair
- Through cooperation along value chain*

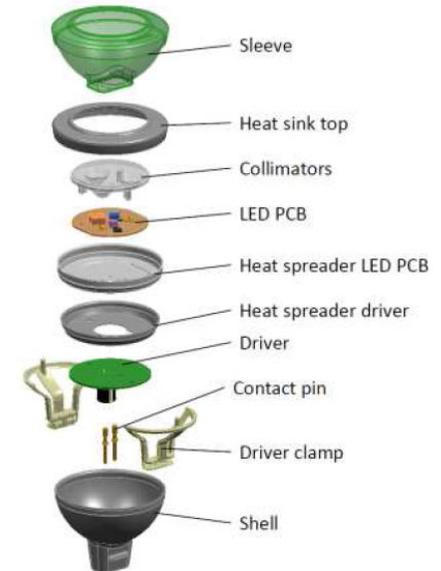
Design Rules

resources	building blocks	materials	<ul style="list-style-type: none"> • Only use materials that can be recycled • Avoid the use of (non-compliant) coatings • Limit the number of different materials • Use preferred/pure materials
	interfaces	electronics	<ul style="list-style-type: none"> • Get PCB out in one piece (→ smelting) • Enable easy/fast detection of materials • Use SMD components
	end-of-life	connections	<ul style="list-style-type: none"> • Avoid fixed connections • Break-down (by shredding/disasassembly) to <ul style="list-style-type: none"> ○ Pieces with uniform composition ○ Pieces of relatively large size (>1 cm)
	identification	<ul style="list-style-type: none"> • Visual marks • Lifetime prognostics 	
	disassembly	<ul style="list-style-type: none"> • Reversible connections • Extended use of NFC 	

Focus on connection



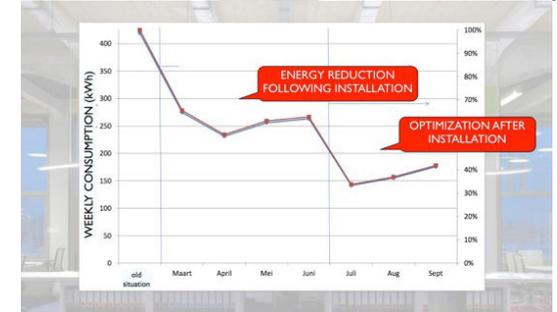
Stacked design



Philips Lighting

Light as a Service

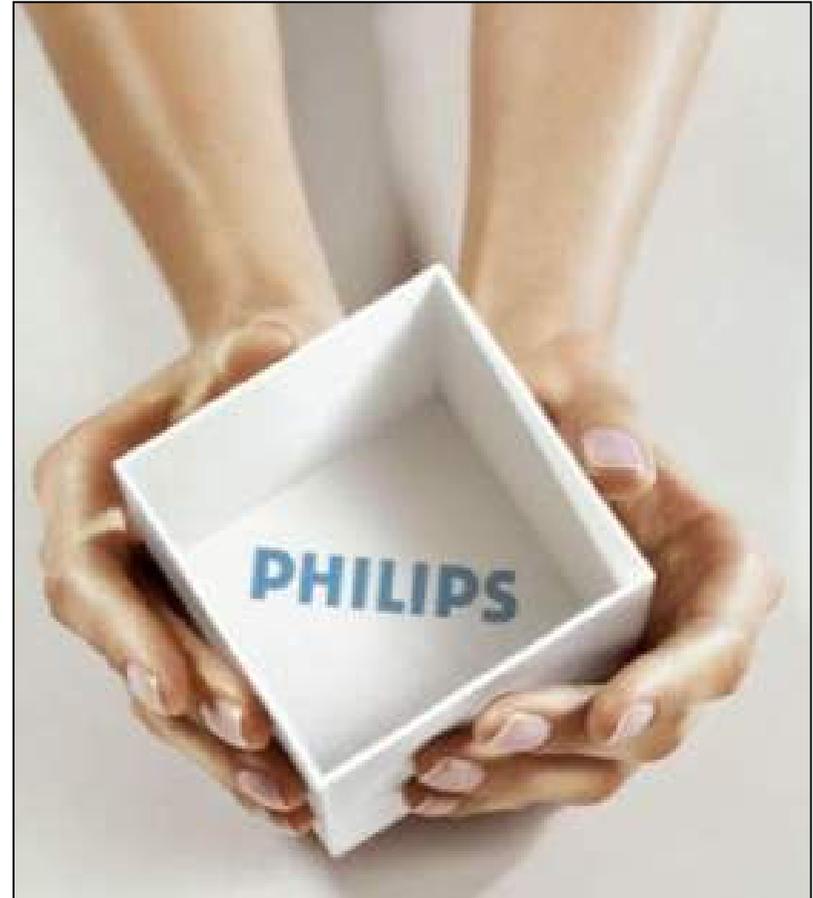
- Retain ownership of infrastructure
- Upgrades, Service innovation, Lifetime extension
- Residual Value through Reuse, Remake and Recycle
- State of the art LED installation and dynamic lighting
- Improve employee happiness and productivity
- End-of-life service of old materials is included
- Reduced lighting energy affords further innovation
- Low CO2 emissions and less waste



Summary



- Unleashing the Power of the Circular Economy
 - Condition for a sustainable world
- Circular Economy = Performance Economy
 - 5 principles
- Ecodesign and 'DfR'
 - Reduce, Reuse, Remake, Recycle
- Light as a Service
 - Access over ownership

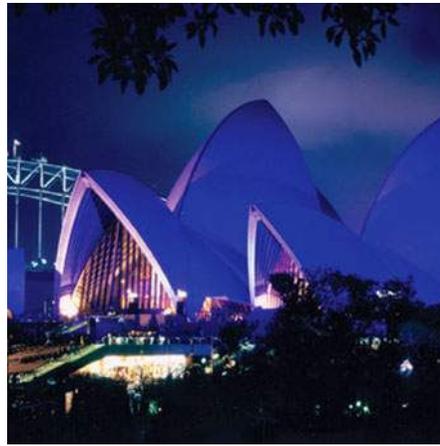




Global Trends and Challenges



Population growth & demographics



Urbanization & the need for Cities to establish identity



The rise of the middle class



Resource & environmental challenges