Els Fonteyne
Circular economy expert
Agoria

Cédric Collard
Business segment manager
Schréder

Wouter de Wolf
Marketing Manager
Signify

Michaël Joris
Business development manager
ETAP

Sustainable and circular lighting

IBE/BIV Webinar 20/04/2023

Embracing technology
Embracing ambition

.AGORIA

.AGORIA

Agenda

- Why circular lighting?
- Circularity for your lighting project
- Criteria for sustainable, high-quality and circular lighting
- Possible maintenance models
- Q&A

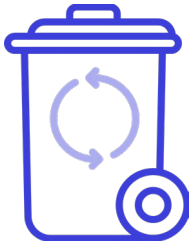
.AGORIA

Why circular lighting?

2 planets

By 2030, we need 2 planets

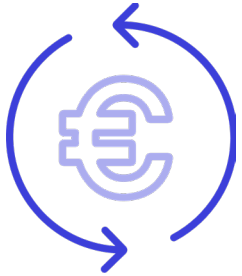
WEF 2022



11 000 000 000

Every year we produce 11 billion tonnes of solid waste worldwide

theworldcounts.com



700 000 new jobs in EU

By 2030, the circular economy would create around 700 000 new jobs in EU

Cambridge Econometrics, Trinomics and ICF (2018) - impacts of circular economy policies on the labour market

Circular Economy requires a long-term vision and a shared responsibility approach for entire product life span

.AGORIA

Why circular lighting?

Green EU targets

1. Make EU climate neutral by 2050

   Transition to LED, smart and connected lighting systems: energy efficiency during use phase

2. Zero pollution

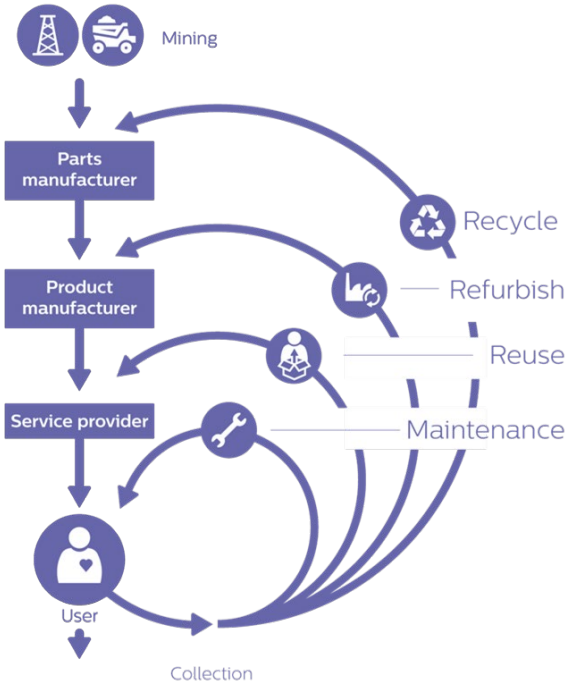
   Realize ban on Fluo by providing LED alternatives

3. Make EU economy circular by 2050

   Focus on waste reduction, by extending lifespan and improved recycling

.AGORIA

Why circular lighting?



Need for clear criteria for sustainable, qualitative and circular for indoor and outdoor lighting

1. Circularity for your application
2. Criteria for sustainable, high-quality and circular lighting
3. Possible maintenance models

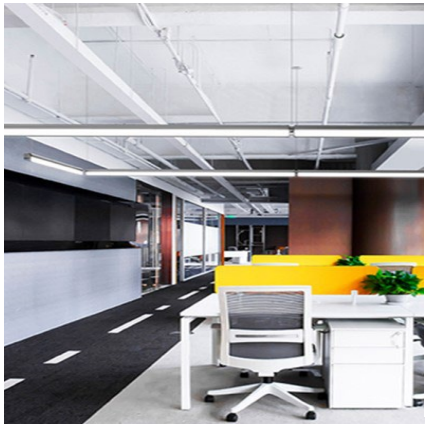
.AGORIA

1. Circularity for your application

Renovation

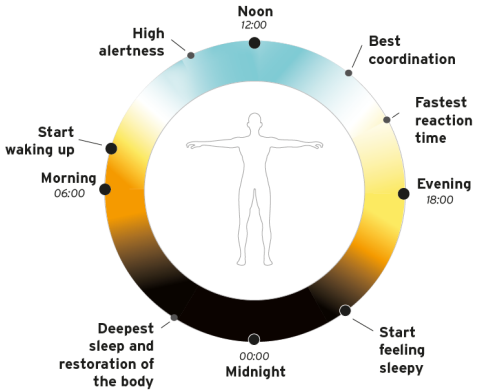
Replacement with LED light sources or luminaires

Light layout taking circularity into account



New construction or installation

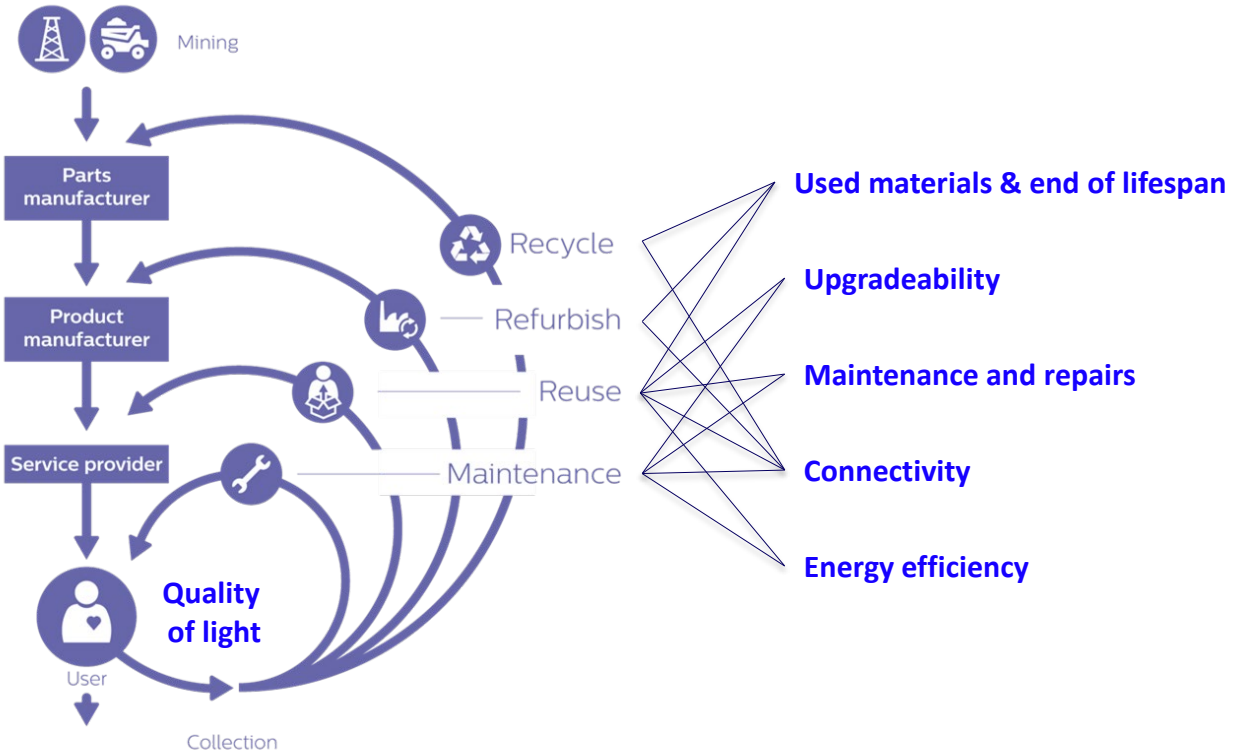
Human centric lighting



Smart and connected lighting

https://www.agoria.be/nl/human-capital-education/welzijn-en-veiligheid/human-centric-lighting-wat-betekent-dit-en-hoe-implementeer-je-het

2. Criteria for sustainable, high-quality and circular lighting



.AGORIA

2. Criteria for sustainable, high-quality and circular lighting

Energy Efficiency

Criteria:

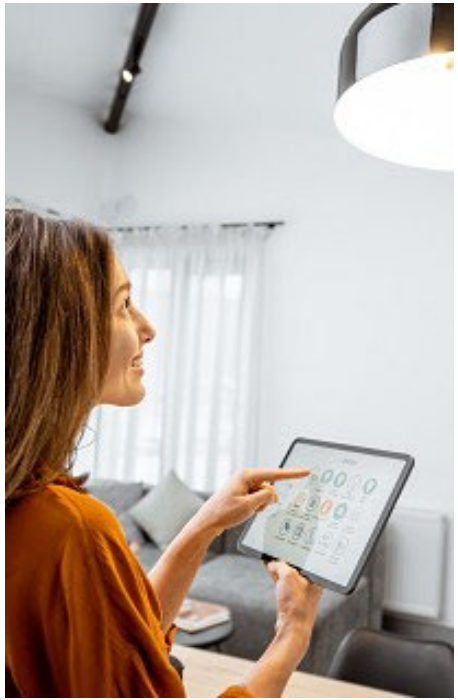
- Minimum initial power (wattage) of the installation, which remains stable throughout its lifetime
- Minimum lm/W ratio taking into account applicable subsidies
- Indoor lighting: minimum conservation factor of L80B50@50khrs
- Outdoor lighting: minimum conservation factor of L95@100khrs and luminaire efficiency >130lm/W

Light Quality

Criteria:

- Minimum light level throughout the lifespan, complying with EN12464-1 standards and/or the WELL standard
- Colour temperature
- Maximum glare: e.g. maximum UGR of 19 for offices
- Minimum uniformity: 0.6

2. Criteria for sustainable, high-quality and circular lighting



Connectivity

Criteria:

The luminaire complies with one or more of the following options:

- a sensor capable of dimming and/or switching on/off;
- a node that enables wireless communication (e.g. Zigbee, Wi-Fi, Bluetooth, 3G/4G, NB-IoT);
- a connection plug enabling the use of a sensor or a wireless communication mode (e.g. Zigbee, Wi-Fi, Bluetooth, 3G/4G, NB-IoT);
- a component that enables the use of data exchange via a wired network (e.g. DALI or PoE).

2. Criteria for sustainable, high-quality and circular lighting

Maintenance and repairs

Criteria:

- Clear maintenance and repair documentation:
  - Identifiable: easy access to the product information of the luminaires, with clear indication of which parts are serviceable and a clear manual with maintenance instructions
  - Accessible: the warranty or service agreement specifies which parts are covered by the agreement. A list of spare parts shall be provided with a manual, including a description of how to access and (dis)assemble parts of the luminaire.
  - Replaceability: in terms of replacement, the listed spare part shall be easily accessible and replaceable. This should be possible with standard, widely accessible tools.
- Monitoring defects remotely, using connected luminaires

2. Criteria for sustainable, high-quality and circular lighting

Upgradeability

Criteria:

The luminaire meets one or more of the following options:

- Presence of standardised interfaces for sensor integration (e.g. Zhaga connection, sensor lock).
- Interchangeability and documented upgradability of electronics components (e.g. drivers and mechanical components (housing, optics, ...)
- Possibility of firmware upgrades

2. Criteria for sustainable, high-quality and circular lighting

Used materials and end of lifespan

Criteria:

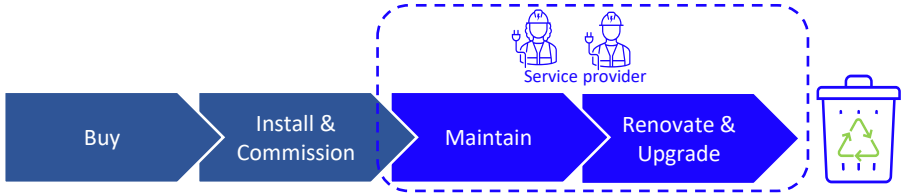
- Product Environmental Profiles (PEPs) or Environmental Product Declaration (EPD) provide insight into the materials used, packaging, production processes and transport in terms of environmental impact (based on a life cycle analysis - LCA)
- The luminaire can be easily and non-destructively dismantled for re-use and easily disassembled for recycling, with the disassembly instructions easy availably on a free and accessible website
- No glue or potting compounds are applied so materials can be easily recycled
- Cooperation with Collection and Recycling Organisations (CRO) (Recupel) for end-of-life management and the company fulfils its obligations within the EU by participating in national WEEE schemes

3. Possible maintenance models

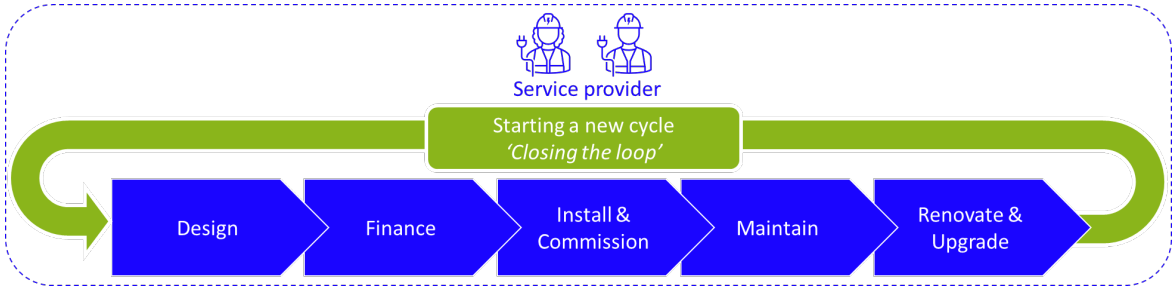
Maintenance lighting = important to ensure lifespan

1. **Purchase of installation and in-house maintenance**

2. **Purchase of installation with a maintenance contract**



3. **Lighting as a Service**



.AGORIA

3. Possible maintenance models

1. Purchase of installation and in-house maintenance

As owner/user you can organise for your own maintenance:

- Circular lighting is designed so that individual parts can be replaced
- Take into account the maintenance of LED luminaires is more complicated than replacing lamps.
- Ensure you select a supplier that is capable of providing you with instructions and spare parts

Once the products become end-of-life you will have to ensure they are properly disposed, following the proper recycling channels.

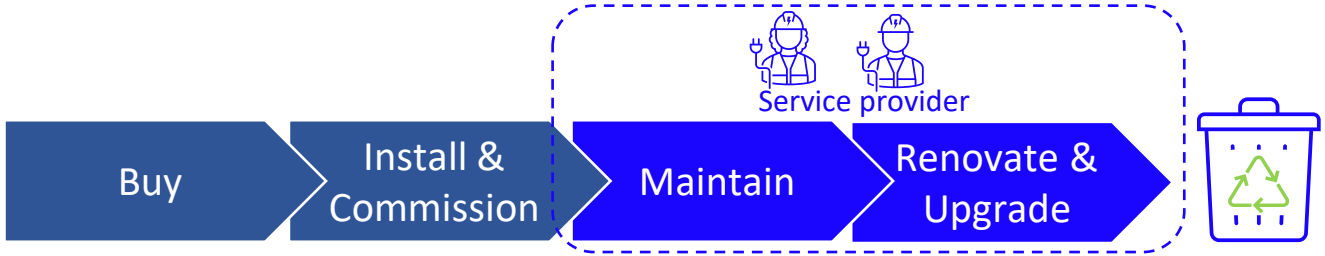
- Circular lighting can be easily disassembled to maximize the recycling potential

.AGORIA

3. Possible maintenance models

2. Purchase of installation with a maintenance contract

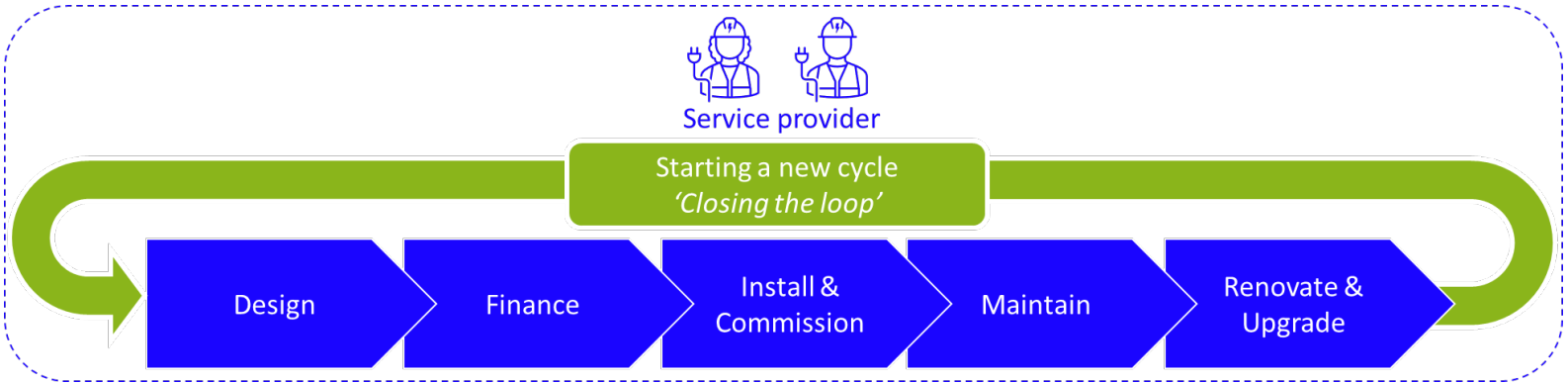
- The maintenance service provider will take care of all preventative and curative maintenance
  - They know the products throughout and have the knowledge and tools at hand
- Over time, they can also renovate and upgrade your lighting. This greatly increases the usable lifetime of your lighting.
  - Evolve with your changing needs
  - Improve the product performance
- Once the products become end-of-life you will have to ensure they are properly disposed, following the proper recycling channels.
  - Circular lighting can be easily disassembled to maximize the recycling potential



3. Possible maintenance models

3. Lighting as a Service

- The service provider will ensure complete unburdening from start to end.
  - Pay for light, not for the lighting
- During the 10-20 year contract the service provider will ensure the lighting is operational
  - Performance metrics are covered in the contract
- At the end of the contract the service provider will find the most circular method to proceed:
  - Buy the installation, and provide in-house maintenance or maintenance contract
  - Continue the contract (with existing or upgraded installation)
  - Take back of installation by service provider, who will refurbish/recycle



More information?

https://www.agoria.be/nl/business-clusters/building-technologies/verlichting/whitepaper-circulaire-verlichting

https://www.agoria.be/fr/business-clusters/building-technologies/eclairage/telechargez-le-guide-eclairage-circulaire

Els Fonteyne
els.fonteyne@agoria.be
Circular economy expert
Agoria

Wouter de Wolf
wouter.de.wolf_1@signify.com
Marketing Manager
Signify

Cédric Collard
c.collard@schreder.com
Business segment manager
Schréder

Michaël Joris
michael.joris@etaplighting.com
Business development manager
ETAP

Q&A

Embracing technology
Embracing ambition

Thank you

For your attention

.AGORIA