

Interreg



EUROPEAN UNION

North-West Europe

CHARM

European Regional Development Fund

**Circular Economy Leadership for the Built
Environment, Atlantic Technological University**

**Circular Economy Leadership and Organizational
Transitions**

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Since 1991 working at TU Delft. Topics of interest: methods and instruments for asset and maintenance management, procurement models, collaboration demand- and supply-side, **life-cycle thinking**, **life-cycle costing**, **circularity**, **digitalization**. Focus housing associations.



**Nationale Duurzame
Huizen Route**
👑 Al 5 jaar een begrip in duurzaam Nederland



Content

- Partners and Objectives
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- Material Exchange Platforms
- Recommendations circular procurement
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Partners



2018-2023



Objectives

The objectives of CHARM are **to demonstrate innovative approaches** for housing renovation and asset management **that prevent downcycling, to secure adoption** of these approaches within the social housing organization partners, as well as **to accelerate the adoption** of such approaches throughout the social housing industry in the Interreg NWE region and beyond.

The importance of CHARM



- The building sector is responsible for more than 60% of the resource use in Europe
- The sector generates about 1/3 of all waste
- The political awareness of circularity is high
- The social housing sector has a key position in Europe

The time to act is now!

- Project CHARM 2018-2023
- Since 2018 the (circular) world has changed

Demonstration Projects

Each partner demonstrates - in one or more projects - circular asset management strategies:

Reuse of materials from demolition on-site

- Paris Habitat: renovation projects
- LeefGoed (Zonnige Kempen): Vinkenhof

Reuse of materials in new construction

- GreenSquareAccord: Stirchley
- LeefGoed (Zonnige Kempen): Circular office and apartments

Design and construct for reuse after first use period in new construction

- GreenSquareAccord: Redditch

GreenSquareAccord demo's

- Large housing association owning a factory (LocalHomes) producing off-site closed panel timber frame constructions, allowing for easy assembly, disassembly and reassembly and re-use of components
- The factory offers them economic and social value: social value by employing low-educated people in their own factory, economic value by constructing dwellings faster, with a higher quality and cheaper than traditionally

GSA: Redditch

12 virtually plastic- free dwellings

- closed panel timber frame construction, allowing for easy assembly, disassembly and reassembly and re-use of components
- test to what extent it is possible to build properties **substituting plastic for more natural products**, illustrating an approach to prevent downcycling through avoidance of hazardous materials use



GSA: Stirchley

39 newly build apartment and three retail spaces for the local working cooperative

- reusing materials and testing replicability of components used in the virtually plastic free homes in a mixed retail and residential dwellings development
- development offers a sustainable alternative to private rental and helps to tackle local social housing issues by providing dwelling and workspace under common ownership

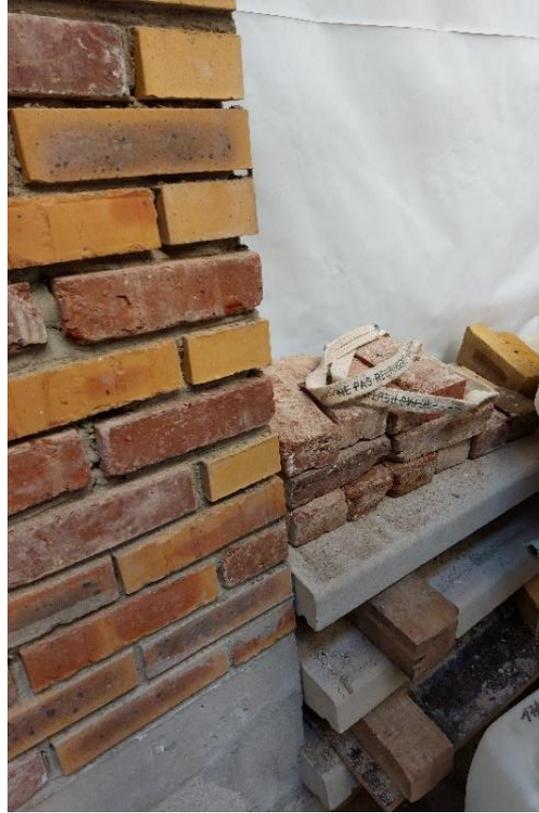


Paris Habitat demo's

- Paris Habitat aims to implement material reuse on a wide scale in all renovation projects, e.g. by the implementation of a **material exchange platform**
- French legislative framework gives direction to circularity: **PEMD diagnosis: a diagnosis of to be reused materials**, if renovating or demolishing properties
- CHARM started a few years before the mandatory PEMD diagnosis came into force, helpful to prepare the organization for circular asset management

Paris Habitat: Petit Musc

Several materials have been reused on site such as : cast-iron heaters, sinks, wooden steps



LeefGoed demo's

- Zonnige Kempen (in 2023 merged into LeefGoed) is a small social housing organisation in Flandres that is very active in searching for new solutions for energy efficiency and renewable energy, and for circularity
- The awareness, knowledge and support of circularity in the whole internal organisation is very high
- Showing circular practises by their office





LeefGoed: Renovation Vinkenhof, Berlaar

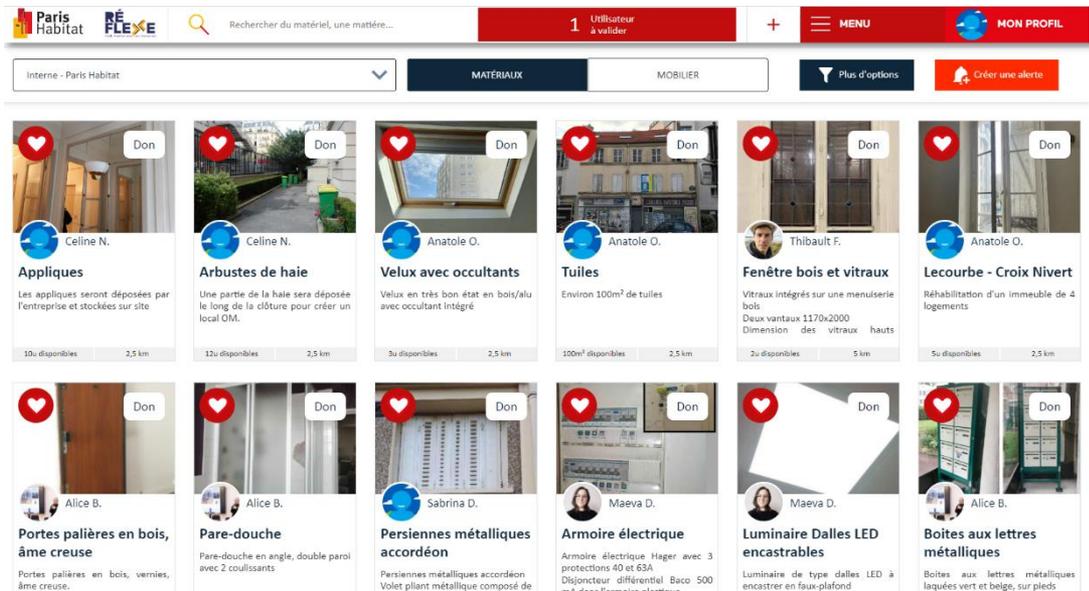
- The project includes 50 homes that were built in the early eighties
- The renovation adds a new insulated outer shell that can be dismantled, roof tiles and glass panels are being reused
- All tenants stay in their home during the renovation period

Building strategies for circular asset management: Stakeholder involvement

- LeefGoed selected architects project independent to assure their competences to work with re-used materials
- Paris Habitat selected retailers that supply reclaimed sanitary equipment (sinks, toilet pots) to be installed during void repairs
- GSA worked directly together with product suppliers of plastic-free building products
- For the re-use of glass Paris Habitat and LeefGoed work directly together with the manufacturer (glass panel suppliers)
- Paris Habitat works together with an association for upcycling and refurbishing building products

Material Exchange Platform Paris Habitat

- To increase the visibility of available materials (and furniture) within Paris Habitat and to promote their re-use
- To extend the life-cycle of materials
- To reduce the carbon footprint of materials and projects
- To match supply and demand, users create a profile to post adverts



The screenshot displays the RE.FLEXE platform interface. At the top, there is a search bar with the text "Rechercher du matériel, une matière...". To the right of the search bar, there is a red button labeled "1 Utilisateur à valider" and a "MENU" button. Below the search bar, there are navigation tabs for "MATERIAUX" and "MOBILIER", along with a "Plus d'options" button and a "Créer une alerte" button. The main content area shows a grid of 12 material listings, each with a "Don" button, a user profile picture, and a title. The listings include: Appliques, Arbustes de haie, Velux avec occultants, Tuiles, Fenêtre bois et vitraux, Lecourbe - Croix Nivert, Portes palières en bois, âme creuse, Pare-douche, Persiennes métalliques accordéon, Armoire électrique, Luminaire Dalles LED encastrables, and Boîtes aux lettres métalliques. Each listing also includes a small image of the material and some descriptive text.

Recommendations circular procurement (1)

- Stimulating and enforcing building product developments based upon circular principles (e.g. non-plastics, non-toxic), the re-use of materials and bio-based materials, can be done by asking open questions and to invite market players to contest and to demonstrate
- New products will take a lot of time to get approved, warranted and used, just because the product is less or not known in the sector

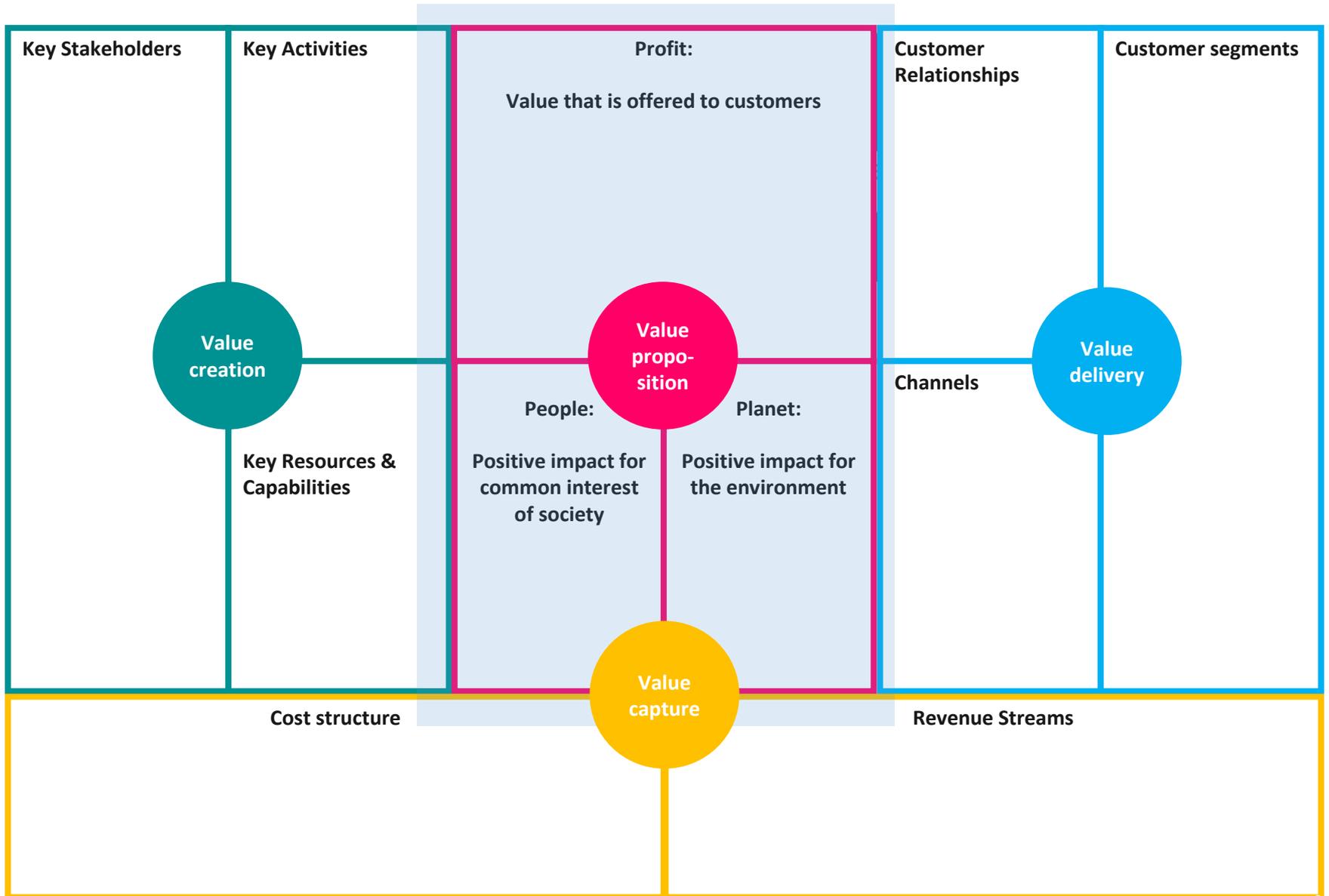
Recommendations circular procurement (2)

- In circular renovation projects the diagnosis phase preceding the design is very important. Involve (new) parties at forehand, such as: architect(s) and demolishing partner(s)
- To tender for circular projects, it is important to put open questions, to give time for diagnosis and searching for solutions
- Generally, circular tendering and contracting takes more time than traditional projects
- Generally, circular tendering and contracting is more costly than traditional projects (the disbalance of material prices and labour cost)

Further uptake: Business plans

Business plans for circular asset management strategies and material exchange platforms are based upon the '**sustainable business canvas**' that consists of four distinctive aspects:

- **Value proposition**: the core element of a business model that outlines the unique value of a product or service that is offered by a company
- **Value creation**: the activities and processes a company undertakes to design, produce, and deliver its products or services
- **Value delivery**: how a business ensures that the value promised in the value proposition is effectively delivered to customers
- **Value capture**: the aspect of a business model that addresses how a company generates revenue from the value you provide to customers



Sustainable business model canvas. Source: Bocken et al. (2018) based on Osterwalder & Pigneur (2010) and Richardson (2008)



CHARM

- Website – general information
- Activities and reports
- Articles - Library
- Newsletters
- Social media

- <https://vb.nweurope.eu/projects/project-search/charm-circular-housing-asset-renovation-management/>

Online Tutorial

Online tutorial to facilitate adoption of the approaches developed by the CHARM partners

In the first part of the tutorial, we introduce the background of the project.

[CHARM online tutorial part I](#)

In the second part we dive deeper into the demonstration exemplars that have been developed by our social housing organisation partners.

[CHARM online tutorial part II](#)

In the third part we explain the basics of material exchange platforms for social housing organisations,

[CHARM online tutorial part III](#)

Discussion

- Barriers in- and outside the organisational and spatial levels of your organisation to apply circular strategies and practises?
- Drivers and enablers in- and outside the organisational and spatial levels of your organisation to apply circular strategies and practises?