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## Centers for Urban Re-manufacture: Lessons from the CURE Pathfinder Project

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**Abstract:** The reuse and remanufacturing of materials in urban areas is an important step towards closing local material cycles. Despite high potential, the use of these materials is currently hampered by various reasons, such as lack of coordination or insufficient exchange between the actors. There is no central point of contact at city level for bundling competencies in this field. The importance and possibility of establishing a central Center for Urban Re-manufacture (CURE) for sorting, storing and preparing for reuse and re-manufacturing of these materials was investigated in Gothenburg and Berlin, in a EIT Climate-KIC Pathfinder project. This article summarizes the findings and lessons of that project, which include an initiative review, market analyses, and participative workshops in both cities. The studies show that Gothenburg had a strong local authority engagement in the topic, while Berlin counted with several independent organizations already providing reuse services. The project managed to generate interest in this topic among local actors in both cities, which will hopefully result in the future establishment of some type of CURE in these locations. The article concludes that a combination of bottom-up and top-down engagement is needed to provide material recovery services at a city scale, involving stakeholders from across the existing material value chains.

### Introduction

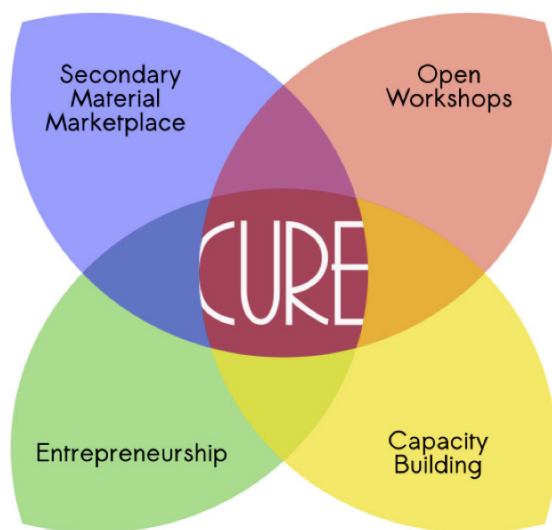
A Center for Urban Re-manufacture (CURE) is a place for experimentation, where locally available secondary materials are sorted, stored, and prepared to be reused and/or re-manufactured. These centers intend to increase the amount of secondary material used, helping redirect waste volumes into value creation activities. CUREs do not yet exist as such; they are merely a recurrent idea among actors engaged in reuse and re-manufacturing practices. Being a common idea, it has been named and described in many ways: Zero-Waste centers (ZWIA, 2013), urban resource centers (Partnership on Circular Economy, 2019), maker spaces, and repair cafés being a few examples.

Some of these places have a particular focus on making or tinkering, while others focus more on recovering materials locally through

reuse practices. Activities such as repair cafes and maker spaces directly address product life extension at the hands of the user. The maker movement has in some ways lifted the discussion around the right to repair products, which has seen increased attention regarding mainly electronic products (Wiens, 2015).

The locations that focus on material recovery are more akin to warehouses than workshops. Second hand shops of all kinds help products and materials find a second lifetime, extending their use phase by relocating items to new users. Even though second hand has a long history and continue to grow, they seem not to affect the production of new items significantly. Rather, they represent a “positive” way for users to get rid of their unnecessary items, not hindering or providing a reflection about over-consumption (Bekin, Carrigan, & Szmigin, 2007).

Few places exist, where the focus of recovering material is directly associated to making and new production. Examples of companies that engage in upcycling are abundant (DeMano, n.d.; Etsy, n.d.; Freitag, n.d.; SchubLaden, n.d.), but not so open spaces where several actors could engage in such activities. That is what makes the CURE idea slightly different. The CURE concept was further developed during an EIT Climate-KIC funded Pathfinder project that ran from August to December 2018. The Pathfinder project aimed to explore the possibility of establishing CUREs in different cities, estimate the potential benefit these centers may generate and engage local consortia to implement these centers in targeted locations. Additionally, a study of initiatives that already use secondary material and/or have open workshop spaces was done to provide inspiration and some understanding of the existing tacit knowledge in this area. The CURE concept was described in the project by four main composing aspects, as shown in Figure 1.



**Figure 1. The four main composing aspects of a CURE.**

The Pathfinder project was done in collaboration between Technische Universität Berlin, Chalmers University of Technology, the Sustainable Waste and Water office of the Municipality of Gothenburg, and the Berlin-based business Material Mafia. Therefore, the targeted locations were Berlin and Gothenburg.

This article collects the results obtained from the Pathfinder project, divided into the three

following sections: initiative review, market analyses, and participative workshops.

### Initiative Review

The initiative review compared fifteen existing initiatives that provide access to secondary materials and/or open workshop spaces, resulting in an overview of how these initiatives are operated, financed, what types of activities they perform, and what sort of tools and spaces they use. Data about the initiatives was collected through their official webpages and by semi-structured interviews. More information about the review results can be found in Ordóñez et al., 2019.

Thirteen of the fifteen initiatives analyzed actively engage in facilitating material reuse. Three ways in which initiatives enable re-circulation were identified:

- Direct reuse by other actors (e.g. exchanging items).
- Offering materials for other actors to re-manufacture (e.g. doors made into tables by others).
- Use secondary material in their own product development (e.g. re-manufactured furniture).

The initiatives that use secondary material to do their own product development typically work more like design firms or manufacturing spaces, than material marketplaces. The materials that the initiatives focus on vary and include household items, clothing, and bikes, among other materials. The control on circulated materials is however low, as only six of the initiatives keep an inventory system, and these systems in some cases have rather vague categorizations.

Of the fifteen initiatives analyzed, six are not dependent on external funding to operate. The main strategies for financial independence identified were: (1) Selling materials and/or products, (2) membership fees, and (3) organizing workshops and courses. Among the nine initiatives that depend on external funding, four are run or supported by municipalities, while the others are dependent on sponsorship from industry, research initiatives or non-profit organizations. It is important to notice that these initiatives vary greatly with regards to what they need to

finance, since there are large variations in rent, staffing, opening hours, etc.

Overall, the study illustrates how heterogeneous these initiatives are. While this is, of course, dependent on how they were sampled, they still differ greatly, particularly in how they operate, what services they provide and how they are financed. What the initiatives have in common besides recirculating material is that their drive to do so is mainly environmental sustainability, and not 'doing business'. As described by many of the reviewed initiatives, there is no lack of public interest and the enthusiasm and driving spirit is high among the people who work in these initiatives. However, how all this is optimally orchestrated is still relatively unknown, with most initiatives learning as they go. Additionally, they do not really learn from each other. There are no 'manuals' or other sorts of documentation available on how to successfully run an operation of this kind. Many of the initiatives often get asked to answer some questions about their activities, which results repetitive and time consuming in the long run.

## **Market Analysis**

Two market analyses were done to estimate the potential benefit of establishing CUREs in Berlin and Gothenburg. These analyses provide a brief overview of: local initiatives that support material recovery, current material streams, and local industrial characteristics, resulting in location-specific recommendations for potential CUREs establishment. More information about both market analyses can be found in the project reports (Decker et al., 2018; Rexfelt et al., 2018).

### *Gothenburg Market Analysis*

One of the most important aspects in Gothenburg is that there is a political will to increase recycling, but also other types of material reuse. While there are private and industrial reuse and remanufacture initiatives, it is clear that municipal initiatives are the biggest and most significant in this location. Another aspect of Gothenburg (and Sweden as a whole) is the public's general interest in sustainability and environmental issues. Looking at the number of sharing initiatives and second-hand shops in Gothenburg, it is clear that the public is interested in more

sustainable alternatives to consumption. However, while a number of designers/firms working with material reuse were identified, they are only a small part of the market. Large companies in the region dominate the design community, and today have no connection to the initiatives reviewed. In addition, large companies employ most designers in this region, and that may act as a barrier for designers to make a business out of urban remanufacturing. This could be tackled in different ways. First, one could strive towards engaging large companies in the region in CURE-related activities, through sponsorships or other means. Another way could be to make use of the fact that the city of Gothenburg hosts a number of renowned Design education programs. If designing with secondary material played a larger role in these programs, this knowledge would then diffuse into the large companies when the graduates are hired. Overall, the market in Gothenburg is suitable for a CURE, with existing municipal support, a plethora of initiatives already in place, and public interest.

### *Berlin Market Analysis*

The economic activity review of Berlin shows that there are many material-intensive businesses in the city. Such companies use material inputs and most likely incur in generating secondary materials. These companies are mostly in trade fair and creative industries, higher education institutions, as well as the craft trade and construction sectors. Statistics show that Berlin hosts over 180 fairs and congresses a year, and is home to over 100 universities and research institutes. More than 6,000 member companies of the Berlin Chamber of Crafts correspond to material consuming and processing crafts, with about 10,000 companies from the creative sector considered material-intensive. It is expected that at least a fraction of these companies could use secondary raw materials instead of virgin ones. The number of companies that carry out material-intensive activities is assumed to be higher than what is accounted for in official reports, since these only include companies with annual sales over 17,500€, leaving many small and micro enterprises unaccounted for. The review of the official Berlin waste statistics lead to the following conclusions: 1) preparation for reuse and recycling needs to

be strengthened and 2) high-quality materials from trade and industry (that are currently not obliged to be handed over to public waste management authorities) must be captured by an additional data collection tool. Currently recovered secondary materials are not accounted for anywhere in official statistics, making them to some extent invisible. If reuse and remanufacturing increases, the recovered streams should be covered by some official statistics to transparently evaluate these measures.

### Participative Workshops

Two participative workshops were done in the targeted cities, as a first step to facilitate the creation of CUREs in these cities. The workshops had three main goals: to gather actors interested and/or already engaged in reuse and remanufacture, get feedback from these local actors about the CURE idea, and help define how the participants would want to engage in a local CURE. The input generated during the workshops was summarized and shared with the participants and is presented in this section.

#### *Gothenburg Workshop*

The event took place in the cafe associated to Gothenburg's recycling center Alelyckan. Over a four-hour period 27 participants from local NGOs, initiatives involved in reuse or remanufacture, academia, small design and architecture firms, and representatives from the public sector engaged in ideas to understand and promote the CURE concept.

To inspire engagement, participants were presented with the background to the CURE idea and preliminary results from the initiative review and the Gothenburg market analysis. Participants were asked to engage in a brain-writing session where they could write any comment about the CURE idea, and it's composing aspects. Next, the participants were asked to describe themselves or their organizations using the four CURE aspects, to later define the challenges they face and finally suggest potential solutions.

The meeting promoted the idea of CURE to a relevant audience in Gothenburg. Participants generated large amounts of input to what they would like to see in a local CURE and suggested how they would like to get involved.

This material will be the base of future co-creation meetings, where project partners, together with engaged participants, will continue and hopefully implement a CURE center.

Given that Gothenburg City has plans of building a new recycling center; it intends to include there the ideas suggested by the CURE Pathfinder project. However, implementation times for the commune to build this center might take up to 10 years before it is actually available. This seemed to participants like an unnecessarily long time, that suggested it was possible to, in some way, take more immediate action. "We should start doing something like this tomorrow!", commented a participant. After the event conversations with representatives from Gothenburg City and the research team suggested that quick action to continue with the CURE momentum, would be to build a workshop space at the recycling center Alelyckan, next to their secondary material warehouse Återbruket.

#### *Berlin Workshop*

The Berlin CURE workshop was organized with Circular Berlin, Material Mafia, and OMA e.V. During the preparation phase, project relevant stakeholder groups were identified and reached, such as local NGOs, initiatives involved in reuse or remanufacture, open workshop spaces, academia, design and housing companies, funding institutions, and Berlin municipalities. As a result, more than 70 people participated in the workshop.

The event was structured into three main parts. The first one covered the findings of the Berlin market analysis. The second part targeted the potential objectives of a Berlin CURE. Participants were divided into 4 groups around CUREs composing aspects. Group work was organized around what type of materials are mostly possible to locally reuse, how to engage the local community, what are the existing skills and potentials and what is necessary to develop to professionalize work in waste prevention. In the third part of the workshop, participants were asked how they would like to contribute to a local CURE.

The workshop demonstrated a high interest in contributing to establish a Berlin CURE. Some highlights were the interest to focus on

recovering wood, textile, and fair discards. The centers should be open and generate knowledge for the community about materials, but also serve as a multiplier for a circular economy in the city. The creation of a physical warehouse with a pick-up area for companies was considered a key aspect. The physical warehouse would serve for connecting initiatives, material sorting, and inventory keeping. Quality assurance of used materials was also considered a key issue. Testing and evaluating materials for safety and harmless use was considered necessary. The workshop results were shared with the participants and have served as a base for following co-creation meetings.

## Conclusions

The CURE Pathfinder project detailed the CURE concept further based on the studies here presented, but most importantly, it generated interest in the topic among local actors. This interest has resulted in concrete continuation steps taken by stakeholders in Berlin and Gothenburg. Hopefully, presenting this experience will inspire other actors to also engage with the CURE idea, beyond the initial reach of the Pathfinder project.

Reflecting on the results, it seems relevant that CUREs are established as open centers recognized, supported or regulated by local authorities. This official status would facilitate that CURE activities get institutionalized, establishing these services at the city level. Gothenburg waste authorities were already involved in the Pathfinder project, providing official support. However the number of organizations in the reuse sector was not high. In contrast, Berlin has several organizations in the sector, but no clear engagement from local authorities. Official institutions tend to act slower, but have the potential to stay longer than independent organizations. Non-governmental organizations rarely scale up to address re-circulation at an urban scale, but provide a rich variety of recovery options. Therefore a combination of top-down and bottom-up engagement is needed to implement re-circulation in cities.

Ideally, recovery services would be economically sustainable to ensure their permanence over time. Acceptance of reuse and re-manufacturing by all actors in the

material value chain is indispensable to implement economically independent CUREs. So, the value generated by recovery activities should engage and complement existing material value chains, rather than compete with them, to foster a wide spread acceptance of these practices.

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