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Embracing Circularity in Adaptive Reuse – the Grassroots Perspective

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Abstract

Prolonging the utility of products is the main aim of a circular economy. So far, this concept has been implemented in a growing number of areas, one of which is built heritage. The circular economy argues that, instead of destroying a building to make way for a new one, the owners or managers of the property should care for it systematically by repair and refurbishment. The success of a circular economy depends on the ability of people and communities to change their behaviour and way of thinking. Many initiatives that embody the goals of circularity – like local energy markets based on blockchain technology – stem from local activist groups. This research aims to contribute to a better understanding of the role and capacity of local communities in introducing new ideas of the circular economy in a bottom-up fashion. We define this local potential for the implementation of circular solutions as *grassroots circularity*. In our study we analysed three adaptive reuse projects in the area of built cultural heritage using a social sustainability framework. We discovered that, while all five factors contributing to the social sustainability model are highly relevant in describing and understanding the successful implementation of bottom-up adaptive reuse projects, they require minor modification in order to fit the circular economy model. As a result of our analysis, we can offer insight on how grassroots circularity can be diagnosed and understood. We believe that the concept of grassroots circularity widens the circular economy model to include the neglected bottom-up potential of local communities.

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1 Introduction

The concept of the circular economy could provide an answer to crucial environmental problems like water, air and soil pollution, resource depletion, and biodiversity loss. The main idea of circularity is built on the notion of the regenerative power of nature, in which nothing is considered waste (Webster, 2017). To the contrary, any by-product of behaviour provides food for something else. Hence, products and their components at all stages of life have a value and can be transformed into something useful (Stindt and Sahamie, 2014; Wells and Seitz, 2005).

Compared to the classical linear economy, in circular economy, the life of the product is deliberated in a much longer perspective. The linear economy focuses on “here and now” and so the origins of materials, as well as the afterlife of products and waste, is not considered important. They remain just inputs and outputs of the production chain. In the circular economy, on the other hand, relationships and feedback loops between materials, waste product, and energy are in the spotlight (Stahel, 2008). A closed cycle of raw materials and energy through multiple phases is assumed and promoted (Bocken et al., 2016). The desired solution is an economic system in which “resource input and waste, emission, and energy leakage are minimized by slowing, closing and narrowing material and energy loops” (Geissdoerfer, Savaget, Bocken, & Hultink, 2017, p. 759).

This closing of loops allows economic logic to be sustainably driven. As Stahel (2016) puts it, the circular economy stresses self-sufficiency over production, so whenever it is possible one should repair what is broken, reuse everything that can be reused, remanufacture what is beyond repair, and recycle what cannot be reused. Prolonging the utility of products is the main aim, which should be achieved by the proper maintenance, repair, reuse, refurbishment, remanufacturing, or recycling of goods. This logic can be applied to any area of production and consumption, including fashion, food, design or built cultural heritage.

The treatment of old buildings is a perfect example. Nowadays, due to the relatively low costs of materials and energy in comparison to labour costs, the preferred solution is to demolish an old structure and erect a new one, instead of refurbishing an often dilapidated building. Such a solution takes into account the cost analysis, but does not reflect on the other aspects – environmental, social and cultural – of potential adaptive reuse. According

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
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to Fitch “the adaptive reuse of old buildings is more economic, not only in general terms (e.g., conservation of the energy represented by the built environment, but also in absolute terms (e.g., the relative costs of old and new built space).” (1990, p. 169). The environmental benefits of adaptive reuse only affirm this conviction. Therefore, adaptive reuse can be considered as one of the most effective tools for sustainable urban development (Yung and Chan, 2012).

There are two ways in which adaptive reuse can be introduced into built-heritage investment projects. It can be either a top-down process driven by public or private investors, or a bottom-up grassroots initiative. In the first case, it is often the public investor, with the aim of generating/securing public goods or services that initiates the process. In a similar fashion, the private investor can step in and start the adaptive reuse project in the hope of generating a profit. In the case of bottom-up initiatives, they emerge from local communities that recognize an opportunity or threat that has been overlooked by local authorities or business entities. Domaradzka (2015) argues that local communities are closer to the problems they are dealing with and can be characterized by higher potential for flexibility than formal institutions. Therefore, grassroots initiatives can react faster and more accurately to new challenges, by adopting innovative solutions and ideas, such as the principles of the circular economy. Many initiatives that aim at closing the loops – like repair cafés, food cooperatives, sharing collectives or local energy markets based on blockchain technology – stem from such local activist groups *(Bilewicz and Potkańska, 2013)*.

Despite the importance of grassroots initiatives, they seem to be understudied in the context of the circular economy (Geissdoerfer et al., 2017). This research aims to contribute to a better understanding of the role and capacity of local communities in introducing new ideas of the circular economy in a bottom-up fashion. We suggest defining this local potential for implementing circular solutions as **grassroots circularity**. Through the research results presented here, we can offer insight on how grassroots circularity can be diagnosed, understood and developed.

The paper is structured as follows: in section 2 we briefly compare the circular economy with the sustainable development approach, and then describe the social sustainability framework (Missimer et al., 2017) that we initially employed for the analysis of local adaptive reuse initiatives. Section 3 outlines our research design by presenting the

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
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research questions and methods applied. The subsequent section presents the results, based on desk research and case study analyses. We describe three cases of adaptive reuse in which circularity emerged as a bottom-up process, and analyse those local communities through the lens of the social sustainability framework. The paper ends with a discussion on the applicability of social sustainability to study of grassroots circularity. Based on the insights from the analysis, we suggest an expansion of the social sustainability framework and opt for the proper operationalization of the grassroots circularity concept.

The concept of grassroots circularity counterbalances the prevailing top-down mode of thinking in the domain of circularity, in which the responsibilities of companies and governments are mainly discussed. Bringing attention to grassroots circularity underlines the potential of citizens to trigger significant social and environmental change on the local level. Our case studies illustrate how citizens should be considered as actors, not just end-users of circular adaptive reuse interventions.

2 Background

The model of circularity, aiming at redesigning the economic system into one that values the long-term use of goods, fits well into the notion of sustainable development. Sustainable development promotes human activity in which Earth's ecological functions are preserved (ISO 15392, 2008) and the indefinite perpetuation of all life forms are ensured (Ehrenfeld, 2005) while the security, health and well-being of humans are supported (McMichael et al., 2003).

A broad literature review conducted by Geissdoerfer et al. (2017) reveals that there are many similarities between the circular economy and sustainability, such as the recognition of large-scale and long-term commitments motivated by environmental hazards, shared responsibility, a global perspective, cooperation between stakeholders, and integration of non-economic aspects into development (for a complete review see Geissdoerfer et al., 2017). In both paradigms, the socio-technical transition toward circularity can be facilitated and finally achieved with the help of innovations and system design.

However, despite many similarities, the concepts also differ in several dimensions. For example, there is a divergence in understanding of the goals, motivation, as well as the specific responsibilities of different actors. In the sustainability paradigm, the goals are

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
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open-ended, diffused and numerous because they reflect the plurality of actors and their diverse interests (Brundtland et al., 1987). The realization of goals requires interaction and cooperation among actors, who first need to align their interests. All actors bear responsibility, and all have to adjust their behaviour in order to reach the goal of sustainability (Bocken et al., 2015). The three main beneficiaries of sustainability interventions are the environment, economy, and society at large (Elkington, 1997). In general, all should be considered and treated with equal attention, but some prioritization is acceptable. For example, when a local specificity requires a particular response in the social domain, placing social needs over environmental ones is acceptable. A well-functioning social system with cooperating actors emerges as a necessary step on the road toward sustainability.

The circular economy depicted by Geissdoerfer et al. (2017) on the other hand, provides an entirely different vision of actors, their motivations and responsibilities. First of all, in the circular economy, there is just one, well-defined objective, i.e., the elimination of “all resource inputs as well as waste and emission leakage from the system” (Geissdoerfer et al., 2017, p. 764). The main actors responsible for reaching this goal are economic actors: largely private business, regulators and specialised NGOs. Society at large is not recognized as an active stakeholder in the process. Society benefits from the implementation of circularity due to improvement of the environment and the condition of the labour market, but does not seem to be listed as an actor who has the power to influence and enforce the transition. In the literature on circularity, the most empowered actors (besides policymakers) are economic actors, whose financial advantages are often prioritized (Webster, 2017).

The marginalization of the role of society in the circular economy might severely impede the implementation of the new economic logic. Communities shouldn’t be seen just as end users, i.e., the beneficiaries of a transition, but rather as active players who can enforce change by pressing companies to adopt new technologies or by introducing change by themselves. In many cases, the adoption of new ideas, products, and solutions starts with local activists who show their neighbours that an alternative form of conduct is possible and actually more profitable in the long term (Brandsen et al., 2016). It may be a food

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
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cooperative[1], which closes the loops by minimizing waste and emissions leakage, or a heritage community that contradicts the make-use-dispose approach in cultural heritage investment. By choosing the adaptive reuse of an old building over the construction of a new one, heritage communities aim at reducing construction waste and emission of greenhouse gases (Stahel, 2016) as well as maximizing the complex value of built heritage (Fusco Girard, 2014, 2013).

Local communities can play an essential role in bringing circularity into life, but their potential seems to be understudied. We posit that one of the obstacles is the lack of an established framework for studying **grassroots circularity**.

A similar problem was diagnosed earlier in the sustainability domain (Colantonio et al., 2009). Although many interventions aiming at achieving sustainability have social consequences, the social dimension of sustainability remains vaguely defined and barely examined. Many researchers have called for investigation into which measures should be used to support an effective transition toward sustainability (Johnston et al., 2007, Marsden et al., 2010). Particularly, which solution will work in which conditions, and what makes the social system sustainable? As a response, Missimer, Robèrt, and Broman (2017) proposed a universal framework for studying **social sustainability**. Building on the study of complex adaptive systems, they formed an unique profile of a sustainable social system, one that is able to prosper in a situation of uncertainty and constant change. They list altogether five characteristics of a social system that they consider essential for achieving sustainability: diversity, common meaning, trust, capacity for learning, and capacity for self-organization.

The first aspect of the adaptive capability of social systems is **diversity** (Norberg and Cumming, 2008). This can be understood as diversity of knowledge, skills, opinions, beliefs, and values. Anything that adds to the variety of a community helps to prepare it for the unknown (Folke et al., 2005). Because societies do not know what skills they will need in the future, they should always broaden their spectrum of knowledge and skills. A monolithic society, in the event of external shocks, often lacks the necessary resources allowing for the smooth adaptation to a new situation (Ostrom, 2009). For example, a village in which 90% of inhabitants work in a car factory is not sustainable because the

1. Food cooperatives collaborate with local farmers and promote usage of reusable packaging.

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
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wellbeing its population depends mostly on one company which can decide to relocate. In that case, the lack of diversity of skills may hinder the process of adaptation.

Diversity can be also understood as a latent resource of the community from which it can draw whenever the need emerges. The diversity or heterogeneity of agents is also often mentioned in the context of innovation (Lane, 2016). Heterogeneity, which leads to creative tension and forces people to think out of the box, is believed to facilitate innovation. Confrontation with heterogeneity helps people to understand reality and the plurality of opinions and meanings. The circular economy requires constant innovation; therefore, diversity should also be recognized as an essential aspect of grassroots circularity.

The inner heterogeneity of society interacts with the second aspect of resilient social systems – **common meaning**. Common meaning is the ability of people to make sense of their situation and actions (Cacioppo et al., 2005). It helps them to set goals, rules of conduct, and values that the community collectively agrees on. Meaning making seems to be a primal trait of people who continuously search for answers regarding their past, present, and future (Giddens, 1984). Their goal is not only to understand the world around them, but above all to share that understanding with others (Berger and Luckmann, 1991). Therefore, alignment of understanding is a crucial step in the emergence of common meaning. The greater the heterogeneity of a social system, the harder it may be to agree on common meaning, and thus alternative common meanings may emerge. In the context of a circular economy, the existence of common meaning may enable transition, but only when the shared understanding of a community does not contradict the notion of a system proclaimed by the circular economy. If a local community perceives its environment as an unlimited resource (what can be their common meaning) they might be reluctant to invest extra time and money in recycling, refurbishing or reusing. In such circumstances, the probability of grassroots circularity emerging spontaneously is very low.

An important factor in shaping common meaning is history. The tales that people hear and space they inhabit consolidate a common meaning which can then last for decades or even centuries (Bruner, 1991). Material bearers of common meaning can be buildings, public spaces or landmarks. They evoke past narrations and carry meanings that are passed from generation to generation. Timeless narrations are inscribed into the building's intrinsic value. This does not mean that the meanings do not alter, but once they are

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
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rooted in the community they can be difficult to change. It might require extra effort and skills to renegotiate a new understanding of these locations or symbols.

What helps the community to achieve a new understanding of reality is **trust** and a **capacity for learning**, two further aspects of a sustainable social system. Communities differ in their ability to learn; some adjust to the changing environment fast, others need more time to adapt. Societies that have a high capacity for learning are seen as more resilient, because they sense change fairly quickly, gaining extra time for reacting when the change actually occurs (Scheffer et al., 2001). The diversified experience of society members increases their potential for learning. In particular, learning-by-doing is an effective form of skills and knowledge acquisition (Schank et al., 1999). The circular economy requires innovation and experimentation, which can be delivered more easily in a society that is prepared for attaining new skills and knowledge.

However, the introduction of new solutions and ideas is not the safest path. Changes are often costly and risky, and there is no guarantee that innovation will be accepted and ultimately pay back (Lane and Maxfield, 2005). But the right environment can soften the feeling of uncertainty related to the process of experimentation. An environment in which people feel safe and unthreatened can be beneficial to the introduction of novel ideas. In a social environment, safety can be described by the level of trust between members. When people trust each other, they focus on potentials, not threats, and they do not waste time and effort on verifying others' trustworthiness (Roszczynska-Kurasinska and Kacprzyk, 2013). Instead of securing themselves against potential mistrust, they can concentrate on the elaboration of shared meaning and the development of solutions.

A high level of trust facilitates the open-minded interaction of people and exchange of opinions that can form a base for self-organization. **The capacity for self-organization** is the last aspect of a resilient social system that Missimer et al. (2017) highlighted. In order to react fast and adequately to unpredictable shocks and changes in the environment, communities need to have the potential for self-organization on different levels and of varying scope (Levin, 1998). Top-down, institutionalized interventions often take time, which communities lack in a situation of threat. It is the grassroots communities that know their surrounding and people's abilities best, and therefore have the potential to form an effective response to the challenge.

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
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This is what makes the capacity for self-organization the most important aspect of grassroots circularity. Without it, no grassroots initiative can emerge and prosper.

Breaking down the concept of social sustainability into the above dimensions enhances the strategic planning and the introduction of innovations for sustainability. The implementation of circularity involves new technical solutions and new regulations, but mostly it requires the adoption of new ways of thinking; therefore, understanding the conditions under which society can unleash its potential is a critical endeavour.

3 Research design

The paper aims to provide the prototype of a new approach to the circular economy by merging it with the social sustainability concept.

As described in the introduction, the methods employed were mostly case studies, based on qualitative in-depth interviews and a document review. The case studies were conducted as part of the CLIC project, which focused on collecting best practices for the adaptive reuse of cultural heritage[1]. Special attention was paid to the circular aspects of projects and their economic and social sustainability.

The overall research was led by the intention to discover bottom-up mechanisms for conducting successful adaptive reuse projects.

On the empirical level, we started with a wide review of adaptive reuse projects around Poland, based on press articles, internet reports and key word search. When choosing our cases we focused on their diversity in terms of location (urban historic centre, periurban, suburban, rural), type of cultural heritage (building, set of buildings, landscape) and the initiating as well as managing body (association, private company, municipality). We ended up conducting five case studies, three of which were initiated and guided by a local community or grassroots group of activists. These three formed the basis for our analysis in this paper.

1. The research and innovation project “CLIC: Circular models Leveraging Investments in Cultural heritage adaptive reuse”, financed from Horizon 2020, 2017-2020, see also ***www.clicproject.eu***.

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
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In each of the locations we conducted a set of in-depth interviews with the following actors of the investment process: 1) project leaders/initiators, 2) site managers, 3) local government representatives, 4) users from the local community. On average we conducted six interviews per case. Each interview was transcribed and analysed using MAXQDA software. We applied codes based on the social sustainability model, adding additional codes on the go.

As mentioned above, the principles for social sustainability were derived from the work of Missimer, Robert and Broman (2017). Our analysis was guided by the following main research questions: What were the roots of the grassroots project's success and sustainability? Can we find all social sustainability aspects (diversity, common meaning, trust, capacity for learning, capacity for self-organization) in the studied cases? Is the social sustainability framework relevant for studying bottom-up circular projects?

During our analysis we discovered that all five factors derived from the social sustainability model are highly relevant in describing and understanding the successful implementation of bottom-up adaptive reuse projects in the cultural heritage field. However, we also discovered that the aspect of diversity is not sufficient to fully describe the underlying dynamic between the local actors. We therefore decided to add a sixth aspect of **openness** to stress the importance of exchange between diverse actors of the process. All of this gave rise to defining the new concept of grassroots circularity, based on our empirical results.

4 Results

The results are presented as follows: firstly, we describe the built heritage and its history and secondly, we analyse the grassroots initiative that led to adaptive reuse using the social sustainability framework.

4.1. Case A – Rural Ecomuseum

Our first case is a rural ecomuseum, which is a network of natural and built sites located over an area of four municipalities. Currently, the ecomuseum network is composed of 38 private actors, such as owners of bed and breakfast establishments, restaurants, local companies, and social actors, predominantly non-governmental organizations. The ecomuseum was launched in 2001 as a joint initiative of one municipality and local

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
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activists. In 2003, it obtained European Union funds; however, since then it has been financially maintained by private funding. The revitalization project encompassed various objects connected with the cultural and natural history of the region. The ecomuseum also functions as a networking initiative for local residents – it is a hub for the organization of public events and part-time work opportunities in the region.

In case A, a high-density network of locals has been established, linking private actors working for profit with civic activists. Long-term collaboration has resulted in the creation of a local action group. Our research showed that **trust** was the crucial element in making the collaboration possible. In the beginning, activists, private actors and the municipalities worked together, and their cooperation was characterized by a high level of trust, and an open attitude towards new ideas, proposals and solutions which were realized by establishing links to external actors. In later stages of cooperation, municipalities became less invested in the idea, eventually becoming an obstacle to achieving grassroots circularity in the region. The reasons for this were twofold: first, the project leaders were involved in local elections on the opposition side to the elected mayor, and second, the social support for the ecomuseum decreased when it started to attract large numbers of tourists who contributed to the traffic and parking problems in rural areas. The respondents indicated their current lack of trust as the main reason why the initiative cannot develop further.

However, as reported by the respondents, the core element of the ecomuseum's strategic action is to seek new partners and combine scarce resources for individual events. For example, one interviewee said that local festivals and their cultural offer is produced by grassroots logic, under which networked actors and new partners provide money and material resources (infrastructure, transport) and unique skills (photographic, crafting etc.). A lack of resources for action stimulates **diversity** in the social environment of the ecomuseum. A variety of perspectives – for-profit and non-profit – forces knowledge transfers within the group, but also broadens the local community's **capacity for learning** through workshops developing intangible cultural heritage skills. It would seem that in case A, the grassroots circularity activism is to a certain point stimulated by difficulties posed by the local institutional environment, in this case – the reluctance of local authorities to continue cooperation. In a context of limited opportunities, the most crucial aim is to maintain the initiative itself. In this sense, the specificity of the initiative's grassroots

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
DOI: 10.3217/978-3-85125-668-0-20

circularity potential is highly visible in two particular dimensions. The first is the **capacity for self-organization**, which is realized by taking care of internal and external relations, as well as building the contingent structures of local activism and entrepreneurship. The collective construction of **common meaning** is also at stake. Actors involved in the initiative are focused on framing rural areas as symbolically significant and having intrinsic value, which could be the basis for place attachment and an important resource for the rural ecomuseum. However, it is not enough to overcome obstacles generated by the lack of trust between local actors.

4.2 Case B – Suburban Residence

The second case is a renovated residence hosting a cultural centre, located in a suburban garden-city. The building was constructed at the beginning of the XX century and its predominant function was to offer leisure and sports activities to local residents. In the 1990's, since there was no public funding to renovate it, the building became largely devastated. When municipal plans for privatization appeared, an organized group of local residents started to actively oppose it, and obtained financial backing for renovation, which made it possible for the residence to remain a public property. As a result, the site became a municipal centre for cultural and educational initiatives as well as a space for non-governmental organizations and civic activism.

At the time of the renovation, one of the local associations of residents played a crucial role in the process of initiating the adaptive reuse. As our respondents told us, the association worked closely with the mayor (who was previously a member), which allowed them to influence the direction of proposed changes in the building and choose activities for the institution that later occupied the space. The **trust** between local actors was strong and enabled them to successfully carry out the process of obtaining funds, despite the short time-frame. Importantly, the **diversity** of the group of active citizens, some of whom were architects, lawyers and historians, allowed the initiative to benefit from their various skills, which contributed to the process of renovation in different areas.

However, over time and due to personnel changes in municipalities, the managers of the residence began to focus on implementing the statutory goals of the municipality in the cultural field of public policy. As a result, the local civic sector lost some of its impact on decision-making and currently acts as a critical reviewer of local policies, which is a

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
DOI: 10.3217/978-3-85125-668-0-20

symptom of distrust between part of the local community and the authorities. The **common meaning** of the residence as a public place was an important aspect of the fight for its renovation: according to the association, the pre-war owner's will was for the residence to serve local community. It can be argued that this common meaning saved the building from destruction – for local residents the intrinsic and aesthetic value of the residence was very high, inspiring them to fight for what they perceived as part of their shared history and heritage. Moreover, they shared a common understanding that the place belonged to them and they as citizens should never be deprived of it.

Currently the residence is managed by the municipality and has the status of a local cultural centre. Hence, there is no longer a need for **community self-organization**, despite the existing potential for it, which remains dormant. The management of the residence argues that they are still acting as a grassroots initiative, because of their openness toward different actors, such as inhabitants (especially older adults, participating in the Third Age University and theatrical group), non-governmental organizations and the municipal council. For these specific groups, the residence offers space for work, recreation and education. The most significant element of the strategic action of the initiative is the enhancement of the **capacity for learning** in the local community. The place has become an important meeting place for educational activities focused around heritage and cultural issues, thus increasing the learning capabilities of the community as a whole. On the other hand, it has also contributed to higher capacity for learning among local civil society actors, who have created a local heritage community. That is why the residence functions as a hub for knowledge transfer – through Open University classes, by providing space for participation in municipal council meetings, and through the activities of non-governmental organizations.

As we can see, trust, common meaning, diversity and self-organization proved crucial in the process of adapting the building for the benefit of the community, but after some time, most of these aspects began to play a secondary role. The residence is no longer trying to become more circular or sustainable, partly because once it became an institution governed almost entirely by the municipality, it also lost some of its creative and innovative potential. Its program is now well-established, focusing on cultural events such as lectures, workshops, and historical exhibitions, with no new investments in e.g. energy-saving.

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
DOI: 10.3217/978-3-85125-668-0-20

4.3 Case C – Metropolitan Activist Community

Our third case is a metropolitan community located in a unique settlement of wooden houses. The houses were constructed shortly after the Second World War in the middle of a metropolitan city. Originally the housing estate served a mix of public, educational, and leisure purposes. Since 1967, the houses have been successively demolished in order to clear the ground for a new street or new buildings (like embassies). City and district authorities removed some of the wooden houses, arguing that they were in bad condition and that the area is better suited for other, more prestigious purposes. In 2011, the residents of the wooden houses formed a local association and started to formally and collectively oppose the decisions of policy-makers. In 2015, the local partnership was formalised, allowing local actors and the city representatives to become co-managers of the place. Until today, 27 houses have been preserved – serving as residential units and headquarters of non-governmental organizations, but mainly as creative spaces for urban gardeners, beekeepers, artists, cooperatives and public institutions.

Our analysis shows that from the beginning, the local activists were aware of the importance of self-organization. Their **capacity for self-organization** was fully revealed in 2015, when the members of the local partnership managed to construct a network of horizontally and vertically connected organizations. The main areas of their activity were: education, environment and culture. The subjective sense of agency played an important role due to the fact that initiative was neither the owner nor the manager of the place. The lack of grassroots ownership is perceived as the main limitation of the association's potential. Its mode of coordination is more of an urban social movement than a local community, and access to the group is based on a sense of belonging and a **common understanding** of the positive social role of the wooden houses.

Despite the rather low initial diversity of community (the community was relatively small) it opened up and reached out to other associations and citizens in general. By highlighting the uniqueness of the place, activists have managed to build a common meaning of the area that is shared among wider group of citizens. They have stayed open to other initiatives and actors, which has resulted in the increase of diversity.

Now the place has a wide group of supporters and users, and a diverse socio-cultural offer, which attracts continuous attention. Case C also highlights that in a situation of

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
DOI: 10.3217/978-3-85125-668-0-20

distrust between local authorities and activists, there is a greater need for self-organization and that diversity can be acquired in the course of initiative's development.

4.4 Analysis of case studies

All three cases represent the potential of grassroots activism to introduce a positive change in the area of circular adaptive reuse. Interestingly, the most important driver of all the studied initiatives was the perceived threat of the community losing a place of a significant cultural or symbolic value. During the process, the threat was transformed into the potential not only to renovate, but also rebuild, recreate or inspire new socio-cultural activities in the previously neglected or underdeveloped sites.

Our analysis was based on rich qualitative data from in-depth interviews, documents and publications concerning the initiative as well as press articles and internet resources. While coding our material we applied the five dimensions of social sustainability as our main codes, developing new ones concerning circularity and sustainability whenever the basic ones were insufficient.

Table 1 summarizes the results of first order analysis, describing the presence and intensity of each factor in the given case. The measure of intensity was derived from a comparison between the cases themselves, as well as with other cases of local initiatives not presented here, but studied by one of the authors (see Domaradzka 2015, 2017, 2018). For example, we could see that the initial diversity of skills and actors involved in the adaptive reuse process was the highest in case B, smaller in case C (especially at the first stage), and lowest in case A, where a group of long-term rural residents coexisted with newcomers from a large city.

In terms of the capacity for learning, we found it high in all the studied locations, which may be key to understanding why the grassroots adaptive reuse was possible to implement. As a complex process of reimagining, redesigning and restructuring, the adaptive reuse projects required a high capacity to learn new skills, transfer knowledge between actors and apply it in practice. During our analysis we discovered several learning loops embedded in the project development and a high intensity of knowledge and skills exchange between the engaged actors.

Different and sometimes competing forms of common meaning were manifested in our three cases. In case B, the location in a garden-city with a long and well maintained history

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
DOI: 10.3217/978-3-85125-668-0-20

as well as a strong local identity, facilitated the emergence of common meaning around the site (perceived as a symbol of a 'golden period' in the history of the town). In case A, the common meaning varied depending on the group – it was slightly different for the well-rooted rural inhabitants and newcomers from the city. However, both groups perceived the cultural heritage as valuable and important (in itself or as means to economic development) which helped the mobilization around the initiative. In case C we could observe competing meaning between the local activist group (who valued the site for its uniqueness and genius loci) and the district authorities (who focused on the economic value of its prestigious location). The initial lack of agreement was overcome due to the strong social support that the initiative gathered and its dynamic development as a cultural services provider.

In analyzing trust we decided to discern in-group and out-group trust to describe its role in a more precise manner. We also defined three groups among which we could measure relations of (dis)trust: leaders of initiatives, citizens (other local residents), and local authority representatives. Based on the interviews conducted with all these three groups we could observe some level of distrust between local leaders and municipal authorities (apart from case B, where initial high trust was later replaced by distrust), while the relations between leaders and local community members were usually based on trust, which helped them to gain support and overcome initial barriers.

	Case A Ecomuseum	**Case B** Suburban Residence	**Case C** Metropolitan Activist Community
Diversity	low (small rural community with urban newcomers)	high (mixed suburban area with high middle class presence)	moderate (small local community, surrounded by several institutions & initiatives)
Capacity for learning	high	high	high
Common meaning	depends on the group – competing meanings	high	moderate – competing meanings
Trust*	L | \LA – low L | \C – moderate C | \LA – high	L | \LA – high L | \C – high C | \LA – moderate	L | \LA – low L | \C – high C | \LA – moderate
Capacity for self-organization	high for leaders; low for local community	high for leaders; moderate for local community	high and contagious – activation of other initiatives

* L – Leaders, C – Citizens, LA - Local authority

Table 5: *Meso level analysis according to social sustainability criteria*

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
DOI: 10.3217/978-3-85125-668-0-20

During our analysis we discovered that the concept of diversity is not sufficient to explain the circular potential of a grassroots community. Our interviewees recounted how their openness to cooperation, new ideas and other partners' modes of functioning, helped them create local partnerships for the sake of the project. Therefore we propose to widen the concept of grassroots circularity to include **openness** as an important factor supplementing diversity.

In the case of common meaning, we propose developing it to include **compatibility with circularity values** and sensitivity to the intrinsic value of cultural heritage. Finally, we underline the need to discern **in-group** and **out-group relations** when analyzing trust within the grassroots circularity model. As a result, we can propose a model of grassroots circularity evaluation, based on six criteria:

• **diversity** of skills and actors involved

• **openness** to experience and cooperation

• **capacity for learning**

• **common meaning** and compatibility with circularity values

• in-group and out-group **trust**

• **capacity for self-organization**

While during our analysis we focused on the initial and formative stage of the grassroots initiatives, we also evaluated their current state. As a result we can formulate the following reflections:

1) First, the issue of sustained trust is crucial for the long-term successful functioning of the studied sites. In two of our cases, trust was mainly built on interpersonal relations with the local mayor's office, which made them initially strong, but also fragile in the context of long-term political change. In the third case, where the initial distrust was overcome by a formal agreement, the situation remained relatively stable, and inspired the activists to develop different strategies to ensure continuity. In other words, strong ties and in-group trust between a grassroots initiative and decision makers can constitute both an opportunity and a threat. Openness of the initiatives' representatives (e.g. public actors, local association, private investor) to forming partnerships as well as building out-group trust agreements seems to be key in overcoming political change. This finding is especially

M. ROSZCSYNSKA-KURASINSKA, Anna DOMARADZKA, B. ŚLOSARSKI, A. ŻBIKOWSKA
DOI: 10.3217/978-3-85125-668-0-20

relevant in the case of Polish society, which exhibits a low level of trust (see e.g. EVS, 2019); however, in a more general sense, it highlights the weaknesses of strong in-group ties, and underlines the potential of loose out-group ties.

2) The capacity for self-organization was high in all the studied cases, usually based on the activists' social skills and cultural capital. While a more diverse community often became engaged at the later stage, the initial group of activists often consisted of middle class professionals, some of them newcomers to the local community. Most of them had a history of earlier social engagement and had the capacity to mobilize their resources and support network to further the idea of adaptive reuse. The newcomer perspective also made them more open to change and innovative ideas, as well as unhindered by previous cooperation experiences.

5. Summary

When introducing circular solutions to built heritage investments, we often struggle to ensure sustainability and a positive social impact. While the notion of intrinsic value helps us understand why some places generate the spontaneous interest and mobilization of local communities, it would be valuable to understand the exact reasons why some circular projects are more successful than others. In this paper we propose widening the concept of circularity to include its grassroots aspect and to underline the potential of local communities to introduce change. The type of change we analysed here concerned adaptive reuse projects in the area of built cultural heritage. However, we assume that the discovered mechanism can also be applied to other areas of intervention, whenever new ideas are introduced and a top-down approach is not sufficient to solve local challenges.

The proposed grassroots circularity model is based on the well-developed concept of social sustainability. We consider the social sustainability concept to be a good starting point for analysing the conditions required to ensure the implementation of new ideas (like circularity) at the community level. The authors of the social sustainability concept point to five main factors without which sustainability cannot be achieved. Based on our case studies we adapted their model to allow for the evaluation of the grassroots circularity dimension.

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Based on the observation of three cases of adaptive reuse in the field of cultural heritage, we identified six crucial aspects building local potential to introduce changes in values and behaviours necessary for the successful implementation of innovative re-adaptation projects.

We believe that the concept of grassroots circularity allows us to widen the circular economy model to include the neglected bottom-up potential of local communities. In addition, our case analysis shows that each community has different strengths and weaknesses in terms of implementing new projects and sustainable circular solutions.

There always seem to be a driving force that makes it possible to mobilize local resources and relations for the sake of protecting, rescuing, redeveloping or upgrading buildings and landmarks. Following the work of the CLIC project and the intrinsic value concept developed by Fusco Girard et al. (2007) we point out the importance of the spontaneous value-attribution and place attachment present in all cases of grassroots circularity initiatives.

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