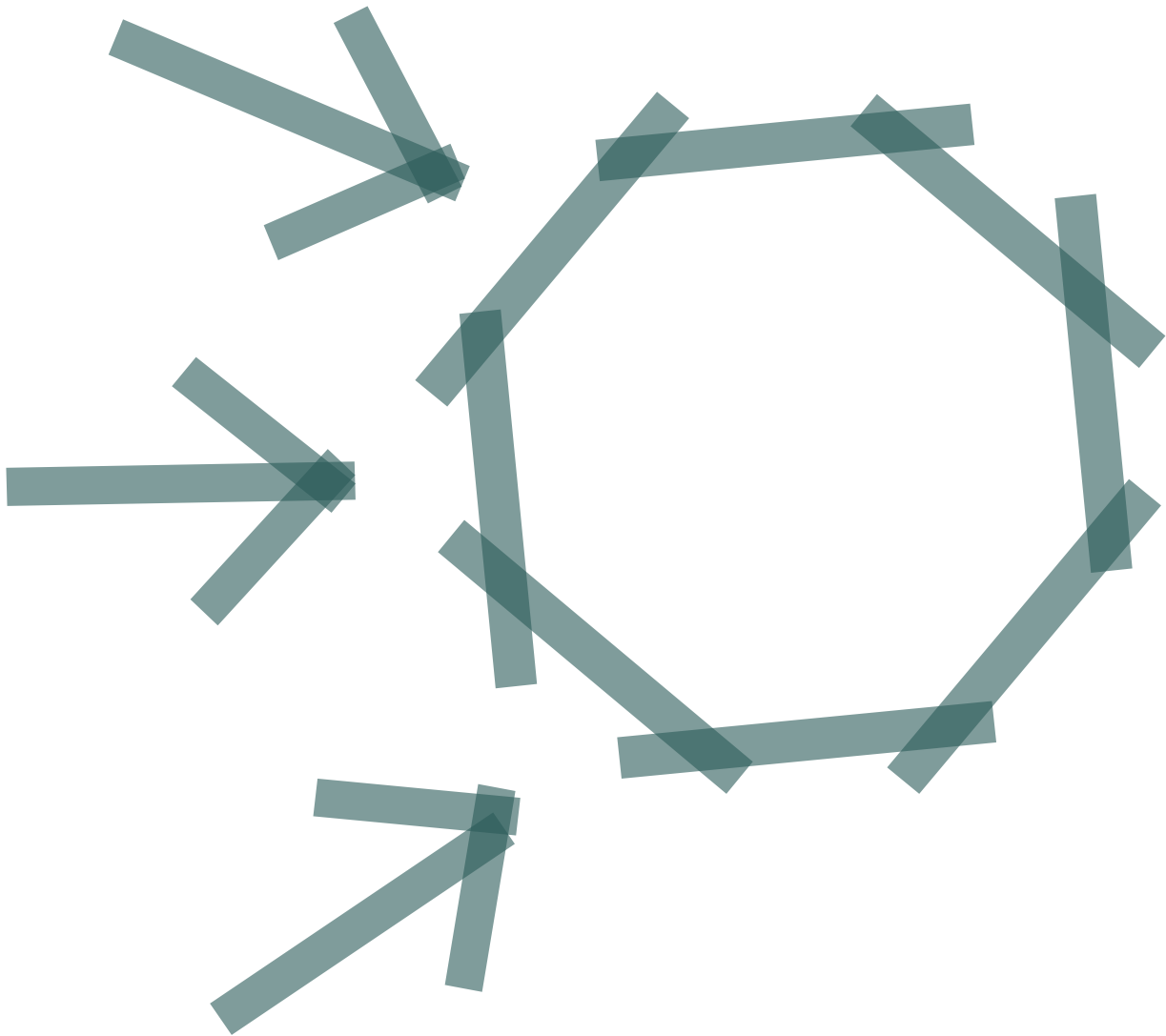


# Roadmap to a circular society

// A co-design project for the conceptual and organizational development towards a circular society



ROADMAP

**social design lab**

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sponsored by  
**DBU**  
Deutsche  
Bundesstiftung Umwelt

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At the beginning of our joint endeavor at the end of 2020, developing a roadmap for a circular society seemed an effective project to take to the next level what we – the Hans Sauer Foundation and the Chair Sociology of Technology and the Environment at the BTU Cottbus – had already achieved in the field of circular societies. This project would not have been possible without the financial support of the German Federal Environmental Foundation (DBU).

The past 1.5 years were characterized by various phases – one highlight certainly being the only non-digital workshop of the entire group: the writing seminar in Schwanenwerder, Berlin. Many hours were spent in teams discussing and exchanging basic principles and ideas, but also intensely developing and sharpening new theses. Working digitally with a group of over 40 experts was a constant challenge for everyone involved. We want to take this opportunity to thank everyone involved in this collaborative process in various ways. In addition to the financial support from the DBU, the multi-faceted input by the participants – during workshops and throughout the whole process as critical authors, readers, commentators and general contributors – was key for the successful creation of this product. With this preface, we would like to express our gratitude for a friendly, respectful, fruitful and truly co-creative collaboration.

This roadmap consists of different parts and each part is to be understood – both in its content and form – as the result of a fully collaborative and iterative process. In detail, these parts are a catalogue of demands on policy makers (Chapter I), a snapshot of the current discourse and area of practice regarding circular societies, including funding landscape, pioneers, etc. (Chapter II), and a deeper insight into the project's co-design process (Chapter III). The focus topics first specify in detail the prerequisites and characteristics of circular spaces and practices and enhance the understanding of why these are necessary in order to promote circular communities and circular citizens (Chapter IV, A). We then use the Open Development Goals (ODGs) and their “stories” to illustrate the potential that lies in the “openness” for a circular society and sketch out possible transformation paths (Chapter IV, B). The principles for collaborative value creation developed on the basis of empirical case studies of four pioneering projects are intended to promote the initiation, development and establishment of circular ecosystems (Chapter IV, C). The Catalogue of Competencies and Skills of Circular Literacy is intended to make circular literacy compatible with the existing education system and facilitate its promotion; Examples of good-practice provide inspiration for implementation (Chapter IV, D).

We hope that these diverse propositions and topics will inspire different people to continue working towards the vision of a circular society. The development of this roadmap made one thing very clear: conceptualizing a desirable vision for a livable future and making it a reality rests on many building blocks, different perspectives and as diverse a constellation of actors as possible.

**The results and demands relate primarily to the situation and need for action in Germany and, in individual cases, to the European Union.**

We hope you enjoy the read!

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[ 01 ] The participants of the writing workshop on Schwanenwerder (Photo: Hans Sauer Foundation)

## **I. 8 CONCRETE DEMANDS ON POLICY MAKERS**

**01** From educating to empowering: Building circular literacy!

An education and skills campaign is needed to empower everyone to contribute to the success of a circular society. Circular literacy must be anchored in all areas of education and go hand in hand with the creation of learning spaces and educational communities, beyond just formal educational institutions.

**03** Backslapping is not enough – more time for circular practices!

A 40-hour working week, which is currently the politically idealized normal employment relationship, is incompatible with a circular society. Circular practices – collective repairing, DIY, swapping, sharing, maintaining, reducing – and the commitment to actively (re)shape living conditions take time. Purely idealistic recognition or honorary allowances for community work are not enough; Loss of income and reduction of gainful employment because of circular activities must be (financially) compensated to secure basic needs.

**02** Experimentation clauses for pioneering projects in the context of a circular society!

In many cases, the implementation of pioneering projects in the context of a circular society pushes the limits of existing legal frameworks. Therefore, standards and experimentation clauses for real-world laboratories need to be enshrined in law to create legal leeway for trials of circular society innovations.

**04** Opening things up for circularity!

Man-made things can be managed more effectively in cycles if their design is geared towards circularity and if there is transparency on what they are made of, how they are produced, maintained, and repaired. When key information about materials, and manufacturing processes is openly available, circular practices such as repair, reprocessing and recycling become much easier and, in some cases, possible in the first place.

**05** Enable collaboration and co-creation for circularity!

Cycling materials and things requires diverse processes of collaboration and co-creation (collective designing) in all phases of value creation. These processes must be based on the principle of openness so that a wide range of people can take part in the design and reorganization of products and processes.

**07** Free up the cellar and mobilize the storage room!

Many households store large quantities of unused items. Storage facilities are important, but also problematic if they take up (heated) space and render everyday items permanently unused and inaccessible. Many new purchases could be prevented if these resources were returned to circulation.

**06** Circular cupboards and repair cafés for everyone!

Circular everyday practices must be radically simplified, as linear behavior – throwing away instead of passing on, buying new instead of repairing, etc. – has been the de facto norm till now. For example, spaces such as repair cafés or lockers and cabinets at public space where goods can be exchanged and get a new lease on life. Everywhere in daily life, spaces and opportunities should be created that enable people to act in a way conducive to a circular society.

**08** Tell circular success stories!

Modern stories about success and progress still often focus on economic growth, acceleration, and material prosperity. However, circularity of production and consumption cannot be attempted sincerely without deceleration and sufficiency – more stories about their success are needed.

Introduction

The need for restructuring the current climate- and environment-damaging as well as exploitative systems of production and consumption becomes more and more urgent. The concept of a circular economy entails promising approaches for a more sustainable type of economy and living. However, it largely disregards the social and economic transformation required. Political and economic discourses have so far largely been focused on production and recycling while product design and the potential of inner cycles (refuse, reduce, reuse and repair) have received only limited attention<sup>1</sup>. The United Nations World Resources Council forecasts an increase in the use of raw materials to 190 billion tons by 2060; according to the Council, 60 billion tons would be compatible with preserving ecosystems and curbing climate change. In its model, the World Resources Council also shows that the way in which we design, forms/intensities of use as well as the choice of materials matter greatly for achieving the climate targets. With regard to consumption, the German Council of Consumer Experts has shown that public awareness of the circular economy is also primarily focused on production and recycling. Other options such as waste avoidance and reuse are rarely mentioned<sup>2</sup>.

However, a circular economy is not possible without the broad participation of people who implement practices such as repairing, sharing, swapping, reusing or reducing consumption in their everyday lives, and by doing so greatly increase the lifespan of products and their intensity of use. The transformation towards an economy that enables a good life within planetary boundaries cannot be reduced to new business models, innovative products, or technologies. It must involve society, align technologies and products with societal needs and day-to-day lifestyles, involve people in its development while pursuing social and ecological sustainability goals in equal measure. This requires a fundamental change in economic, socio-technical, and political conditions that expands the framework of regular action for people, politicians, companies, civic initiatives and administrations. They must be empowered to co-appropriate means of production, reuse secondary materials, and actively participate in a circular economy and society.

1] Calisto Friant et al. (2020).  
2] Federal Environment Agency (2023).

To enable a good life in a circular society, resources, work, prosperity and opportunities for participation must be created and distributed fairly and transparently. Therefore, all current endeavors towards a circular economy – particularly in the context of national circular economy strategy – must be examined and significantly expanded.

Voluntary measures and the commitment of individuals have only a limited impact. Stronger regulation, strategic promotion, subsidization and public infrastructure can provide more effective support for those who already are or want to become pioneers in circular society.

Against this backdrop, we formulate eight demands on decision makers that are intended to initiate a circular change away from the linear dead-end. The demands relate primarily to the situation and need for action in Germany and, in individual cases, the European Union.





From educating to empowering: Building circular literacy!

An education- and skills-campaign is needed to empower everyone to contribute to the success of a circular society. Circular literacy must be anchored in all areas of education and go hand in hand with the creation of learning spaces and educational communities, beyond just formal educational institutions.

Problem description

Linear practices, such as buying disposable products, are omnipresent. Anyone who wants to overcome these practices encounters a lot of resistance and obstacles. Circular behavior requires knowledge, skills, time, and conditions that have not yet been established in, and skills to act circularly and contribute step by step to the creation of a circular society<sup>3</sup>. The focus here is on enabling a variety of practices – such as repairing, sharing or circular design<sup>4</sup> as well as the ability to think critically and act collaboratively. Understanding and adopting circular practices is a learning process that needs to be guided and supported. Educational objectives to promote circular literacy are currently heavily neglected in our education systems. In Germany, only few specialization programs for students, project days or training courses deal with sustainable and circular forms of production and consumption and even those restrict themselves mostly to specific topics such as recycling. Existing environmental and sustainability education programs, such as ESD programs and corresponding textbooks, often focus on small-scale and easy-to-implement measures that have little social impact<sup>5</sup>. The few explicit and often civic learning and teaching centers for circular literacy are often affected by temporary or insecure funding. However, it is precisely such real-world laboratories where experimental learning is prioritized over formal learning. Which is why they are urgently needed as learning and transformation spaces for the development of a circular society.

IMPLEMENT NOW

Implementing extracurricular programs on circular literacy:

Vocational schools and high schools as well as universities should implement learning modules on circular literacy that can be easily integrated into curricula – e.g. as part of interdisciplinary project days, working groups and university initiatives.

3] cf. definition of Working Group 4, Chapter IV D.  
4] cf. results of Working Group 1, Chapter IV A.  
5] see Blum et al. (2021) and Wanner et al. (2020).

Through trainings teachers and learners become knowledge multipliers<sup>6</sup>. The German Federal Ministry of Education and Research and the Ministers of Education and Cultural Affairs of the federal states must create supportive conditions, in particular broadly accessible support and incentive programs.

Promote flagship projects: The Federal Ministry of Education and Research, the education ministries of the federal states and local education administrations must ensure the rapid and long-term promotion and stabilization of flagship projects for a circular society. This includes the development of learning materials as well as the establishment of learning spaces and research formats to empower and support committed teachers, students, and institutions. This benefits formal as well as non-formal education institutions, such as civic initiatives in the form of repair cafés, real-world laboratories<sup>7</sup>, open workshops, etc.

INITIATE NOW

Anchoring circular literacy in vocational training – for the craftsmen and businesspeople of tomorrow: The Ministries of Education and Cultural Affairs of the federal states and the Federal Institute for Vocational Education and Training should integrate circular literacy into the training of businesspeople, craftsmen and people in technical professions, e.g. through training programs.<sup>8</sup>

Developing standards for circular literacy: There is a need for transnational education and cultural policy that includes circular literacy in curricula and educational standards in all areas of education. All formal educational institutions – from kindergartens to schools and universities – should be considered.<sup>9</sup>

6] Examples of good practice that have already been implemented in this area can be found in Chapter IV D.  
7] This must be taken into account in particular when drafting the future Real Estate Laboratory Act.  
8] This can build on the efforts of the BilRess network (Education for Resource Conservation and Resource Efficiency) and individual chambers of commerce and further add a social dimension, a focus on consistency and sufficiency and an understanding of transformative learning. Since 2012, the BilRess network initiated by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety has been committed to anchoring resource education in schools and vocational training, higher education and further education. The Cologne Chamber of Industry and Commerce, together with Interseroh+, has also developed a free additional qualification “Circularity Scouts” for trainees.  
9] The project is intended to build on and complement existing structures, educational programs and materials that have been developed as part of the UN Decade of Education for Sustainable Development (ESD).



**Experimentation clauses for pioneering projects in the context of the circular society!**

In many cases, the implementation of pioneering projects in the context of the circular society pushes the limits of existing legal frameworks. Therefore, standards and experimentation clauses for real-world laboratories need to be enshrined in law in order to create legal leeway for trials of circular society innovations.

**Problem description**

Existing legal conditions regularly pose an insurmountable obstacle to putting promising project plans with innovative ideas for a shift to circularity into practice. One challenge are overly specific standards, for example when the reuse of windowpanes is made impossible by legal regulations on the correct window size. Elsewhere there is a lack of flexibility in established forms of organization for new types of partnerships and collaborative projects. This is precisely where real-world laboratories and experimentation clauses can make a difference. Experimentation clauses are already making it possible to test autonomous vehicles on public roads or experiment with drone technologies under real-life conditions. Such clauses – subject to approval and authorization from the local authority – allow deviations from the regularly applicable legal framework for a limited period of time in a defined geographical area. The planned German Real-World Laboratory Act, which has so far only been designed for the testing of digital technologies, should be expanded to include content and overarching standards for projects in the context of the Circular Society. The planned Real-World Laboratory Act must contain experimentation clauses that create leeway for practicing and scaling socio-ecological innovations. The goal is to make the overall social benefits of circular society projects visible and to increase their attractiveness for future investments.

**IMPLEMENT NOW**

**Extending experimentation clauses to circular society pioneer projects:** The Federal Ministry for Economic Affairs and Climate Protection (BMWK) should include experimentation clauses for real-world laboratories in the context of a circular society in the planned Real-World Laboratory Act in order to promote and accelerate innovations for a socio-ecological transformation and make them economically viable.

**START NOW**

**Creating a competence center for circular society real-world laboratories:** Competence centers should be created in all federal states to advance circular society real-world laboratories, living labs and pioneering projects. These centers should fulfil the following tasks:

Central contact for real-world laboratories in the context of a circular society (e.g. Haus der Statistik or Zukunftshof Wien), which advises on the use of experimentation clauses and on handling of legal hurdles.

Advice and support for the transition from real-world laboratories into regular operations / continuation of the project to enable scaling.

Mediation of knowledge and initiation of dialogues: pooling experience and knowledge in real-world laboratories and establishing interfaces (e.g. to facilitate knowledge transfer) between real-world laboratories.





**Backslapping is not enough – more time for circular change!**

A 40-hour working week, which is currently the politically idealized normal employment relationship, is incompatible with a circular society. Circular practices – collective repairing, DIY, swapping, sharing, maintaining, reducing – and the commitment to actively (re)shape living conditions take time. Purely idealistic recognition or honorary allowances for community work are not enough; Loss of income and reduction of gainful employment because of circular activities must be (financially) compensated to secure basic needs.

**Problem description**

More time is needed for multiple forms of work such as unpaid labor, care work or community work and for the active (re)shaping of local living conditions. People need spaces for experimentation beyond the traditional logic of traditional employment in order to work together with other committed individuals to bring about local and regional change towards a circular society. On the one hand, this promotes experiences of truly making a difference, i.e., the development of individual democratic agency. On the other hand, it concretely improves material<sup>10</sup>, immaterial<sup>11</sup> and infrastructural<sup>12</sup> living conditions.

Should a vacant building complex be demolished and used as a private investment property for future sources of private profit, or should it be renovated to give the local population a meeting place with opportunities for circular practices. In order to enable more people to actively engage in such conflicts of use around and in public spaces, the associated loss of income must be financially compensated. Currently those citizens have financial advantages who do not participate democratically and are not committed to local circular change, but instead pursue their regular gainful employment. It is not sufficient to receive non-material recognition for community work. The commitment to improving local living conditions and the time and effort involved must be compensated financially or through alternative forms of securing basic need.

10] e.g. equipping communal laundry rooms in apartment blocks.  
11] e.g. organization of clothes swap parties for the neighborhood.  
12] e.g. investments in “libraries of things” and open repair workshops.

**IMPLEMENT NOW**

**Introduction of a scholarship program:**

10,000 scholarships are to be offered annually for explicit “circular society time”. The specific activities are defined by the applicants themselves, and the socio-ecological benefits must be demonstrated. The application for such a scholarship should be low-threshold and feasible without a great deal of bureaucracy. The Federal Volunteer Service (Bundesfreiwilligendienst) could act as the sponsor of the scholarship program, financed by federal funds.

**START NOW**

**25 % working time for a good cause:**

Companies and public institutions must grant their employees the right to devote 25 % of their regular working time to local socio-ecological projects, while continuing to pay their wages and salaries.

04

Open things up for circularity!

Man-made things can be managed more effectively in cycles if they are designed to be used circularly and there is transparency about their production, care, reparability and composition. If key information about materials, substances and manufacturing processes is freely and openly available, circular practices such as repair, reprocessing and recycling become much easier and, in some cases, possible in the first place.

Problem description

Tracing the origin and use of materials is difficult to impossible for most consumer goods in current production and value creation systems. The same applies to energy and resource consumption throughout all phases of a products’ life cycle. This knowledge, however, often is the key to circularity of production and consumption processes. Repair and/or reconstruction of products often fail due to a lack of information on manufacturing or installation processes or due to missing or unaffordable spare parts. A transformation from linear to circular value creation systems requires that such opacity and gaps are eliminated, a product design that allows, even promotes repair and reuse, as well as the availability of technical and general information on production methods . Only then will a significant number of people – and not just a small number of market players – have the opportunity to actively participate in and help shape circular systems of goods, production, and consumption.

IMPLEMENT NOW

Digital product passports – as open as possible:

European and national legislation must quickly and comprehensively introduce the digital product passports planned for 2030 and make them freely available. This allows pooling of n knowledge on materials, chemical substances, and components that is relevant for circularity, as well as information on manufacturing processes, reparability, reprocessing and proper disposal. Existing national and European initiatives that are working on solutions in parallel should be reviewed, expanded and extended to as many product groups as possible with an emphasis on circularity and a broad user base. Expanding the availability and use of product passports should be built on civic and public sponsorship models which reflect and ensure independent, broad participation and are carried by a broad stakeholder base.

Expanding circular product policies:

Other product policy instruments such as the repair indices for smartphones, laptops, televisions, lawnmowers and washing machines that have been introduced in France should be adapted to other countries and the European level and extended to as many product groups as possible.

START NOW

Turn product passports into digital libraries of circular knowledge:

Digital product passports should be expanded to include instructions for circularity that contain tried-and-tested procedures in connection with the reuse and recycling of the respective product or its components and materials. Accordingly, the digital infrastructure for product passports should be developed into free and publicly accessible platforms for the peer-to-peer exchange of knowledge and expertise.

Establishing a circular technical inspection association (TÜV):

Establishing a system and infrastructure for decentralized testing and certification of products and circularity instructions so that they are subject to expert review where issues of safety, warranty or similar are concerned; in line with requirements by other alternative technical inspection associations, , Circular Responsibility Associations (CRAs), which ensure functionalities and safety issues in second, third, and later life phases of products

05

**Enable collaboration and co-creation for circularity!**

In order to circulate materials, substances and things, diverse processes of collaboration (cooperation) and co-creation (collective design) are needed in all phases of value creation. These processes must be based on the principle of openness so that a wide range of participants can take part in the design and reorganization of products and processes.

**Problem description**

Current practice in the context of design, technology development, standardization, and the handling of intellectual property follows the logics and value creation models of particular industries. These support, to a large extent, a proprietary approach to knowledge, expertise, and information, i.e., an approach based on ownership and closedness. As a result, they often stand in the way of reusing, re-designing and repurposing products to, ultimately create cycles. A far-reaching shift to “openness” for circularity or a systematic strengthening of open approaches (such as open source, open data, open standards) is necessary to enable compatibility, interoperability, and innovation for the creation of new resource cycles. Openness creates crucial conditions for the success of new communities of design and action as well as important practical and regulatory resources for “circular products”.

**IMPLEMENT NOW**

**Creating and proliferating norms and standards for circularity:**

Ongoing initiatives and Expand continue ongoing initiatives of standardization and standard-setting processes for circularity, such as the German Standardization Roadmap Circular Economy. Fully tap into the potential of norms and standards to increase transparency and inclusivity of development processes. The development and proliferation of open standards, in form of easily accessible, refinable and usable guidelines or specifications that anyone can use to (further) develop products and services without restrictions or additional costs, should be promoted through appropriate programs. This can be helped by strengthening the role of civic initiatives and actors from consumer, regenerative and other sectors in the context of, for example, standardization processes or the development of standards.

**Establishing funding programs for open hardware development (open-source hardware):**

Public and non-governmental funding should focus on open hardware development in order to increase the distribution of technologies that are designed and constructed to be understandable, repairable, combinable and modifiable; technologies that use open designs, freely licensed documentation and project files as well as standard components.

**Creating incentives for the distribution of free licenses:**

Promoting open and free licensing (e.g. Creative Commons) instead of the restrictive use of intellectual property rights; examine the potential of tax models or incentives through public programs to promote Creative Commons.

**START NOW**

**Developing openness for circularity strategy:**

The public sector must promote the development of an integrated strategy that systematically (1) identifies the potential of existing open models in standardization, regulation, and the handling of intellectual property, (2) identifies barriers to circularity in the existing system and (3) designs and ultimately implements transformation strategies.



Circular cupboards and repair cafés for everyone!

Linear behavior – throwing away instead of passing on, buying new instead of repairing, etc. – is still the norm. That is why everyday practices of circularity must be radically simplified: Everywhere in daily life, spaces and opportunities should be created that enable people to act in a way conducive to a circular society.

Problem description

Repairing, DIY, swapping, sharing, caring, maintaining, reducing – a circular society thrives on a large number of people integrating circular practices into their everyday lives. However, linear behavior is often the simpler option: buying new is easier than repairing<sup>13</sup> and is encouraged by the continuous introduction of new products<sup>14</sup>. Maintaining and caring for things, swapping, and sharing everyday objects or reduce consumption also costs time and require making an effort. Circular everyday activities are laborious and should be recognized as such. First and foremost, this includes creating a variety of spaces and opportunities for circular practices along daily routines. There are already good examples that need to be disseminated on a larger scale: a “for-free” corner for every hallway, a bicycle repair station at every train station, a circular locker for swapping things at every workplace, at least one location for borrowing and renting tools and other resources and a repair café in every urban neighborhood – there are many ways to transform public or communal spaces into circular spaces.<sup>15</sup>

IMPLEMENT NOW

Seed funding for circular places:

Public infrastructure – such as train stations, bus stops and libraries – must be systematically examined, cataloged and developed in terms of its potential as space for circular action. Viable approaches, such as bicycle repair stations at train stations, Fablabs or using existing publicly available infrastructure, such as libraries, to set up locations for borrowing everyday items, must be massively expanded. The Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) should set up a seed funding program that provides quick and unbureaucratic financial support for these circular places.

13] A [2019 study](#) (Hipp & Jaeger-Erben) shows that the majority of respondents buy a new appliance when a used appliance breaks down. Repairing is perceived as unattractive and too expensive.

14] A [2016 study](#) (Fels et al.) and a 2021 publication (Hipp & Jaeger-Erben) show that when new product generations come onto the market, users tend to devalue the previous models they are currently using and perceive them as outdated.

15] Examples and stories of circular spaces and practices are presented in Chapter IV A.

Institutionalize and establish legal certainty for circular lockers and for-free boxes:

Every household should have the opportunity to pass on items that are no longer in use or collect them for free from circular lockers or for-free boxes within a radius of 500 meters. City and local authorities must develop a legally secure framework for the installation of circular lockers in public or communal spaces and develop an architecture through which responsibility for these lockers is shared between authorities and citizens.

START NOW

1000 new open workshops:

The governments of the Federal States should develop a “1000 Open Workshops Program” through which they guide and support municipal administrations in establishing a nationwide infrastructure of open workshops and repair cafés in cooperation with civic actors. The network of repair initiatives provides instructive practical examples. This would represent a significant extension of the planned EU provisions on the right to repair. The long-term goal should be to provide one open workshop or repair café per 1000 residents.

Circularity in the temples of consumption:

Highly frequented places of consumption such as department stores and shopping malls must enable circular practices. There should be repair workshops, second-hand or free shops and locations for borrowing everyday items in every mall. Such offers should be subsidized by the state through co-financing rents for real estate and start-up capital. Department stores and mall operators should be required by city councils to make some of their space available for communal use.

07

Free the cellar and mobilize the storage room!

Many households store large quantities of unused items. Storage room is important, but also problematic if it takes up (heated) space and renders everyday items permanently inaccessible and therefore unused. Many new purchases could be prevented if these resources were returned to circulation.

Problem description

In 2020 humanity has reached a point where there are more man-made things on earth than biological mass<sup>16</sup>. This immense anthropogenic mountain of stuff is also stored in the basements and storage rooms of industrialized consumer societies. Each person in Germany, on average, owns 10 000 things<sup>17</sup> – possibly considerably more, many of which are unused<sup>18</sup>, collecting dust in drawers and wardrobes or cluttering basements and storage rooms. However, just as easily as basements can be a graveyard for the premature death of still usable items, they can be places to store memories, realize creative projects or store things for later use. Most people don't want to do without storage options, but at the same time are stressed by overcrowded shelves and cluttered attics<sup>19</sup>. Clearing out these areas takes time and nerves, but they store resources and items that could be of interest to others. Freeing the basement and reviving the storage room means harnessing the potential of these spaces as hubs of product circularity.

16] Read in a [scientific paper in the journal Nature](#) (Elhacham et al. 2020).  
17] However, there is no clear evidence for this number, as [this publication](#) by Jaeger-Erben & Hielscher (2022) shows (especially pages 26-28).  
18] The architect Henrike Gänß has documented this [imbalance between owning and using](#) for her own property.  
19] This is shown very impressively by [an American study](#) (Arnold et al., 2017), which observed a number of households over a 10-year period as they accumulated more and more things in their homes.

IMPLEMENT NOW

Developing domestic mining:

Develop a national program of domestic mining, for example under the lead of the BMUV. The goal is widespread initiation, professionalization and promotion of platforms and services<sup>20</sup> that enable domestic mining and support people in mobilizing their unused objects and resources. At the same time, it must be ensured that the freed-up spaces are utilized with an emphasis on a sufficient circular society, e.g. by using them as shared space or storage for spare parts and shared tools.

Promotion of shared storage rooms in apartment blocks:

Landlords should be incentivized via tax reductions to provide a percentage of the storage space as shared storage, which can serve as a borrowing station for all tenants for tools and rarely used household appliances. The shared storage and the servicing of the space and the items it contains are part of the overall rental agreement.

START NOW

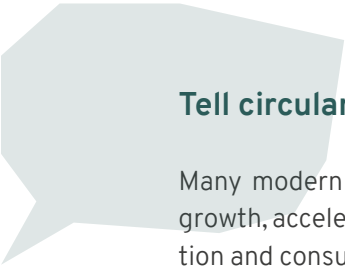
Stocktaking:

The Federal Ministry of Education and Research (BMBF) should initiate a comprehensive citizen research project with the aim of – literally – taking stock in storerooms and basements in order to determine the potential for local product cycles. This should result in the participatory development of a catalogue of measures to identify socially acceptable ways out of the dead end.

Incentives for circular private spaces: Municipal and local authorities should create an incentive program for homeowners to motivate them to share and/or open up their parking spaces for communal use, e.g. by reducing property tax.

20] Community-based platforms such as nebenan.de, sales platforms such as kleinanzeigen.de or socio-ecologically orientated service providers such as [GreenCircle](#) offer good starting points here.

08



**Tell circular success stories!**

Many modern stories about success and progress still focus on economic growth, acceleration, and material prosperity. However, circularity of production and consumption systems cannot be attempted sincerely without deceleration and sufficiency; there need to be more stories told about the success of circularity!

**Problem description**

The metabolism of modern, linearly organized industrial societies consumes immense amounts of energy and resources while generating large quantities of emissions and waste. Even in times when many people must tighten their financial belts due to rising prices, consumption still far exceeds the capacities of natural ecosystems. This development is fueled by powerful narratives about what supposedly guarantees social progress: an economy that creates “value” at an exceeding rate and constantly increases its output by ensuring a continuous flow of new products and services. Acceleration, intensification and speed – these points of emphasis in modern narratives about progress and prosperity must be replaced by stories about a circular society that conserves resources. Deceleration, sufficiency, and longevity are more than just arbitrary sustainability strategies. They must become part of a new normality, an unquestioned purpose of economic and value-creating action.

**Implement now**

**New narratives for the National Circular Economy Strategy:**

Circular practices must become more visible in public discourse and a priority of political strategizing. The current efforts for a national circular economy strategy must critically evaluate the persistent narratives of unavoidable economic growth and competitiveness more closely and, in a participatory process, look for new success stories. Civic actors should form alliances and influence the BMUV as the lead institution for the national circular economy strategy accordingly.

**Start now**

**Introducing and standardizing holistic value creation indicators:**

As part of a collaborative and creative process initiated by the federal government together with actors from the sustainable economy and civil society as well as citizens’ representatives, a system of indicators must be developed that can measure circular value creation in its various aspects and effects. The aim here is to move away from a purely monetary value indicator and to measure value in a multi-dimensional and dynamic way. This process should take place parallel or at the latest subsequent to the development of the national circular economy strategy and lead to concrete standards or guidelines (such as the Ecodesign Directive).



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## II. STATUS QUO: FIELD OF RESEARCH & PRACTICE

Since the end of the 20th century, there has been growing awareness of the inability of global markets to respond appropriately to the largely self-inflicted ecological damage and social injustices. For decades, both researchers and climate policy protagonists have been voicing the need for a socio-ecological transformation of current systems of consumption and production, which is now also recognized by economic actors<sup>1</sup>. Currently, many political and economic interest groups are pinning their hopes on the concept of the circular economy, which aims to fundamentally change economic value creation processes and to minimize the consumption of natural resources and the destruction of nature. The principle of the circular economy envisions harmonized cycles of biological and technical materials: renewable natural resources are only consumed to the extent that they can be reproduced and/or compensated by nature and non-renewable resources (e.g., materials, components or products) are maintained for as long as possible.

However, critical analyses of circular economy approaches point out that issues of social and cultural sustainability, feasibility and social change are currently given too little consideration<sup>2</sup>.

In Western countries, the “Circular Economy” is mainly conceived as a project of ecological modernization that is primarily concerned with technological solutions and new business models that are intended to overcome the current limits to (economic) growth. A circular economy is intended to pave the way for new markets and new areas of economic development. There is no fundamental reexamination of the purpose and organization of economic activity<sup>3</sup>. A capitalist and market-compliant interpretation of progress and economic growth prevails<sup>4</sup>: a circular economy should enable the decoupling of economic growth and increasing resource consumption as well as reduce the negative ecological consequences of production and consumption. However, critical researchers believe that a successful decoupling of economic growth and increasing natural resource consumption is unlikely or even impossible to realize<sup>5</sup>.

1] s. World Economic Forum (2020).  
2] Kirchherr et al. (2018); Korhonen et al. (2018); Hofmann (2019).  
3] Bauwens et al. (2020); Hobson (2016); Korhonen et al. (2018a/b); Temesgen et al. (2021).  
4] Hobson & Lynch (2016); Valenzuela & Böhm (2017).  
5] Jackson (2016); Parrique et al. (2019).

Furthermore, well-founded research shows that rebound effects are not adequately addressed by current efficiency-focused approaches<sup>6</sup> and may even lead to contrary effects<sup>7</sup>.

One of the main criticisms is that the almost exclusive business focus of concepts of a circular economy which eclipses important social goals. This focus makes it easier to promote and adopt the concept in different business contexts. However, it also leads to contradictions and oversights in terms of social impact, social justice, and social participation<sup>8</sup>. The focus on economic value creation and technical innovation also fails to recognize the necessary fundamental socio-cultural changes, e.g., changing lifestyles and a more engaged citizenship<sup>9</sup>, although that scientists and practitioners consider cultural barriers to be major obstacles to a shift towards a circular economy<sup>10</sup>. Accordingly, there is a lack of wide-ranging participation that would include citizens and a heterogeneous group of actors for sustainable consumption and alternative forms of production and collaboration. The discourse lacks answers on how the circular economy could be socialized or how society could participate in a comprehensive transformation of the economy, from production systems to everyday consumption. The concept of the circular economy has the potential to become a comprehensive socio-ecological transformation program if these topics are consistently included, i.e., if a circular economy becomes a circular society.

6] Bocken & Short (2016); Hobson & Lynch (2016); Zink & Geyer (2017).  
7] Haupt & Hellweg (2019).  
8] e.g. in Calisto Friant et al. (2020); Corvellec et al. (2022); Geissdoerfer et al. (2017); Hobson & Lynch (2016).  
9] Calisto Friant et al. (2020); Jaeger-Erben & Hofmann (2019).  
10] Kirchherr et al. (2017).

II. STATUS QUO: FIELD OF RESEARCH AND PRACTICE  
// CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS

The roadmap participants introduced the concept “Circular Society” as an answer to these criticisms of the concept of circular economy. This concept is intended to emphasize discourses and approaches that go beyond technological and market-based solutions and define the transition to circularity as a profound socio-ecological transformation. The concept of the circular society formulates a vision for a sustainable future in which not only the current consumption and production systems are to be questioned and transformed. Rather, it also ties into further debates on alternative forms of value creation and social justice and creates a conceptual basis for socio-ecological transformation paths.

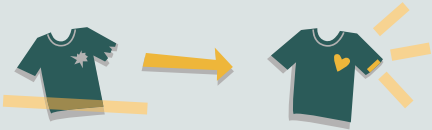
[ 02] Circular Society Principles (own illustration based on Hempel (2021))

8 PRINCIPLES OF A CIRCULAR SOCIETY<sup>11</sup>

In a circular society, the first step is to ask what is really needed. If there is a need or desire for goods, these are recycled and kept in circulation wherever possible. The aim is to live and do business in a way that is good for everyone involved and for nature. This can only be achieved if citizens, politicians, administration and companies work together. The illustrations show what else is needed to implement a circular society.

<sup>11]</sup> The Circular Society principles were developed in a co-creative and iterative process as part of a master's thesis (Hempel, 2021).

II. STATUS QUO: FIELD OF RESEARCH AND PRACTICE  
// CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS



Keep Resources in Use

*What if we used things for as long and as intensively as possible?*

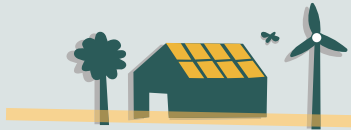
A circular society focuses on extending and maximizing the use of products and materials. The key strategies are repair, upgrade, reuse and sharing of resources. Only when this is no longer possible or sensible will products be refurbished, recycled or composted.



Normalise Sufficiency

*What if we all bought, consumed and owned less?*

A circular society offers services and goods that reduce the overall consumption of natural resources and energy: Post-materialism and solidary forms of care, production, use, and leisure become the norm. Sufficiency does not necessarily mean 'less', but 'enough' for all.



Build Resilience

*What if we lived in such a way that regeneration compensated for decay and degradation?*

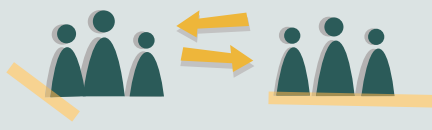
A circular society promotes resilience through regeneration and natural, socio-cultural, and market diversity. It uses energy and resources that are renewable and environmentally friendly. A circular society focuses on solutions that use local resources to meet the local needs of people and nature.



Re-define “Progress”

*What if we put quality of life and intact nature before economic profit?*

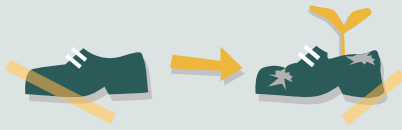
A circular society defines quality of life and ecological integrity as the ultimate goal of economic value creation. It introduces new indicators to assess progress and prosperity, continuously questioning and redefining the meaning of existing concepts such as work and prosperity.



Strengthen Cohesion and Cooperation

*What if we worked together across borders, disciplines and sectors?*

A circular society enables social innovation through co-creative processes and structures. Experimental spaces promote the testing of new forms of organisation and alternative models of production and consumption. The aim is to strengthen local action in global networks.



Design out Waste

*What if we designed things in such a way that they no longer have an “end of life”?*

A circular society understands waste, wastefulness and pollution as design flaws. The circular design approach is social, circular and eco-effective. A circular society develops solutions that create not only economic value, but also social and environmental value.



Transparency and Access

*What if we all had access to information, resources and opportunities for action?*

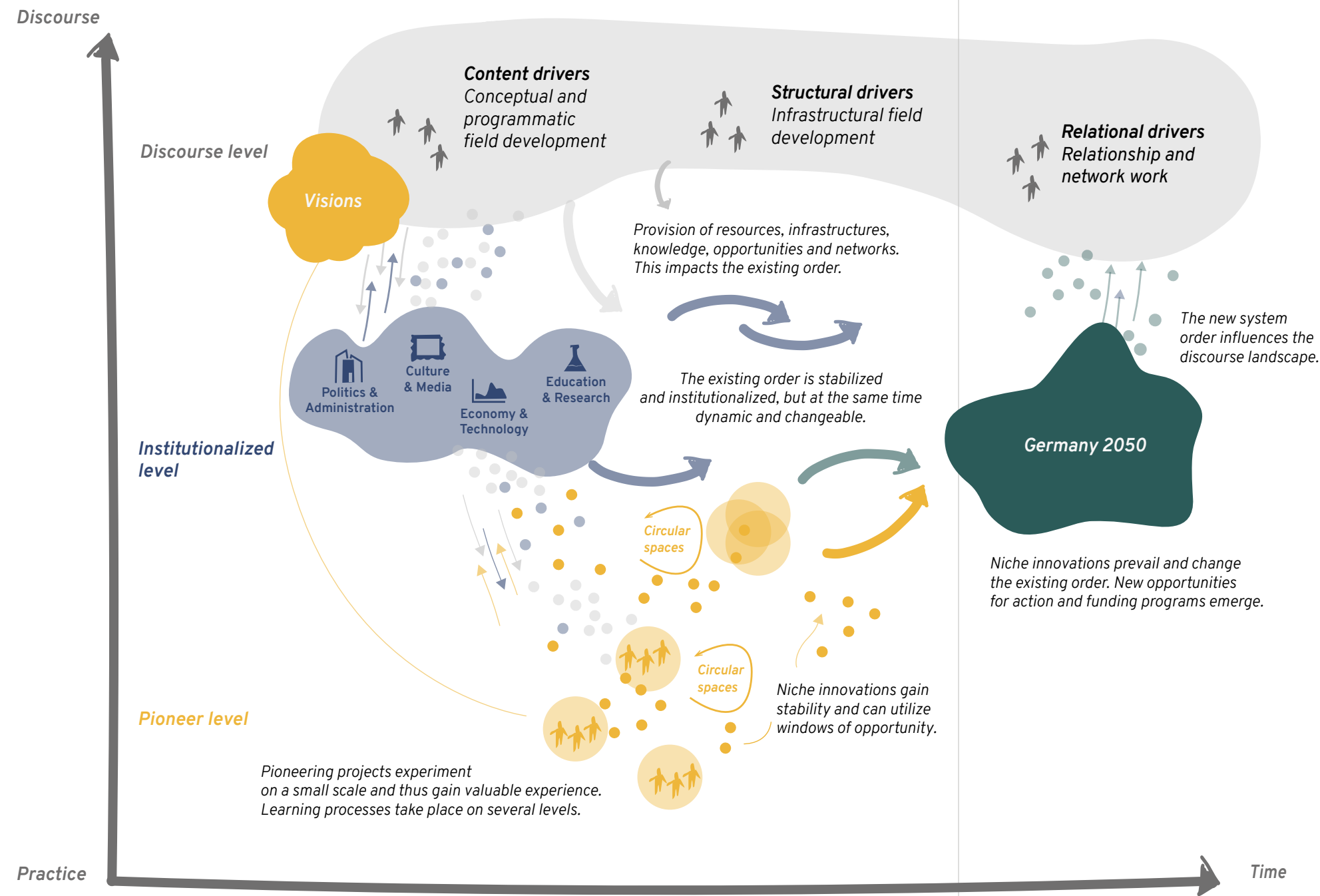
A circular society ensures equal access to information, resources and opportunities for all, creating possibilities for participation. Value chains are transparently structured, and benefits and costs are shared fairly.



Promote Circular Literacy

*What if we put a Circular Society into practice?*

A Circular Society promotes action oriented towards transformation by building circular literacy. Circular literacy includes attitudes, practical knowledge, and skills for stepwise action towards a circular society.



There are currently numerous approaches to the concept of a circular society. One common denominator is the idea that a transition to a circular economy is not possible without the commitment and participation of society and that a circular economy must be consistently geared towards social and ecological goals<sup>12</sup>. The approaches differ in their intensity with which they focus on aspects of social sustainability and the question of social reorganization<sup>13</sup>.

The discourse and practice landscape of the Circular Society in 2023 is described and visualized below (see Figure 3). This visual represents a snapshot that does not claim to be exhaustive. A selection of key players, programs and literature are listed as examples. Graphical elements are intended to illustrate the dynamic nature of the field and to show possible leverage points for intervening in the linear system at the level of discourse, institutions, and support of practice.

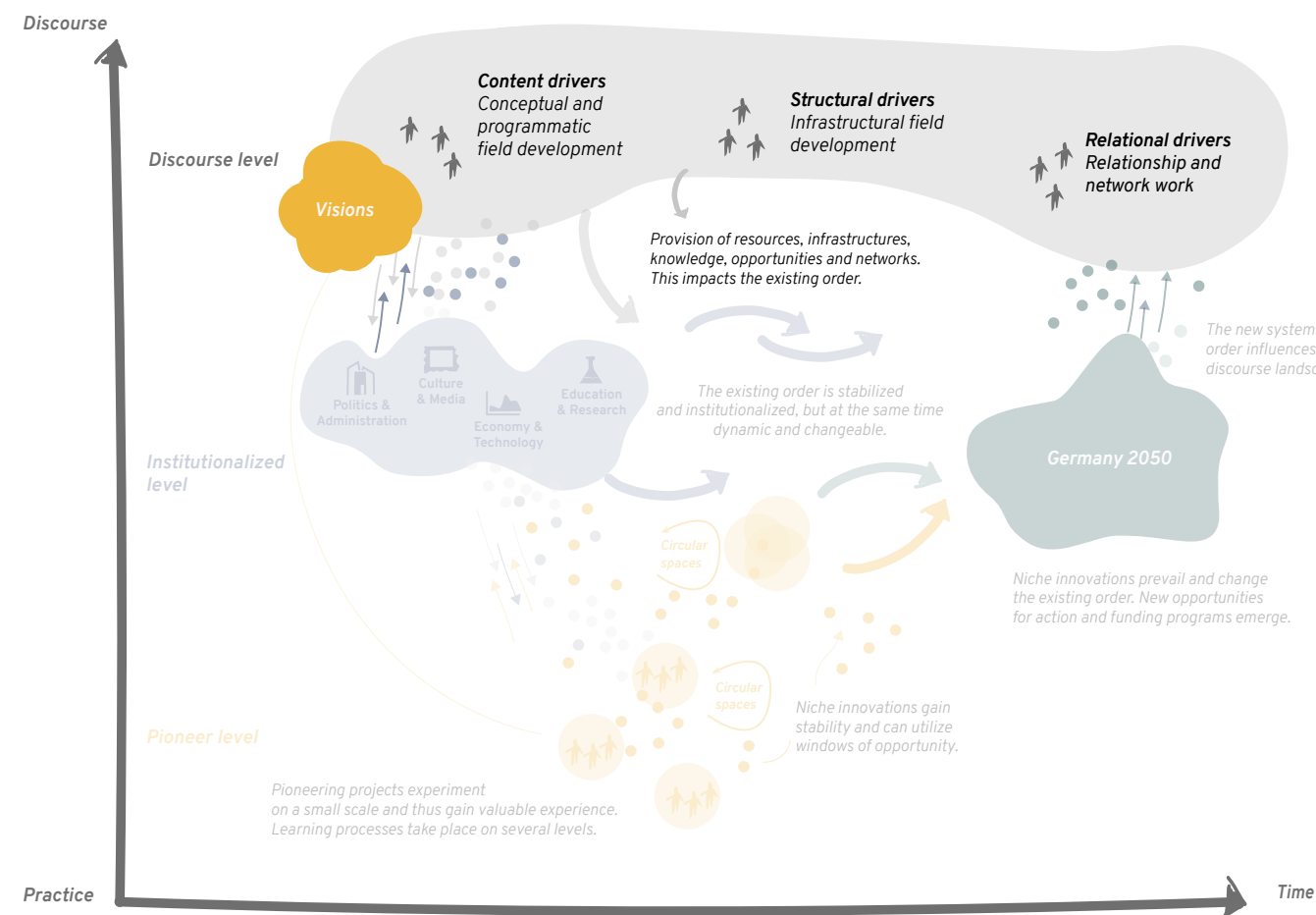
12] Jaeger-Erben et al. (2021)  
13] Calisto Friant et al. (2020)

[ 03 ] Circular Society Field Map (Own representation roughly based on the multi-level perspective according to Geels (2011))

II. STATUS QUO: FIELD OF RESEARCH AND PRACTICE  
// CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS

DISCOURSE LEVEL

The discourse participants drive the research and practice with regard to content, structure and relations. They (further) develop conceptual and programmatic foundations, create resources, infrastructures and opportunities, or carry out networking. By doing so they create frames of orientation as well as structures for action, and in some cases, they pioneer the implementation of the ideas of a circular society themselves.



[ 04 ] Circular Society Field Map – Discourse level (Own representation roughly based on the multi-level perspective according to Geels (2011))

II. STATUS QUO: FIELD OF RESEARCH AND PRACTICE  
// CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS

// CONTENT DRIVERS

On the one hand, the circular society discourse refers to the (historical) theoretical roots of the circular economy (such as systems thinking, spaceship earth economics, performance economy) and, on the other, it refers to debates on alternative economies, social innovation, social justice and diversity. Accordingly, a large number of publications contributes indirectly to the evolution of the concept of a circular society. Since 2018, however, there has been an increasing number of publications by international academics and practitioners directly related to the concept of the “Circular Society”. A selection of these circular society contributions is listed below.

SCIENTIFIC PUBLICATIONS:

Böhm, S., Ho, C. H., Holmes, H., Manolchev, C., Rödl, M., & Spekkink, W. (2023). 14 Circular society activism: prefigurative communities in everyday Circular Economy action. In Allen T.A. et al. (Eds.) Handbook of the Circular Economy: Transitions and Transformation (pp. 241-259). Walter de Gruyter GmbH & Co KG. <http://dx.doi.org/10.1515/9783110723373-017>

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### // CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS

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## II. STATUS QUO: FIELD OF RESEARCH AND PRACTICE

### // CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS

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<https://ddc.dk/wp-content/uploads/2021/10/creative-denmark-white-paper-designing-the-irresistible-circular-society-small.pdf>

II. STATUS QUO: FIELD OF RESEARCH AND PRACTICE  
// CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS

LECTURES:

Bloxxhub (2021).  
Designing the Irresistible Circular Society,  
[https://youtube.com/playlist?list=PLab32e77XDC-pPIQhjcqZt2aV\\_SdRiY52&-si=6SSNIT9PjctF8oca](https://youtube.com/playlist?list=PLab32e77XDC-pPIQhjcqZt2aV_SdRiY52&-si=6SSNIT9PjctF8oca)

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II. STATUS QUO: FIELD OF RESEARCH AND PRACTICE  
// CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS

// STRUCTURAL DRIVERS

Programs that promote the research and testing of a circular society are still rare in the German-speaking funding landscape. Nevertheless, in recent years there have been an increasing number of innovative funding programs and scholarships that provide structural support for the development of this young field of discourse and practice.

PROGRAMS:

German Federal Environmental Foundation (DBU) //  
[#DBUcironomy - The DBU initiative for the economy and society of the future:](#)  
Circular Economy funding priority (ongoing).

German Federal Environmental Foundation (DBU) //  
[Besser wirtschaften und leben in Kreisläufen – Transformationspotentiale der Circular Economy:](#) Interdisciplinary college of the doctoral scholarship programme (completed 2022).

Hans Sauer Foundation & BTU Cottbus-Senftenberg //  
[Circular Society Kolleg:](#) Interdisciplinary college for the promotion of Master's students.

Hans Sauer Foundation //  
[Understanding Circularity:](#) Circular Society & Circular Literacy funding programme (completed 2021).

Hans Sauer Foundation //  
[Circular Cities. Designing Urban Communities of Tomorrow:](#) The Hans Sauer Prize 2021 was looking for concepts for urban circularity (completed).

Hans Sauer Foundation //  
[Designing Circularity in the Built Environment. A German-Dutch Competition:](#) The Hans Sauer Prize 2020 honoured German and Dutch projects that promote circularity in the built environment (completed).

Hans Sauer Foundation //  
[Designing Circular Society:](#) The Hans Sauer Prize 2019 honoured places, products, processes and concepts for a circular society (completed).

II. STATUS QUO: FIELD OF RESEARCH AND PRACTICE  
// CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS

// RELATIONAL DRIVERS

In recent years, an increasing number of regional, national and international alliances and communities have been formed that use various (event) formats to network and build relationships for a circular society.

The following is an overview:

PROGRAMS:

German Federal Environmental Foundation (DBU) // Symposium 2020: From Circular Economy to Circular Society? Paths to a circular economy: The symposium brought together representatives from business, science and civil society. Among other things, they discussed the question of what role the social dimension plays in circularity and how technical and social innovations can be developed together.

Utrecht University // Second Utrecht Degrowth Symposium: From Circular Economy to Circular Society 2020: Over 1500 people from academia and practice took part in the online event. Topics of discussion included the current challenges of the circular economy concept and the need to go beyond market-based circular solutions.

Hans Sauer Foundation & TU Berlin // Circular Society Forum 2021: As a transdisciplinary, digital conference with international contributions from academia and practice, the forum comprised more than 600 participants, including key players involved in the circular economy, its critique and/or the idea of a circular society.

Hans Sauer Foundation & BTU Cottbus-Senftenberg // Circular Society Forum 2022: Over two days, the second Circular Society Forum centred on the key topics of Circular Citizens & Communities, Open Source & Open Design, Collaborative Value Creation and Circular Literacy.

II. STATUS QUO: FIELD OF RESEARCH AND PRACTICE  
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ALLIANCES:

Danish Design Centre // The Mission: Designing Our Irresistible Circular Society: In Denmark, 30 experts from various sectors have developed measures for a circular society. Further initiatives are taking place as part of the New European Bauhaus lighthouse project.

Hans Sauer Foundation & BTU Cottbus-Senftenberg // Circular Society Platform: The platform hosts the digital parts of the Circular Society forums and also enables the exchange of results, experiences and recommendations within the Circular Society community.

ProjectTogether // Circular Futures: ProjectTogether promotes innovators and transformative alliances for circularity through events, projects and incubator programs.

Wyss Academy for Nature // Circular Societies: Wyss Academy for Nature promotes the development of global alliances for a circular society.

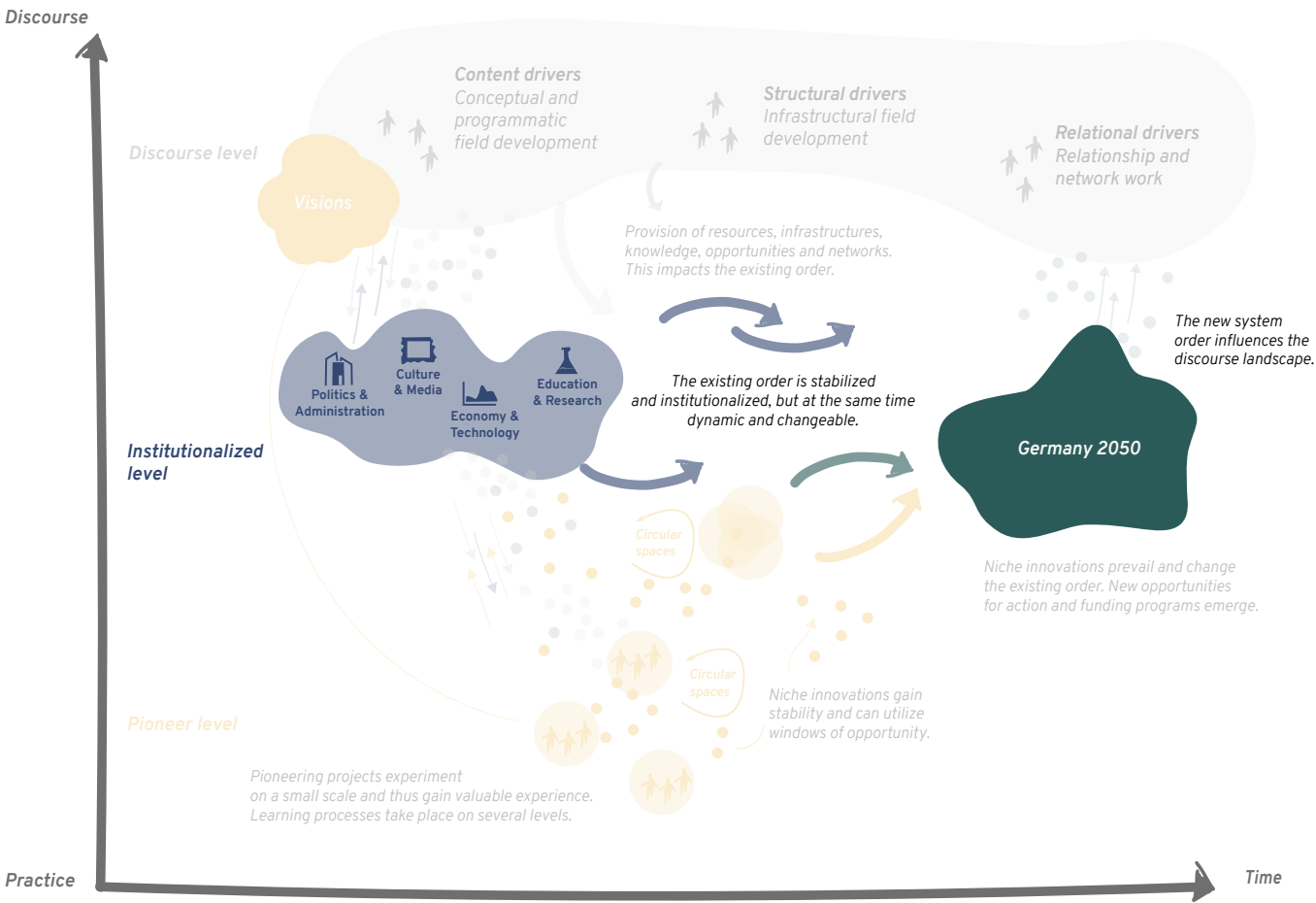
Circular Munich // An open project: Circular Munich networks stakeholders for a transition towards a circular city.

Circular Berlin // Reshaping Berlin towards a circular city: As a non-profit organization, Circular Berlin contributes to shaping the local circular economy agenda.

ICLEI Europe // Circular Cities Declaration: With the declaration, cities and regions commit to using the levers available to them to implement a circular economy. The declaration was developed by a broad partnership of European stakeholders, including cities, international organizations, think tanks, financial institutions, technical experts and regional cooperation partnerships.

INSTITUTIONALIZED LEVEL

The discursive and political field surrounding circularity issues has gained considerable importance in recent years. Numerous actors are now pursuing circular programs, focusing primarily on economic and technological innovations and running, for example, corporate, municipal, or national policies with a view to transforming into a circular economy. These include far-reaching strategies that – as the European Circular Economy Action Plan shows – envision a comprehensive re-regulation of production and distribution processes.



[ 05 ] Circular Society Field Map - Institutionalized level (Own representation roughly based on the multi-level perspective according to Geels (2011))

At European level, the circular economy is either the direct subject of economic policy programs (Circular Economy Action Plan) or part of larger industrial policy or innovation programs (European Industrial Strategy, Green Deal, New Bauhaus). National circularity policies are being pursued or are currently being drawn up in numerous (primarily European) countries, including Germany, where a National Circular Economy Strategy is being developed, accompanied by a participation format, with links to the German government's strategy on raw materials. At the legislative regulatory level, there are also various activities at European level (Eco-Design Directive, Digital Product Passports), which then must be transposed into national law. A standardization campaign by DIN e. V. (German Standardization Roadmap Circular Economy) aimed at circular economy topics is also of cross-sectoral and supra-regional relevance.

Elements of circularity have also entered national innovation policy. Circularity is now, to some extent, reflected in the as missions to be accomplished in the coming years (High-Tech Strategy 2025). Local and regional economic policy launched initiatives with a focus on circularity making (Circular Valley Wuppertal, Circular Value Creation NRW), and there are individual endeavors by German municipalities aiming to become pioneering circular cities (e.g. Freiburg, Heidelberg and Berlin).

Scientific consulting firmly anchors the topic in the work of various committees (Resource Commission at the German Environment Agency, German Advisory Council on the Environment, German Council for Sustainable Development) and repeatedly emphasizes the potential of circular economy approaches.

The Circular Economy Initiative Germany, an association of stakeholders from politics, business, science, and civil society at national level, is working and publishing on the topic and has produced the "Circular Economy Roadmap for Germany". Similarly, the network CEWI (Circular Economy as an Innovation Driver for a Climate-Neutral & Resource-Efficient Economy), set its focus on the automotive and building sectors as a similarly structured association.

At the level of national trade and industry associations (e.g. BDI, VDMA, VCI, VDA, BDE, DIHK), there are programs and initiatives that vary in scope and intentions depending on the respective logics and focal points of the associations. What they have in common is a circular economy perspective that emphasizes the economic potential – from the macroeconomic perspective to the industry and company level.

**II. STATUS QUO: FIELD OF RESEARCH AND PRACTICE**  
// CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS

Sustainability-oriented business associations such as the Bundesverband Nachhaltige Wirtschaft are also active in this field and are working on programs that focus less on efficiency and more on sustainability. Closely, and in some cases directly, related to the activities of the trade associations is the fact that all major international commercial management and political consulting firms operating in Germany (Deloitte, McKinsey, BCG, PWC, EY, KPMG, Bain) are involved in the circular economy and built entire departments dedicated to the corresponding topics.

The activities of the scientific and research community are most diverse and can hardly be presented exhaustively here. At the higher education and university level, numerous individuals and institutions are involved in research on circularity. This ranges from the natural and technical sciences to economic research and design to the social sciences. Particularly interesting in this context are transdisciplinary and transformative-oriented approaches in sustainability and transformation research, which explores new methodological approaches. In non-university research, numerous institutions doing ecological and sustainability-oriented research are active in this field (e.g. the Wuppertal Institute) as well as some of the major German research associations (namely the Fraunhofer-Gesellschaft and the Helmholtz and Leibniz Associations). The topic is also anchored in various areas of research funding, particularly through programs by the German Federal Environmental Foundation (DBU). Ministerial research departments like the Federal Environment Agency's (UBA) have also been doing practical studies on circularity topics for years. At the level of scientific publications, there are now also numerous international journals in which – also across different disciplines – with regular publications on the topic (e.g. Resources, Conservation and Recycling, Journal of Cleaner Production, Sustainability).

Finally, as far as the (organized) civil society is concerned, it is particularly important to mention major national environmental associations and organizations (WWF, Greenpeace, NABU, BUND), all of which consistently engage with circularity, highlight the environmental protection and sustainability potentials of the topic, and strive to anchor it in the current political discourse. Particularly noteworthy is the recently completed project “Modell Deutschland Circular Economy” by the WWF in cooperation with various scientific partners. Furthermore, the Ellen MacArthur Foundation has been working on circular economy issues for several years, gathering significant resonance and influencing public discourse and policies on an international level.

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At the level of national foundations, there are currently few actors and little activity, with notable exceptions including the Hans Sauer Foundation and foundations of political parties such as the Friedrich-Ebert and Heinrich-Böll Foundations, as well as the German Federal Environmental Foundation (Deutsche Bundesstiftung Umwelt). Also, the C2C NGO has dedicated itself to the development and dissemination of the Cradle-to-Cradle approach.

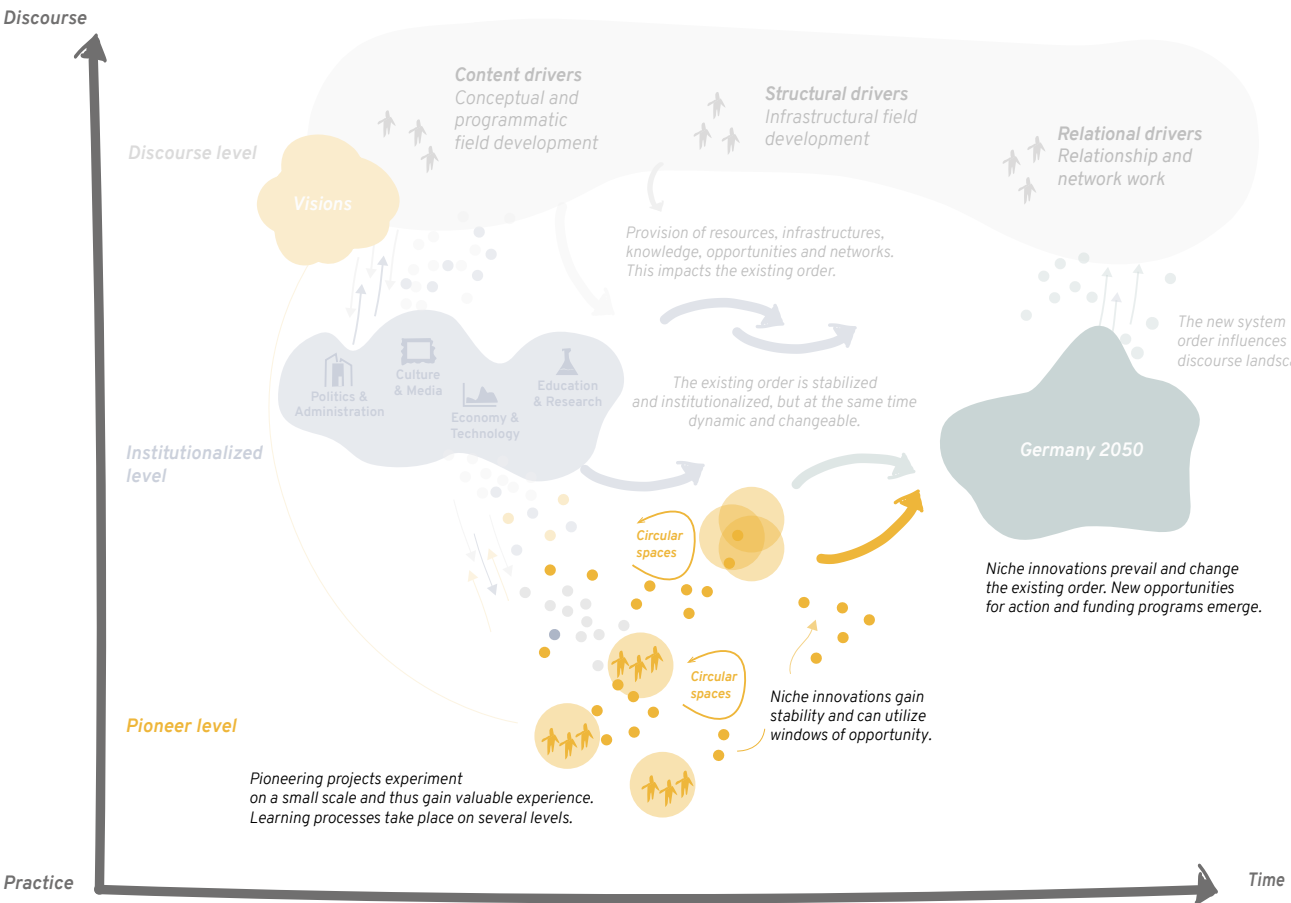
These programs and activities represent an important space of reference and exchange for a circular society. These respective spaces need to be critically examined with regard to their potential for socio-ecological transformation as well as expanded to incorporate and operate according to principles of a circular society.



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PIONEER LEVEL

Pioneers are experimenting on a small scale and in doing so are gaining valuable experience for implementing a circular society in mainstream practice. If niche innovations gain stability and windows of opportunity open, they can contribute to the socio-ecological transformation of production and consumption systems. While pioneers in the field of the circular economy – such as the Ellen MacArthur Foundation, the Cradle to Cradle NGO or innovative companies with circular business models – have become increasingly institutionalized, the circular society is still largely characterized by discourse (especially in the sciences, foundations and networks; see above) and by niche innovations in practice. Civic actors in particular act as social innovators for a circular society – often with an educational mission and a strong focus on participation. Finally, cultural and educational actors are also experimenting with circular society approaches. A selection of projects and initiatives can be found below:



[ 06 ] Circular Society Field Map – Pioneer level (Own representation roughly based on the multi-level perspective according to Geels (2011))

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// CIVIC & SOCIAL INNOVATORS

- [Haus der Materialisierung / Initiative Haus der Statistik](#): This lighthouse project brings together a repair café, food distributors, workshops for self-help and project work, cargo bike hires, a used material market and a rental shop. It is carried out by an association of various initiatives and institutions that research, practice, and work on the topics of sustainable management and climate-friendly resource use.
- [Kunststoffe e.V.](#): The redistribution center for waste and used materials provides used materials as a sustainable resource for artists and designers, for learners and educators, as well as for the resource-conscious public at low cost. The center also offers rental, repair, and educational services.
- [Kunststoffschmiede / Konglomerat e.V.](#), [Verbund Offener Werkstätten](#) and [Repair Cafés](#): Free hands-on courses on plastic recycling, repair and upcycling offered by open workshops, repair cafés and lighthouse projects.
- [Mifactori](#): The design studio develops products, methods, campaigns, and educational programs for a sustainable circular economy.
- [Open Knowledge Foundation](#): The organization is committed to open knowledge and democratic participation. To this end, the organization develops technologies and tools to strengthen civil society.
- [Right to Repair Europe](#): The coalition represents over 100 organizations from 21 European countries, including environmental NGOs and community repair groups, social economy actors, spare parts dealers, self-repairers, repair and refurbishment companies and all citizens who want to stand up for their right to repair.
- [Upcyclingbörse Hannover / Glocksee Bauhaus e.V.](#): The organization offers a space for creative and artistic exploration of the topics of circular society and the climate crisis. This includes educational programs for schools, multipliers and companies, design competitions, open workshops, art and neighborhood projects.
- [Zukunftshof Wien / a.o. Genossenschaft Zukunftshof eG](#): Through the local production, processing and marketing of agricultural products, the farm should not only be perceived as a lighthouse project for sustainable urban agriculture, but also demonstrate economically viable approaches that support both the ecological and economic resilience of the region and strengthen social cohesion.



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// CIRCULAR SOCIETY: DISCOURSES, PROGRAMS AND PLAYERS

// CULTURE & MEDIA

- [\*zukunftsgeraeusche GbR / BHROX bauhaus reuse\*](#): BHROX bauhaus reuse is a transdisciplinary center and participatory urban laboratory for research, education, best-practice projects and performative practice on topics of circularity, sustainable urban development, cultural practices in urban space and much more.
- [\*Good Impact / Article in the circular economy section\*](#): The magazine is committed to a sustainable society and reports on topics such as renewable energies, climate protection, social justice, and a sustainable circular economy. Constructive journalism is used to highlight solutions and provide impetus for active participation.
- [\*treibgut\*](#): The material initiative is a redistribution center for all kinds of materials that are intercepted, collected, processed and redistributed before being disposed of. The majority of the materials finds a new use in the cultural sector - for example in exhibitions, stage sets and art installations.

// EDUCATION & RESEARCH

- [\*Circular Community / Trier University of Applied Sciences\*](#): The aim of this innovative community is to empower students to act in a circular way and thus promote circular literacy on campus. The students have adopted the project and are now working on various topics in self-organized working groups.
- [\*Climate Competence Camp – Vision “Circular Society” / IBBF & UfU\*](#): The free training program for HR developers, sustainability managers and teachers at vocational schools in Berlin provides impulses and insights into the practice of a circular society. In addition, participants are given time, space, and support in developing their own working, teaching, and learning materials to strengthen the circular society in their professional context.

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### III. CO-DESIGN PROCESS IN THE ROADMAP PROJECT

The “Roadmap to a Circular Society” project aims to generate new knowledge on transformation and knowledge on future systems of circularity (target knowledge) as well as strategic impetus for change towards a circular society. One of the project objectives is to further develop the concept of the circular society in terms of content, agenda and strategy and to identify possible transformation paths. In other words, the project is undertaking something akin to “field building” for this emerging field of transformation<sup>1</sup> and simultaneously attempts to develop a “road map” and policy recommendations for the implementation of the circular society concept at an early stage of development.

A transdisciplinary approach based on collaborative design was chosen for this explorative way of production of insights on goals and transformation and a process and method design was developed in line with this approach. This places the project in the context of transformative research combining science, practice and socially engaged agendas<sup>2</sup>. Thereby, heterogeneous bodies of knowledge and experience are brought together and utilized for transformation processes. The focus was on the potential of design-orientated approaches. With their combination of research-based and creative work, the moderation of multi-actor processes, prototyping elements and their application orientation, these design approaches can be a valuable component in and addition to transdisciplinary and transformative research<sup>3</sup>. Design approaches are said to have “great potential to promote the systemic change, creativity, collaboration, empathy and empowerment necessary for sustainable change”<sup>4</sup>. This is particularly true for design approaches such as participatory design and social design, which offer ways of collaborative knowledge production and social learning processes<sup>5</sup>.

However, design – both as an academic discipline and as a profession – only deals with processes within niches of social change, such as transformation design<sup>6</sup>. And even then, both design theory and practice rarely refer to strands of knowledge from the social sciences, theories of social change or current research on transformation processes.

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1] Farnham (2020).  
2] Lawrence et al. (2022).  
3] Gonera & Papst (2019); Franklin (2022).  
4] Bertella et al. (2021), p.1, own translation.  
5] Bijl-Brouwer et al. (2021).  
6] Prendeville & Koria (2022).

Hence, harnessing the above-mentioned potential of design is limited by epistemological and -conceptual gaps, which in turn reinforce the prevalent focus on quick (product and service) solutions and the existing relationships to the current system of consumer society with its rapid product innovation cycles<sup>7</sup>.

If the combination of system, transformation and target knowledge is of central importance for transdisciplinary research<sup>8</sup> then the strength of science and research lies in generating valid systematic knowledge. Design approaches, however, can offer competence with regard to the other two types of knowledge: design combines open and creative moments of knowledge production with those of synthesizing, thereby enabling iterative adaptations.

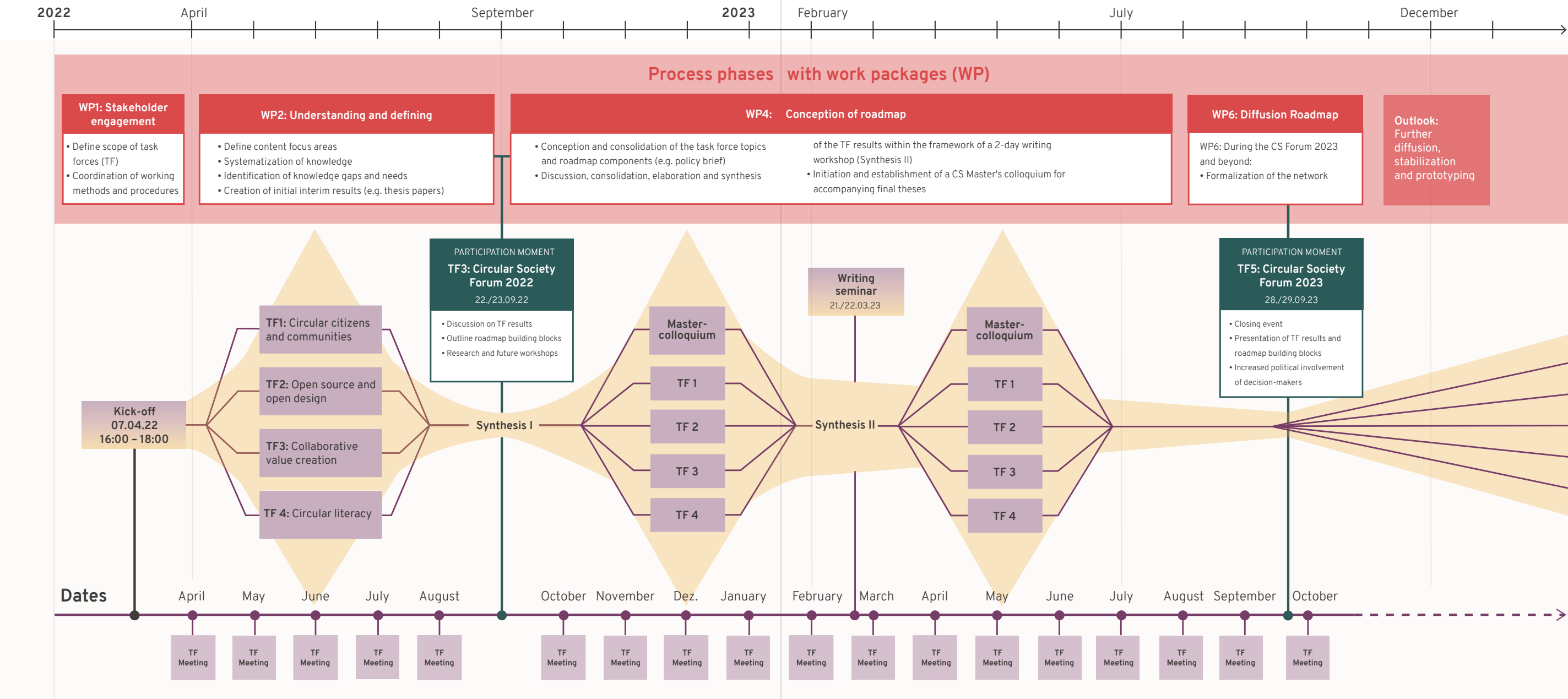
Design can help to produce hybrid forms of knowledge and qualify them collaboratively, which can support the open character of transdisciplinary projects if, for example, they are understood and organized as collective processes of searching sustainable futures<sup>9</sup>.

For those reasons, the project utilized both scientific approaches and design approaches. The co-design process of the roadmap project (see Figure 6) envisaged the coming-together of a group of around 40 practitioners, researchers, and pioneers over a period of around 16 months in a moderated, co-creative process. The main content-related work was carried out in groups along the line of four topics, while cross-group discussion, co-production and iteration emphasized larger digital and co-present formats (“synthesis”). The process was supplemented by moments of “opening up” to an interested audience (“Circular Society Forums”).

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7] Seitz (2020).  
8] Hadorn et al. (2008).  
9] Deserti et al. (2022).

Timeline and work packages: Roadmap to a circular society



[ 07 ] Timeline and work packages: Roadmap to a circular society (own illustration)

**Work package 1: Stakeholder Engagement**

The first phase was a structured process of selecting and approaching participants between February and April 2022. Building on preliminary work and prior knowledge of the project team, research was conducted with a focus on conceptual and practical projects in German-speaking countries. After various iterations a group of around 40 people was selected. Stakeholder engagement continued as the project progressed so that a total of 42 people (including the project team from the Hans Sauer Foundation and BTU Cottbus) were involved in the roadmap project.

**Work package 2: Understanding and Defining**

On 7 April 2022, the co-design process entered its first active group work phase with a kick-off event including the identified stakeholders from science, politics, business, and civil society. During this phase, four teams with different thematic focuses were formed and their working methods were consolidated: “Circular Citizens & Communities”, “Open Design and Open Source”, “Collaborative Value Creation” and “Circular Literacy”. Numerous team meetings followed, supplemented by working phases in subgroups. An attempt was made to cater to the different requirements and capacities of the participants and to offer various opportunities for participation as well as financial support (as required). In this way different levels of participation were made possible.

**Work package 3: Circular Society Forum 2022**

The project team organized a second Circular Society Forum around eight months after the start of the project with the occasional involvement of participants. The forum took place digitally on 22 and 23 September 2022 and attracted a total of 250 event visitors. Talks and presentations from members of the circular society community and the roadmap team discussed as part of a two-day lecture and workshop program. The forum was the first instance where participation in the roadmap process was opened to external experts and researchers. The conference presentations can be viewed at [www.circularsociety.de](http://www.circularsociety.de) and on the [Hans Sauer Foundation's YouTube channel](#).

**Work package 4: Roadmap Conception**

In October 2022, the project entered the phase of “roadmap conception”. In this phase, the four working groups focused on outlining the products of the roadmap project within their respective thematic priorities. During this phase – in the spirit of an adaptive and open-ended process – variances in the group work and the respective working methods began to emerge: it became clear that the thematic complexes addressed by the teams are characterized by strong internal logics, such as

varying stakeholder constellations, sectoral connections, and specific expertise. In practice, this led to adjustments in both the working methods and product strategies, as outlined in the reports of the individual teams below.

In this working phase, the project team offered the participants a two-day, in-person writing seminar in Berlin Schwanenwerder on 21 and 22 February 2023. The aim was to discuss, consolidate and summarize the results of the working groups and to set a stage for the cross-working group products (e.g. demands for political action). A total of 25 people took part in the writing workshop, which corresponds to around two thirds of those involved in the project.

**Work package 5&6: Circular Society Forum 2023 and Diffusion Roadmap**

Following the writing workshop, the project entered its final phase. The work presented and discussed in the writing workshop was iterated, in some cases discarded or supplemented with new product ideas. At the same time, preparations began for the final work phase which included the organization of a Circular Society Forum Berlin. At the same time, the project team began to synthesize results across the groups, including the creation of a catalogue of demands on policy makers. At the Circular Society Forum 2023 the work was presented to an expert audience from science and practice.

Overall, the process described proved to be a suitable means of bringing together existing heterogeneous bodies of knowledge that were formerly divided into sectors and utilizing these bodies of knowledge for both conceptual and strategic-transformative work. The transdisciplinary composition of the group, featuring perspectives from research and practice, the creative, artistic and activist community, proved to be extremely suitable for exploration in an early phase of concept development. This was achieved in particular through the consistent equal treatment of the different types and forms of knowledge. The fact that the participants (and the project as a whole) were not restricted to results and products, such as those “required” by traditional academic practice (papers, monographs, etc.), can also be seen as an important contributor to the success as it significantly promoted cross-sectoral field-building work.



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## **IV. FOCUS TOPICS**

A) CIRCULAR CITIZENS  
& COMMUNITIES –  
AND THEIR CIRCULAR  
SPACES AND PRACTICES

# // Circular Citizens & Communities - and their circular spaces and practices

## PROCESS

### // Co-design in Team 1

The central aim of Team 1 was to analyze circular communities, further develop a concept of “circular citizens” and make recommendations for inclusive and participation-oriented circular governance. The focus was on both the promotion and stabilization of social and grassroots innovations (such as repair or do-it-yourself initiatives) as well as the creation of conditions for personal commitment, inclusion, and participation in a circular society.

Team 1 met in regular intervals of 4-6 weeks for online workshops. Their work method incorporated reflection, discussion, analysis of empirical examples. They further worked on developing tools for the presentation of results. Key results were recorded on Miro boards.

Over the course of these analyses and discussions, the thematic focus shifted to circular spaces and practices through which circular communities are created. In several iterations the team collected and clustered examples of social practices and spaces for circular behavior. In consultation with other teams a template was developed to describe such spaces and practices with the purpose of accurately and consistently analyzing empirical examples. The aim was to identify the spatial, social, institutional, and material prerequisites for circular action and, on the basis of those prerequisites, to identify ways of promoting, stabilizing and disseminating circular places, for example.

In the further process, profiles of examples of circular spaces were, to better understand the characteristics and prerequisites of circular spaces and practices and to be able to grasp their great variety. The aim was to identify how these spaces are created and what role they play in a circular everyday life and a circular society. In order to summarize the findings and analyses of the working group, stories from the spaces are told below using a heterogeneous range of (potential) circular spaces.

Requirements for action 6 and 7 (see above) were derived from these analytical steps.

## Team members

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- Johannes Staudt (TU Munich)
- Prof Dr Gerald Beck (Munich University of Applied Sciences)
- Marlene Eimterbäumer (Osnabrück University of Applied Sciences)
- Katharina Pollich (TU Munich)
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- Tom Hansing (anstiftung)

## Team lead

- Prof Dr Melanie Jaeger-Erben  
(BTU Cottbus-Senftenberg)

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

1. WHY CIRCULAR CITIZENS & COMMUNITIES?  
// The need for communities, practices, and spaces for a circular society.

Regardless of whether a circular economy is understood in a narrow sense, i.e., primarily as a business model innovation, or as a far-reaching reorganization of consumption and production systems: The major challenge in a circular economy, e.g., in circular production and consumption, is collaboration. To minimize the consumption of goods, resources, and materials and to use them for as long as possible, requires complex and multi-faceted coordination and interaction processes. This in turn requires cooperative action to converge towards an overarching goal that at least partially overrides individual goals. Otherwise, cycles of value creation and value retention can neither be established nor maintained. A circular economy is above all a task that must be solved collectively, and this applies especially to a circular society. Communities and collaborative action not only have a functional benefit for circular value creation. A circular society is primarily understood as a bottom-up movement that is driven particularly by the emergence and spread of so-called social or grassroots innovations (see also the field map in Chapter III).

One example from this spectrum is the repair movement, i.e., the increasing spread of local repair initiatives and their supra-regional networking in Central Europe since around 2009. The work of these repair initiatives consists primarily of creating a social space for regular open meetings in which broken items brought in by guests are repaired together. The aim is not only to preserve objects but also to empower people to repair them and to develop collective self-efficacy in the realization of resource conservation and alternative consumption. In addition, there are supra-regional networks such as the “Netzwerk Reparatur-Initiativen” in Germany or “Stichting Repair Café” in the Netherlands, which offer networking platforms, start-up support and legal advice, but also lobby for social dissemination and institutionalization of repair at the interface between civil society and politics. This example shows the main reasons why it is important to focus on “circular citizens” and “circular communities”: repair initiatives are both at the core of the repair movement and the central place or nucleus of the broader social transformation beyond that. This is where spaces are created in which circular action takes place, is adopted and further developed. It is a core concern of the repair movement to strengthen these places and at the same time to use them to demonstrate how community repair and repair itself can change society.

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

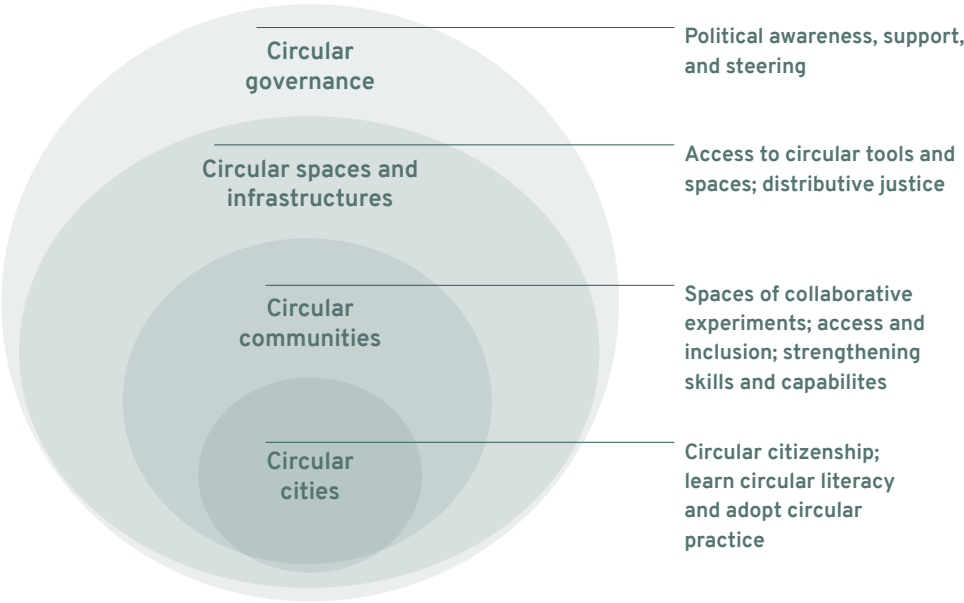
However, it is not the physical space that is significant here, but rather the social space that is created through collective action, cooperation, social interaction, and a kind of shared identity – namely, the circular community. At the same time, such communities and communities of similar practices promote the emergence and spread of new social roles and identities, which we refer to as circular citizens. For “circular citizens” circular communities can be important points of reference and places of learning. However, the establishment of circular practices in the everyday lives of circular citizens, i.e., the transfer of (newly acquired) skills into everyday life and household management, is central to our analysis.

A circular society is dependent on both circular communities and circular citizens. Without the everyday and large-scale implementation of circular practices across society a comprehensive transformation of production and supply systems cannot take place. However, mobilizing circular citizenship and creating places for the learning of skills requires inclusive and accessible circular communities and spaces that not only impart know-how but also provide tools and infrastructure.

As the following illustration shows, these various elements must be supported by circular governance that creates the appropriate political and structural framework. Because – to return to the example of the repair movement – we are currently still living in a “culture of non-repair”<sup>1</sup>. Private or do-it-yourself-repair is made more difficult not only by the high costs of repair in comparison to buying new (financially, but also in terms of time) and the limited accessibility of spare parts, but also because do-it-yourself-repair operates in a legal grey area.

1] Jaeger-Erben et al. (2021).

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES



[ 08 ] Circular governance (own illustration)

Against this background, the central concern of Team 1 was to develop strategies and recommendations for inclusive and participation-oriented circular governance through the analysis of circular communities and the further development of a concept of the circular citizen. The focus here lay on mobilizing and stabilizing social and grassroots innovations (such as repair or do-it-yourself initiatives) as well as creating the conditions for personal commitment, inclusion, and participation in the circular society. As further explained below, in the course of the collaborative work the focus was increasingly placed on the circular spaces and practices in which circular communities are created and in which circular citizens participate.

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

2. WHAT ARE CIRCULAR CITIZENS & COMMUNITIES?  
WHAT ARE CIRCULAR SPACES AND PRACTICES?  
// An exploration in profiles

As already indicated above, we understand **circular communities as social contexts for circular behavior** through **cooperation and interaction**. It is not strictly necessary for the community to consist of permanent members nor for their activity to be analog or concurrent. Circular communities can be both open workshops with a core of long-term members and repair initiatives with changing helpers and fluctuating guests, as well as virtual communities merely meeting in online forums or sharing videos with DIY instructions. However, as the term community is more associated with the idea of a fixed group with fixed roles and less with its performative aspects (collective action), the team decided to instead focus on the spaces in which circular action takes place.

**We understand circular spaces as socio-spatial-material contexts in which a physical or virtual place equipped in a certain way and that both enables circular action and is itself produced through circular action.** Our understanding of circular spaces thus brings together static elements (presence and equipment of a physical or virtual place) and performative elements (action). The following profiles present two examples of circular spaces and illustrate their different characteristics and requirements. The aim of the profiles is to better understand the characteristics and prerequisites of the spaces and to help defining the broad spectrum of possible spaces.

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

Profile: Circular spaces // “for free” corner

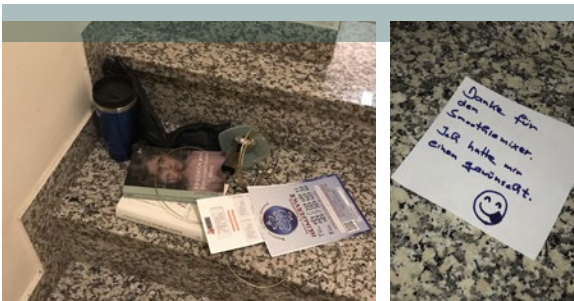
CATEGORY: Private      RELATED SPACES: Hallway

DESCRIPTION

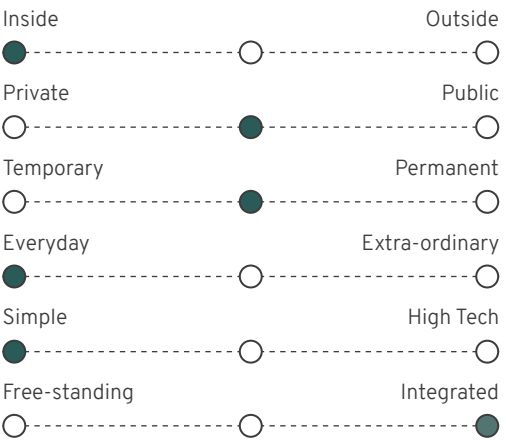
Corner in semi-public space  
(entrance area, hallway)

SIZE (from - to)

Area: 1-3 m<sup>2</sup>  
Persons: House community



[ 09, 10, 11, 12 ] “for free” corners (Photos: Johannes Staudt)



SUITABLE FOR THE FOLLOWING PRACTICES

Primary:

- Pass on
- Reuse

Secondary:

- Communicate

ACCESSIBILITY (spatial)

- Semi-public

ACCESSIBILITY (temporal)

- Mostly 0h - 24h

FORM OF ORGANIZATION

- House community

USERS

- Tenants, apartment owners

OPERATOR

- House community

FURNISHINGS

- Steps
- Area
- Corner

REQUIREMENTS

- Dry
- Visible
- Not in the way

COSTS

- Free of charge
- Minimal space requirement

POPULARITY

- Probably quite common

GOOD TO KNOW

- Often popular with younger residents

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

Profile: Circular spaces // Garages

CATEGORY: Private      RELATED SPACES: Street

DESCRIPTION

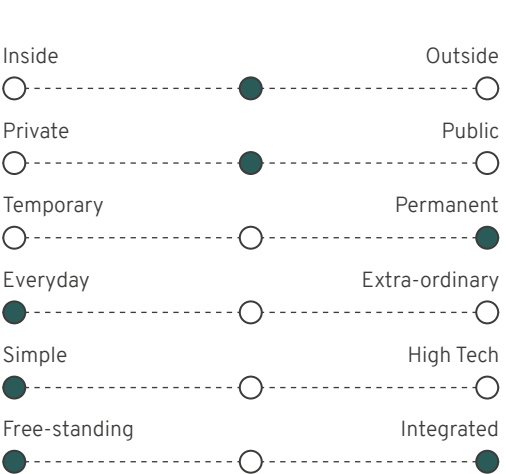
Conversion of garages as storage rooms /  
exchange rooms

SIZE (from - to)

Area: 15-25 m<sup>2</sup>  
Persons: House community



[ 13, 14, 15 ] Garages (Photos: Johannes Staudt)



SUITABLE FOR THE FOLLOWING PRACTICES

Primary:

- Storage
- Passing on
- Reuse

Secondary:

- Communicate

ACCESSIBILITY (spatial)

- Semi-public

ACCESSIBILITY (temporal)

- Mostly 0h - 24h

FORM OF ORGANIZATION

- House community + neighborhood

USERS

- Tenants, apartment owners

OPERATOR

- House community

FURNISHINGS

- Lockable gates
- Light
- Electricity

REQUIREMENTS

- Dry
- Accessible

COSTS

- Rent / purchase

POPULARITY

- Depending on neighborhood / building

GOOD TO KNOW

- Repurposing often not legal



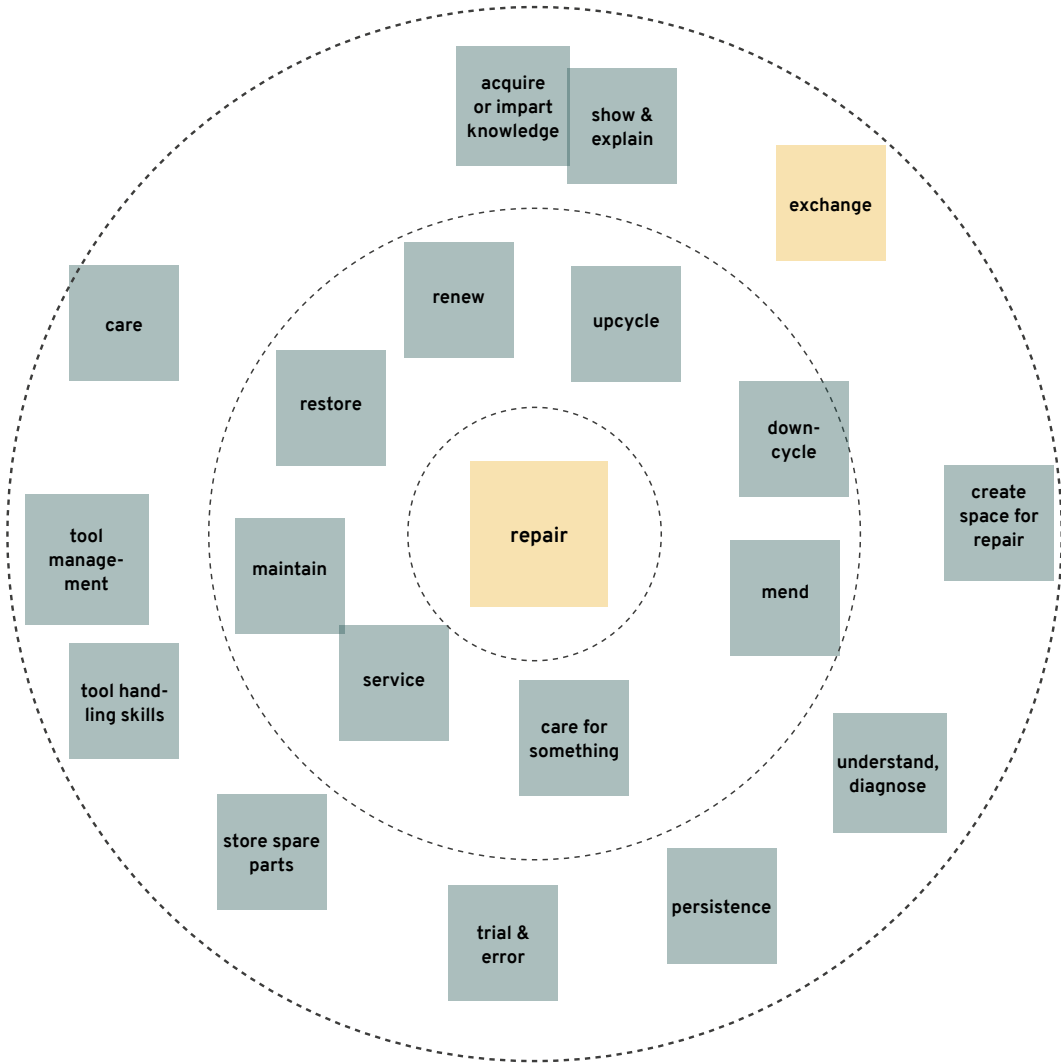
IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

We define circular citizens<sup>1</sup> as people who routinely implement circular behavior into their everyday life. These could be active members of repair initiatives or people who sew their own clothes or regularly buy and sell second-hand items. Ultimately, however, the spectrum of possible actions is much broader and cannot be described solely in terms of specific social roles. In our view, the concept of the circular citizen is particularly important when it comes to educational work that furthers circular literacy or asks questions about the rights and obligations of individual citizens. When analyzing the prerequisites for anchoring the circular society in everyday social life, we believe that it is less important for individuals to act in a circular manner than it is for social practices to become established as a circular culture that contributes to the maintenance of circular value creation. Circular practice – such as sharing tools – requires the participation of several individual actors but also builds on certain characteristics of non-human actors (e.g. an easy-to-use sharing platform, a robust commodity). Thus, choosing the starting point of circular practices over that of individual behavior enables a more comprehensive view of the development and stabilization of a circular society in people's everyday lives.

Thus, we define circular practices as contexts and processes of action that contribute to circular value creation by preserving or restoring the use value of goods, materials, or resources. We also consider practices that can be considered complementary to the “obvious” circular practices (such as repairing, recycling, reusing, caring), such as storing or sorting. Ultimately, this allows for the identification of networks of interrelated, mutually dependent practices. Circular action, such as do-it-yourself-repair, requires a whole series of simultaneous or alternating activities in coordination with other practices, as the following collection of actions relating to the repair of objects will show.

1] The term citizen is not used here in the constitutional sense. It refers to all people who live in a certain place or are involved in a certain practical context.

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES



[ 16 ] Repairing as a circular practice (own illustration)

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

Below are three examples that illustrate circular practices. The in-depth analysis and discussion of circular spaces and practices primarily serves to derive the prerequisites for their establishment or appropriation, stabilization and dissemination.

Profile: Circular practices // Reselling

Similar practices: –

DESCRIPTION

Passing on things or materials in exchange for monetary value

EXAMPLE

Reselling used clothing, technology or furniture

SKILLS REQUIRED

Taking initiative, sorting out items, assessing price, communication

TOOLS REQUIRED  
(Tools, materials)

If necessary, aids for setting up and dismantling larger items for sale

SPACES

Digital platforms (Ebay, Momondo, vinted), flea markets, second-hand stores

SUFFICIENCY  
(Contribution to reduce / save – individual / social)

Extends the lifespan of products

TIME REQUIRED

Rather high, as selling requires prior organization and planning

COSTS

Shipping and transportation costs may be incurred – can be negotiated whether these are borne by the seller or buyer. If the buyer bears the costs, the profit increases

POPULARITY

Very common for some materials and items, less so for others

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

Profile: Circular practices // Care

Similar practices: maintain, care, service

DESCRIPTION

Paying attention to something and being attentive to “needs”; doing what is “to be done”; superordinate practice for caring, maintaining, repairing

REQUIRED SKILLS

Being able to receive “signals”, attentiveness, resonance ability

TOOLS REQUIRED  
(Tools, materials)

Depending on how specific care is provided

SPACES FOR PRACTICE

Independent of the space

SUFFICIENCY  
(Contribution to reduce / save – individual / social)

Rather indirect connection (those who take care of things treat them with more care, are more likely to repair them), but high potential

TIME REQUIRED

Depends on how specific care is taken; caring is more of a constant mode

COSTS  
No direct costs

POPULARITY  
Everyone cares a little

LEGAL DIMENSION / LEGAL QUESTIONS  
(Including standards)  
Not relevant? Possibly limits of caring in order to remain within the scope of warranty in some cases

NORMATIVE DIMENSION  
(Which normative concepts support or hinder the practices? e.g. hygiene, comfort)  
- Possibly social stereotypes as to who has to (not) take care of what?  
- Possibly ideas of comfort that see caring as an effort?

Profile: Circular practices // Donations

Similar practices: Reuse, pass on, maintain, be able to separate, collect, sort

DESCRIPTION

Collecting unused items and donating them for free

SKILLS REQUIRED

- Being able to let go
- Pre-sort donations according to quality
- Know which stores accept which items

TOOLS REQUIRED

(Tools, materials)

- Materials for transportation (bags, boxes, etc.)
- Means of transportation (bicycle, cargo bike, car)

SPACES FOR PRACTICE

- Public spaces (Oxfam, Diakonie)
- Used clothing containers (Diakonie, waste disposal companies)

SUFFICIENCY

(Contribution to reduce / save – individual / social)

Individual: Less storage space needed;  
Danger: “filling up” with new things  
Societal: Less production of new things

ROLE OF SOCIAL / MEDIA SUPPORT

(Helpers are needed for practical work – digitally and on the ground)

When handed in at stores: Evaluation of donations by employees

TIME SPENT

- Time spent on editing own things: dependence on frequency
- Time spent washing and cleaning donations: Depending on quantity of donations & degree of soiling
- Time required for transportation to drop-off point: varies
- Time required for donation itself: Very little < 15 min.

COSTS

Costs for travel/transport to drop-off point (ticket; vehicle rental)

POPULARITY

Very common for some materials and items, less so for others

LEGAL DIMENSION / LEGAL QUESTIONS (Including standards)

- What may not be donated (e.g. no electronics at Oxfam)

NORMATIVE DIMENSION

(Which normative concepts support or hinder the practices? e.g. hygiene, comfort)

- Promotion: Ideal motivation (support a good initiative)
- Hinder: “not being able to separate oneself from something”

GOOD TO KNOW

Additional benefit: Support NGOs that do good with the money earned; more space at home

**Conclusion:** Circular spaces are a core aspect of the circular society, as they create the socio-spatial-material conditions for the appropriation and exercise of circular practices and the formation of circular communities. In short, they produce circular citizens – i.e., people who act circularly on a daily basis. In our view, circular spaces can emerge almost anywhere. A circular space can be a corner in the corridor of an apartment block where things are passed on or given away between households (“give-away corner”). Circular spaces can also be institutionally anchored public libraries that regularly offer DIY workshops or tool rentals. The further work of the team therefore focused on a more precise description of circular spaces, integrating all previous analyses and findings. The aim was to identify how these spaces are created and what role they play in a circular everyday life and a circular society.

3. HOW DO CIRCULAR SPACES WORK?  
// Stories of spaces for circular action

Circular action presupposes the existence of physical and social spaces in which action can take place and finds the necessary material equipment while at the same time allowing for social interactions. Circular spaces can arise or be created through social action virtually anywhere. A good example, as they are simple and low-threshold, are the so-called for-free corners or giveaway boxes that are often found in the corridors of apartment blocks or on sidewalks. They represent a very simple yet effective type of a circular space that is more than “just a box of stuff”. Ideally, these corners or boxes are arranged and organized in a way that invites people passing by to take a closer look. There is usually a note like “for free” on the boxes or in the corners, sometimes also a “Thank you” or a brief explanation of certain items. In apartment blocks in particular, the boxes or corners are sometimes used by several households to pass on or acquire things worth keeping. For these spaces to unfold as circular spaces, they need to be continuously (re)created: firstly, the items to be given away need to fluctuate through social spaces, i.e. people need to pass on usable items to others who take them or continue to use them. Secondly, it must be ensured, at least on a basic level, that the spaces themselves remain usable, i.e., they must not become cluttered and should remain clear and reasonably attractive. Thirdly, certain regulatory framework conditions or rules should be in place or develop over time. For example, the space should be more or less “legalized” and at least approved by a property management company or city cleaning department. In addition, users should adhere to certain – usually informal or implicit – rules, such as not putting down broken items or trash and not taking out all the items in the box at once. Last but not least, it is important that the circular space is accessible and located in a way that it is actually convenient for users in their everyday lives (e.g. on the way to their own home).

The circular practice of “giving away” in the form of the for-free box or corner depends on other practices such as preparing, saving, storing, sorting, arranging, etc. It is the interaction of these practices, with the circular space that enable giving away and thus preservation and reuse. At the same time, users of this space communicate about goods and the consumption of goods. They show each other what they think is still worth keeping and what they think others might still need. The givers not only get rid of things that are in their way, but they also show that they care about the things themselves and about other people. By using the for-free corner, they are also expressing a certain appreciation for both their material and their social environment.

This example is intended to illustrate that circular spaces are multi-layered phenomena with certain prerequisites of furnishing and formalization. Further, they need to be maintained through regular interaction. It is clear, however, that even simple spaces such as for-free corners or boxes fulfil several roles in a circular society. The increasing complexity of the spaces – for example in the form of a for-free shop – goes hand in hand with an increase in the functions these spaces fulfil. Circular spaces may be rich in prerequisites but at the same time they can be created anywhere and thus potentially achieve contiguity to everyday life, which in turn can enable numerous circular practices and circular citizenship.

In the following, different circular spaces tell stories from their everyday lives and show how they overcome linear challenges in networks of associated practices and spaces. The aim is to highlight not only the complexity of the spaces, but also to point out possible paths of development through which more and more such spaces can evolve.

There are already numerous projects, initiatives, and experimental spaces that practice new forms of economic activity, production and consumption as well as co-creation and co-production. Open workshops and repair initiatives, FabLabs and open-source initiatives, collective enterprises, and communities of solidarity-based production and consumption are the seeds and biotopes of a sustainable future and a future-proof economy. They are bold experiments built on significant personal commitment, a great deal of creativity and a strong will to change. However, their transformative potential is all too often restrained by barriers and obstacles such as long and bureaucratic administrative processes and a lack of (sufficiently) accessible spaces, resources, relevant information, and co-decision structures.



[ 17 ] Give-away box (Photo: Johannes Staudt)

Circular spaces play an important role in this context as they can create low-threshold opportunities to bring the circular society “to the surface” and “into the depths of everyday life”. Therefore, a key requirement is **the creation and stabilization of as many circular spaces as possible**. People should have the opportunity to participate in practices of sharing, exchanging, and reusing as well as the communal organization of consumption in as many places as possible throughout their everyday lives. **Circular consumption and everything that goes with it should be as simple, accessible, and practical as possible. For this circular spaces are crucial enablers.**

REFERENCES

Jaeger-Erben, M., Frick, V., & Hipp, T. (2021). Why do users (not) repair their devices? A study of the predictors of repair practices. *Journal of Cleaner Production*, 286, 125382. <https://doi.org/10.1016/j.jclepro.2020.125382>

IV. FOCUS TOPICS

// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

Profile: Circular place // Material initiative

HI, LET ME INTRODUCE MYSELF:

I am the Materialinitiative Zündstoffe. I am run with love and passion by creative people, students, art and culture businesses as well as sustainably producing industries on a voluntary basis. I make sure that less material ends up in the garbage can and that a lot of it is reused.



[ 18 ] Project “Materialvermittlung”’s Pop-Up Store

DESCRIPTION

This is the warehouse of the Materialinitiative Zündstoffe e. V. in Dresden. It is located on the upper floor of an industrial complex. The initiative was founded by committed citizens.

The material initiative accepts waste from the manufacturing industry, art and cultural businesses as well as private individuals and actively passes it on. They promote a resource-conserving and creative approach to used materials and create fair access to them.

PAST

Reduce waste from art / culture producing industries & make material available to other industries / institutions

PAST

Reduce waste, save CO<sup>2</sup>, change awareness to reuse material, build networks between different manufacturing industries

PRESENT

Material is handed in, sorted, maintained and actively passed on. Increased awareness for the space through more cooperation / networks

FUTURE

Good spaces, legal framework conditions to increase reuse in practice, relationship / material networks

VISION

Material initiatives are replaced by practices / cycles are implemented in production facilities

IV. FOCUS TOPICS

// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

Profile: Circular place // Material initiative

LINEAR CHALLENGE

Material from production is sent for (energy) recovery after a single use.

- Material from production / overproduction / misproduction is regarded as waste and sent for disposal. However, the material is still suitable for many non-production purposes
- There is a lack of information between the material provider and the material recipient
- There is no current location for exchanging these materials
- There is a lack of creative handling / practice in the use, processing etc. of residual material in various sectors
- The space creates this flow of information, it serves as a location for exchanging material and at the same time offers input for a new, creative practice of reuse
- At the same time, this space provides people and projects with resources that match the respective financial framework and to promote a creative approach as well as fair access to residual materials

CIRCULAR ALTERNATIVE

collect, sort

Production cycle is established in the production facilities.

- There will be no more material initiatives in a circular society
- In a circular society, the practices of the material initiatives are combined in the individual production sites and live on here
- However, even a circular society needs storage space
- Material initiatives currently symbolize circularity with their places and practices



[ 19 ] Circular place: Material initiative (own illustration)

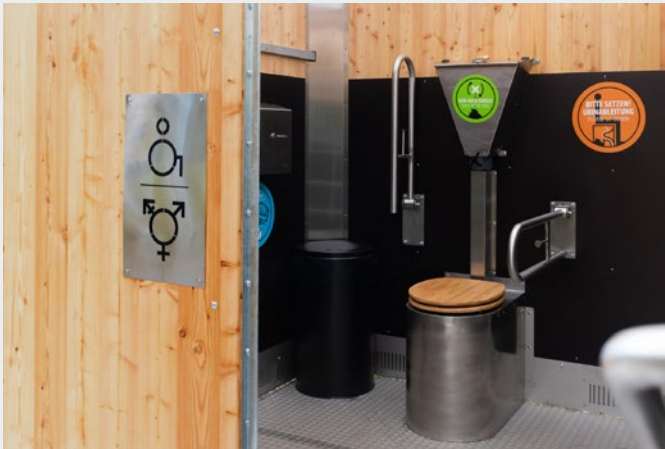


IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

Profile: Circular space // Public dry toilet

HI, LET ME  
INTRODUCE MYSELF:

I've been here since 2022 and am used by all park visitors who need to use the toilet. I turn their business into great humus fertilizer!



[ 20 ] Berlin toilets from Finizio

DESCRIPTION

Public dry toilets are often a guerrilla act of placemaking. The provision of public toilets is often inadequate, in many places they are missing, cost money, can only be paid for with a debit card, discriminate against bodies that are not cis-male and hinder people with physical disabilities. Public dry toilets do not require a water connection or drainage and can therefore be set up ad hoc anywhere. In Eberswalde, excrement is converted into eco-fertilizer using a composting process – which benefits the environment.

PAST

There was no public dry toilet which did more good than harm.

PAST

A new dry toilet was installed: there was no longer any excuse for not providing a toilet in a public space. Everyone had access.

PRESENT

There is a local nutrient cycle system to process the contents of the dry toilets into fertilizer.

FUTURE

More and more water is being saved as there are further concepts for dry toilets in private households.

VISION

As part of circular society, the new dry toilet practice connects people with their basic needs and the nutrient cycle of nature.

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

Profile: Circular space // Public dry toilet

LINEAR  
CHALLENGE



The flush toilet is a waste of resources.

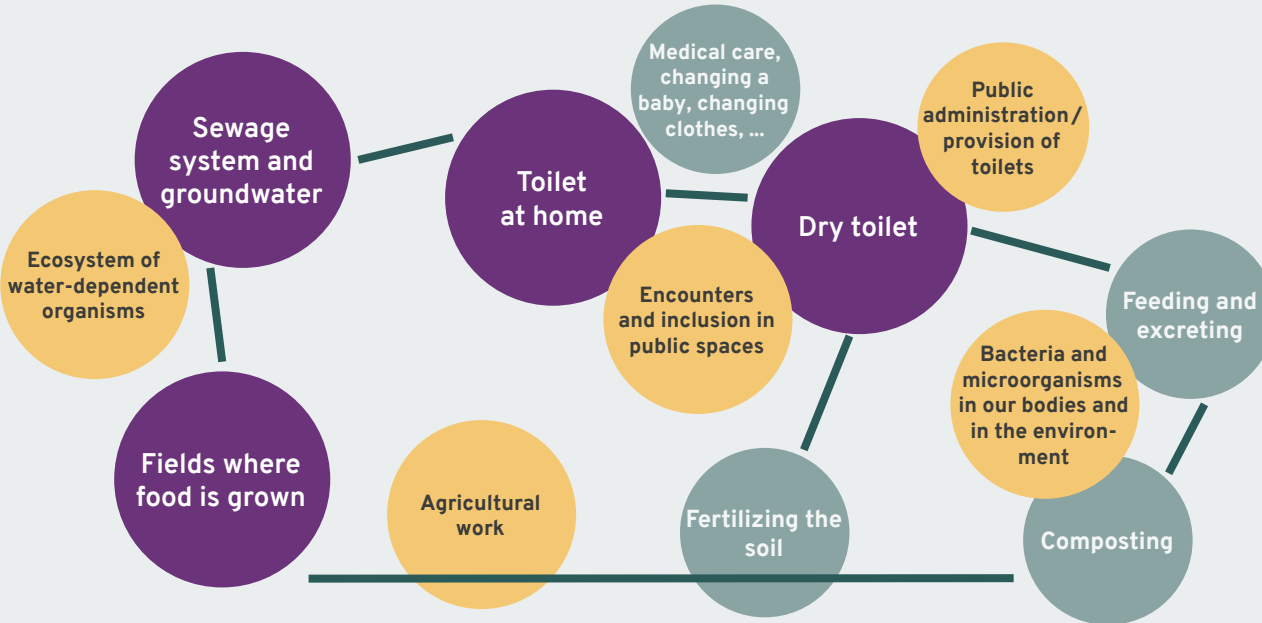
- Water toilets are also called “flush & forget systems” because the system is made so convenient that you are not even confronted with all the problems a water toilet entails
- Despite water shortages in Germany, we flush away the equivalent of the Müritz (the largest lake in Germany) in drinking water every year
- After flushing, pollutants are often released into the environment from the wastewater systems. Added to this are excessive amounts of liquid manure from factory farming, which also pollute bodies of water, causing fish to die
- Our excrement contains important nutrients that need to be recycled so that the soil remains fertile

CIRCULAR  
ALTERNATIVE



Turning shit into gold by recycling the contents of dry toilets.

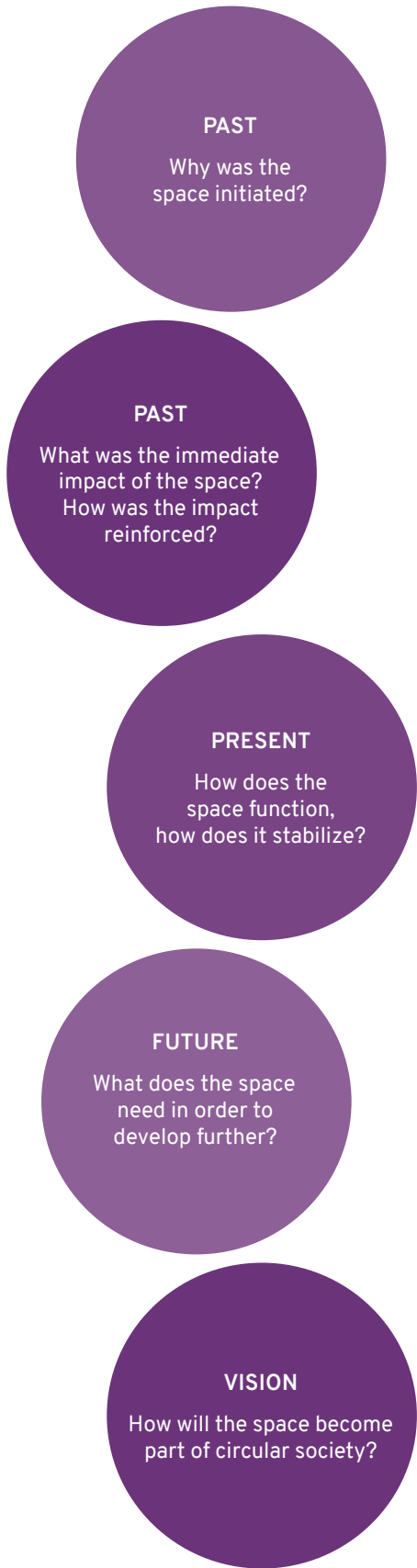
- In controlled facilities, solid waste can be processed into nutrient-rich soil and urine into nutrient-rich liquid fertilizer
- Local recycling plants enable a cycle between the provision of dry toilets and saving water, removal and recycling of excreta, distribution of ecological fertilizer and upgrading of the soil, the cultivation of local food, which is consumed and the resulting excreta are returned to the cycle via dry toilets
- If toilets are a regenerative system and local value chain, the incentive to provide public dry toilets increases
- Comprehensive provision strengthens communities, because toilet-related discrimination is a thing of the past and inclusion can be lived



[ 21 ] Circular space: Public dry toilet (own illustration)



IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES



Profile: Circular place // Circulation cabinet/locker

HI,  
LET ME INTRODUCE MYSELF:

I've been standing here in the foyer of Munich University of Applied Sciences on the Pasing campus since 2022. people swap all sorts of things here, mostly clothes. I also collect old smartphones for recycling and provide information about sustainability at the Green Campus Pasing.



[ 22 ] Circulation locker Pasing (Photo: Gerald Beck)

DESCRIPTION

The circulation locker was initiated by the students. The locker was already in place, but no longer in use. As it is a metal locker, the fire protection authorities are not bothered by it. People mainly exchange clothes, but also books and other items. Circular lockers evolved from book exchange shelves. Items of all kinds can be handed in. The cupboards are “curated” on a voluntary basis. The association “Kreislaufschränke e.V.” supports committed people in setting up circulation lockers.

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES

Profile: Circular place // Circulation cabinet/locker

LINEAR  
CHALLENGE

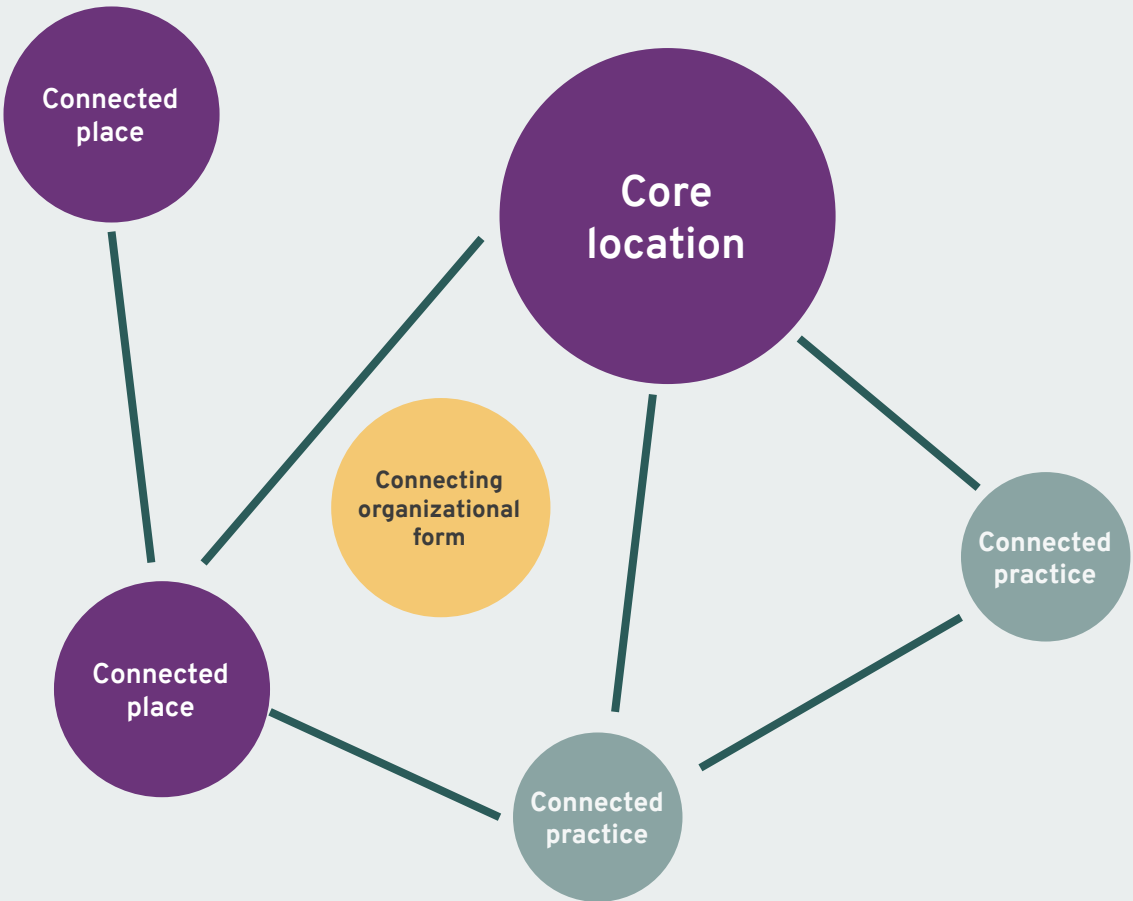
CIRCULAR  
ALTERNATIVE

What to do with things in the household that are no longer needed but are still good for use?

- Wasting resources by throwing away things that are still good

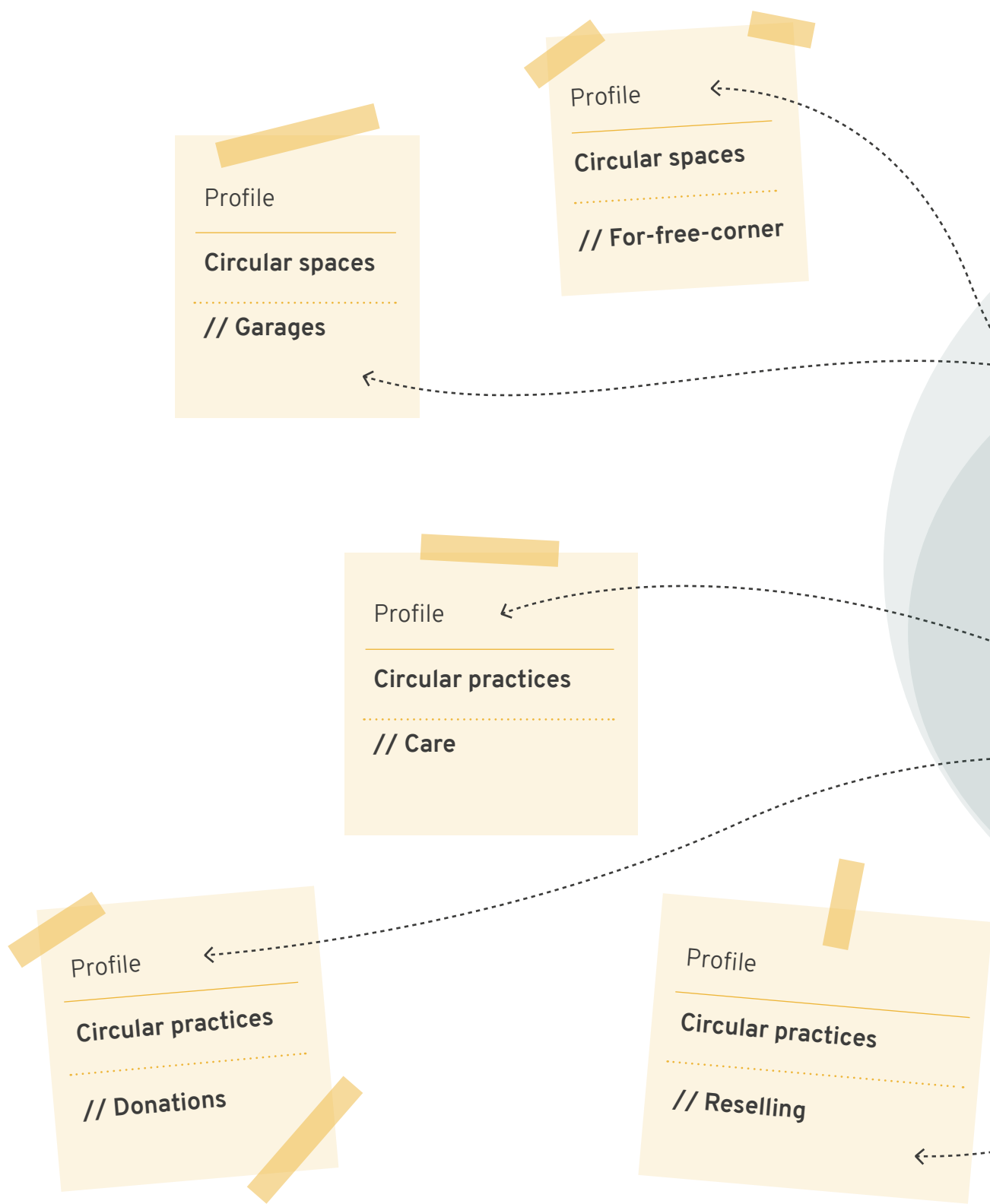
What is the circular alternative?

- Easy-access space
- Straightforward principle
- Use is free



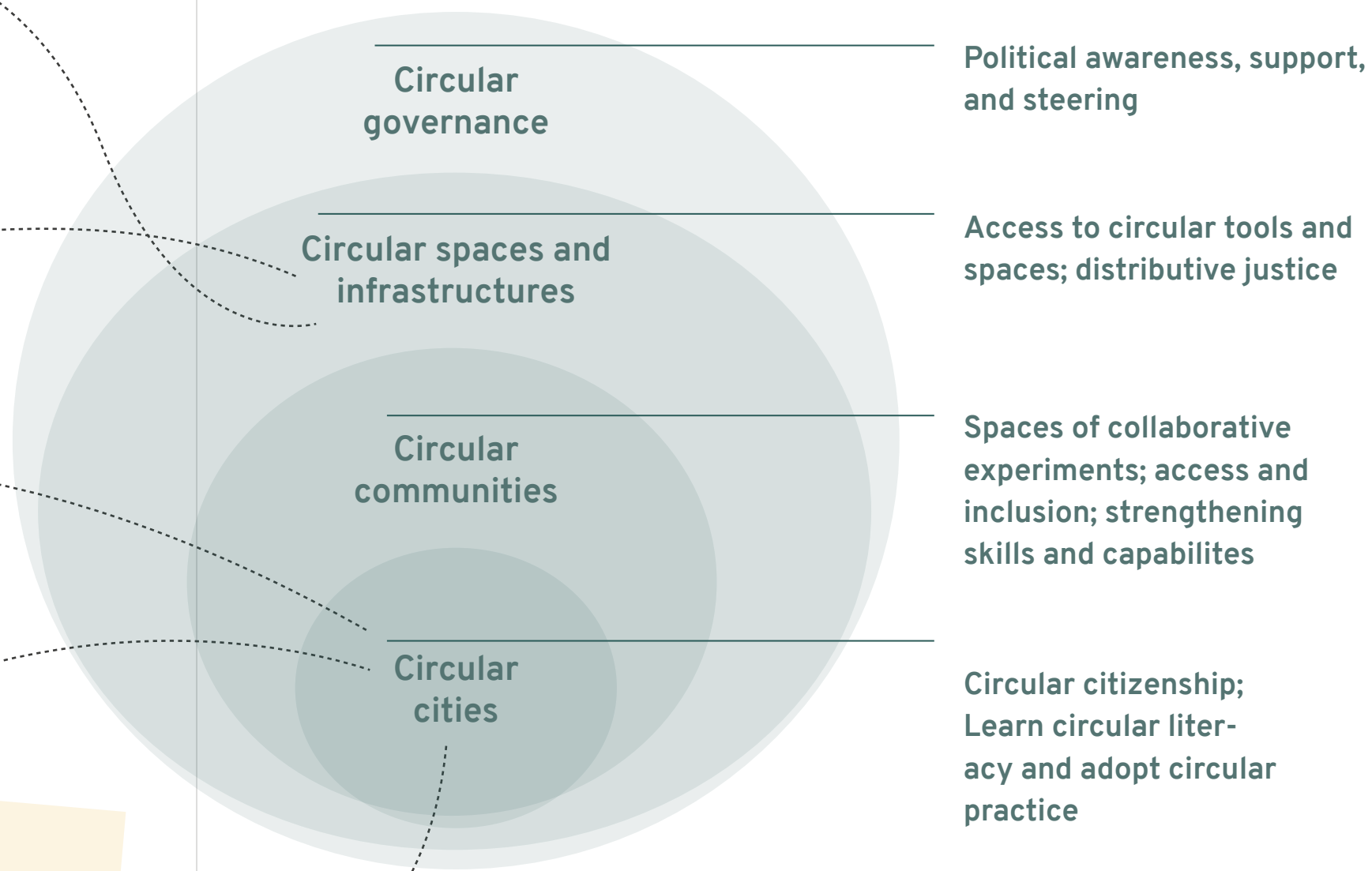
[ 23 ] Circular Place: Circulation locker (own illustration)

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES



[ 24 ] Circular Governance (own illustration)

IV. FOCUS TOPICS  
// CIRCULAR CITIZENS & COMMUNITIES – AND THEIR CIRCULAR SPACES AND PRACTICES



## IV. FOCUS TOPICS

B) OPEN SOURCE &  
OPEN DESIGN

# // Open Source & Open Design

## PROCESS

### // Co-design in Team 2

The team working on “Open Source and Open Design” comprised actors who have relevant knowledge, expertise, and experience in the area and its current structures and practices as well as those who come from other disciplines and practical fields with relevance for the topic, such as the participatory design and open innovation processes. This is based on experiences from political work and practical projects as well as perspectives from arts, activism and academia. This selection and composition of this group of participants was the basis for the multi-perspective approach to the topic.

The initial focus was on collecting and comparing knowledge (“understanding”) and the collaborative development of a working program. In this context the participants were also familiarized with the co-design approach. As a result, the group intended to develop “Openness Development Goals for a Circular Society”, which – as the SDGs do for the topic of sustainable development – formulate crucial fields of action and targets for the topic of openness in a circular society. The writing seminar in February 2023 included a first phase of presenting the ODGs to the participants of the other teams who could comment on them. In this context, further perspectives were explored, and a communicative expansion of the ODG approach was initiated: so-called “ODG stories” were envisaged to illustrate examples and practices from diverse areas of society (“Culture & Media”, “Education & Research”, “Civil Society”, “Business & Technology”, “Politics & Administration”) and make the ODGs more tangible.

Preliminary results were presented for public discussion at the “Forum Open Hardware 2023” in Berlin as part of a workshop (Lars Zimmermann); parts of the roadmap work were presented at re:publica 2023 in Berlin (Maximilian Voigt) as part of the presentation on the “Open Circular Society”.

### Team members:

Lars Zimmermann (Mifactori)  
Maximilian Voigt (Open Knowledge Foundation; Association of Open Workshops; FabLab Cottbus e.V.)  
Pauline Alt (Cradle to Cradle NGO; freelance designer)  
Jakob Kukula (SpreeBerlin; Symbiotic Lab)  
Fanni Florian (German Institute for Standardisation e.V.)  
Temporarily involved were: Prof Sonja Hörster (Institute for Participatory Design; Weihenstephan-Triesdorf University of Applied Sciences) and Lenard Opeskin (TU Dresden)

### Team lead

Adrian Schlegel (Hans Sauer Foundation)  
Dr Ralph Boch (Hans Sauer Foundation)

1. WHY OPEN SOURCE & OPEN DESIGN?  
// The necessity of openness for a circular society

Closing material and product cycles is necessary for a circular society. This requires an open and free approach to information, knowledge and expertise: the shift from the current extraction- and consumption-forward approach towards a circular and regenerative handling of natural resources requires transparency of technical cycles as well as their material foundations and underlying processes. Open Source and Open Design for a Circular Society focus on the potential of free use of knowledge and data for the collaborative creation of resource and product cycles. In open source and open design all types of knowledge relating to the processing of materials into products and services and their use and potential reuse are shared to the greatest possible extent. The aim is to create the potential of decentralized practices of reuse and further processing and to provide man-made, technical cycles with the degree of transparency required for a circular approach.

Open source and open design are essential prerequisites for realizing many of the so-called R-strategies necessary for circularity<sup>1</sup>– not least for the creation of inner cycles of reuse and further use. Only the open access to and treatment of design, production and construction knowledge enables the necessary practices of repairing, remodeling and redesigning products as well as their components and parts that are distributed across different spaces and actors.

In this respect, open source and open design for a circular society are not only a practice and attitude of activism. They also constitute a political and systemic demand for a fundamentally different societal approach to (technical) knowledge as they stand in stark contrast to the current systems of production and consumption that are based on the privatization and commercialization of knowledge. Furthermore, open source and open design are not limited to the mere circulation of knowledge and expertise, but rather aim at the associated creation of expanded social opportunities, practices, networks, spaces, and processes. This especially concerns participation and co-creation, which in turn entail fields that are subject to high legal, professional or institutional hurdles in the current system, such as product design, production processes, material and construction knowledge and more. Closely related to this is the creation of transparency and accessibility in areas that are currently characterized by barriers to knowledge and information and a general lack of transparency. This in turn is an important prerequisite for new, decentralized and collaborative practices of innovation and (re)production, which open up numerous opportunities for the creation of widely spread resource cycles that are not limited to companies.

1] Potting et al (2017).

2.WHAT IS OPEN SOURCE & OPEN DESIGN FOR CIRCULAR SOCIETY?  
// Prominent approaches rethought and made usable

In the roadmap project, as in the corresponding professional and social discourses, open source and open design stand for open and freely accessible design and production processes as well as a transparent handling of the associated knowledge, information, and databases. The term “open source” goes back to open-source software and the handling of its code in software development<sup>2</sup>: the code is kept freely accessible, modifiable and distributable. Open-source software is then developed in a decentralized and collaborative manner and relies on principles and methods of peer review and community production.

The current discourses on openness in various areas such as science, education, technology, data processing, administration, innovation, design and others not only address the economic and practical advantages of such models of dispersed collaborative and social work and production, but also the associated emancipatory gains with regard to democracy, diversity and participation<sup>3</sup>. Accordingly, discourses on openness correlate with diverse movements and initiatives attempting to conceptualize this type of decentralized development and production in areas such as hardware and physical products. There are conceptual and programmatic links to open and free approaches in dealing with, for example, scientific and other knowledge (open access, open science), educational content (open education, open educational resources) and the design of products and systems (open design, open-source hardware). Especially the latter emphasizes the added value of publicly accessible design information for the development of physical products, machines and systems.

Open source and open design approaches regard scientific, technical, creative, and other knowledge and expertise as an openly available resource: open interfaces, freely available components, and tools as well as compatibility and interoperability are given high priority in the design and development of products and systems. The necessary open standards and norms – such as those widely used on the internet and software sector – are also in use or are currently being developed<sup>4</sup>. Open source and open design stand for an inclusive approach to knowledge and expertise. Codes, blueprints, and material knowledge are prepared in a comprehensible form, shared and made freely available. Open source and open design rely on the participation and innovative power of the many and in this respect form a model contrary to the currently predominant economic model that is mostly non-transparent and characterized by a proprietary handling of knowledge, information and innovation based on ownership and competitive advantage.

2] See [The Open-Source Definition](#).  
3] See The [ABC of Openness](#) (2019) and the [Open Source Hardware Principles](#) (Open Source Hardware Association, 2021).  
4] Example of a jointly developed, open standard: Technical Rule DIN SPEC 3105-1:2020-07: Open-Source Hardware, Part 1: Requirements for technical documentation, Beuth Publ, Berlin (2020).

In the context of a circular society, both concepts and terms are of considerable importance as they are essential prerequisites not only for production but also for a variety of reproductive and regenerative practices<sup>5</sup>. Open source and open design approaches can be seen as key success factors: on the one hand, for the necessary mobilization of decentralized, sufficiency-oriented initiatives and alliances, and on the other for the creation of collaborative forms of value creation across the boundaries of social sectors and economic industries that are separated from each other in the linear system.

3. HOW DOES OPEN SOURCE & OPEN DESIGN WORK FOR CIRCULAR SOCIETY?  
// Openness Development Goals (ODGs) and ODG stories

A free and open approach to knowledge and information is currently only truly realized or even normatively anchored in a few areas of society. Therefore, team 2 has attempted to approach this conceptual yet practical task by developing “Openness Development Goals (ODGs)”. Based on the Sustainable Development Goals (SDGs) of the United Nations they were designed as a hybrid product of the roadmap, intended as a mixture of conceptual groundwork and a socio-political catalogue of demands. These ODGs are in turn supported by practical examples from numerous social contexts, the “ODG stories”: while open source and open design as explicit and practiced principles have so far only been disseminated in few, mostly technical niches, they are already implicitly used in many areas of life, have generated added value and are widely accepted as a self-evident foundation.

5] The paradigm of openness also allows for a change of perspective in the understanding of actors. This means that processes (design, production, use and recycling) can also be opened up to non-human actors in the environment by attempting to systematically include them and thus consistently take ecological concerns into account – just as actor-network theories have envisaged and, for example, planet-centered design approaches attempt to practice.

The ODGs consist of a eight such goals and aim to cover as many social and ecological topics and facets as possible with a focus on a circular society. They are aimed at all actors who can potentially participate in shaping openness, are involved or can influence it: political decision-makers, activists, companies, professional groups, initiatives, projects, individuals and many more. The ODGs address questions of collaboration and process design, considering the legal and normative aspects that team 2 identifies as particularly important in connection with open design and open source for a circular society.

- ODG 1: Strengthening decentralized cooperation
- ODG 2: Favoring open data and open source
- ODG 3: Using circular standards
- ODG 4: Favoring simple design
- ODG 5: Practicing co-creation
- ODG 6: Understanding processes as open-ended
- ODG 7: Being transparent and organizing conducive property rights

Like the SDGs, which were developed by the UN as sustainability goals, the ODGs do not provide specific instructions or guidelines for action. Rather, they formulate a framework that must be “translated” into concrete contexts for action. The ODG stories provide examples of such translations or existing practices of openness in five social sectors (which were also used by teams): “Culture & Media”, “Education & Research”, “Civil Society”, “Business & Technology” and “Politics & Administration”. In total, this results in 35 ODG stories, which, although not always directly related to the topic of circular society, present respective insights and experiences.

The ODGs and ODG stories are published and communicated at [www.roadmap.circularsociety.de](http://www.roadmap.circularsociety.de).



1  
ODG

THE ODGS AND THEIR STORIES

ODG 1: Strengthening decentralized cooperation

“Circular Society” is a blueprint for a sustainable world in which collaboration and collective working are strengthened. Practices such as repairing, reusing, or recycling materials require cross-sector collaboration: circular processing by others is always considered and enabled. Concepts like open design, open data and open source entail methods of decentralized collaboration that have emerged from the possibilities of the internet and are used today, in some cases with great success. However, decentralized collaboration can also be found beyond the Internet, as it generally refers to the ideal that others can and may build on previous work as freely and openly as possible. The lower the barriers, the more successful this is. Methods of barrier-free collaboration should always be prioritized in a circular society.

STORIES

Culture & Media: **Our language**

Our language itself is a good example of the joint development of our culture through an open solution. Everyone is free to use our language and its development is a collaborative and decentralized process. Words cannot be monopolized. Language is open to all. Once you have heard a word you can repeat it. Spelling is transparent for everyone (DUDEN online) and can be used freely. Our entire culture is essentially organized, developed and passed on through language.

Education & Research: **Citations in science**

The global system of science is based on generally accepted standards and rules for scientific work. Perhaps the most important element of this system are citations. Citations are the prerequisite for discussing and comprehending new ideas and findings. They create transparency: the cognitive process of others can be understood, criticized and thus improved. Anyone can quote anything freely, there are no barriers. The extensive use of citations is the reason for the productivity of our global science. Scientists can collaborate productively in a decentralized manner across national borders and even across centuries.

Civil society : **Non-profit status of associations in Germany**

Associations are an important part of civil society in Germany: there are almost 600,000 non-profit organizations in Germany. They bring together people with common interests and goals. These include many so-called non-profit associations, i.e., associations that pursue charitable, social, or ecological goals. Many of them are legally recognized as being useful to society, with the implication of, for example, tax benefits or easier access to financial support. Non-discriminatory access is a prerequisite for the recognition of an association’s non-profit status. Nobody may be excluded. Organizations that only accept women or men, for example, are generally excluded from non-profit status. The state thus recognizes that barrier-free access is an essential prerequisite for strong contributions to our culture and to a country worth living in.

Further information

Economy & Technology: **Commons like roads, air and education**

The economy and society benefit from commons. Commons are “common goods” that everyone can access and use. They range from air to educational institutions and roads. Access to them is (generally in Western countries) free and open. These common goods present an open, i.e., non-monopolistic, “infrastructure” of coexistence and co-operation. They are decentralized in the sense that no one is excluded from their use and that there are no rules about where we go when we use the street, for example, or how we deal with acquired knowledge or what we do when we breathe in the air.

Politics & Administration: **The legal system**

Free countries have a liberal legal system. In principle, it sets out in full transparency which rules apply in a given country, what can be expected from the state, and what the state expects from the individual in return. This system of rules is intended to create transparency, trust, and stability and to facilitate economic activity: decentralized cooperation between everyone is made easier. The opposite is anarchy, corruption, and cronyism that undermine these general egalitarian rules which makes it difficult to understand which behavior leads to predictable success.

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ODG 2: Favoring open data and open source

Open data stands for digital data that is publicly accessible in machine-readable form, licensed openly and free to use for anyone. Open-source stands for digital blueprints of software and hardware that can be freely viewed by anyone and used for any purpose. Open data and open source even attempt to simplify further processing through deliberately comprehensible design and understandable documentation. This is done, for example, through open interfaces or by using openly available standard components and tools. Cycles can benefit from these open technologies: available circuit diagrams are one example that makes things easier to understand and supports repairs. Information about the materials used facilitates recycling. Open specifications of components simplify their reuse or further development. Open data and open source are champions of decentralized collaboration and should be used wherever possible.

STORIES

Culture & Media: **Zero waste culture on the Internet**

The internet is full of people using the hashtag “#ZeroWaste” to share ideas on how to live well while producing less waste at the same time. Almost every day people share a wide range of solutions for a less wasteful consumer life that most of us can implement directly in practice. This zero-waste culture thrives on sharing and exchanging ideas as equals. New ideas are not kept secret, but proudly presented, always combined with the wish that others will also adopt and use these solutions.

Education & Research: **Open Educational Resources**

Open Educational Resources (OER) are freely available educational materials that are accessible online. They can and should be used freely. That is why they are published under open licenses. Many teachers use OER and some also contribute to the pool of available materials. Open licenses not only allow the materials to be used, but also to be productively and creatively expanded and adapted. There are many projects and portals for OER in Germany and worldwide.

[Further information](#)

Civil society: **The OpenStreetMap**

OpenStreetMap (OSM) is a collaborative project that provides a freely accessible and customizable digital map. The project utilizes open-source software, open data and open licenses. Thousands of volunteers around the world contribute to this project. They add geographical data of roads, buildings, bodies of water, cultural assets and much more to the map. In many areas, OSM is many times more powerful and detailed than its best-known competitor Google Maps. Decentralized collaboration is made possible by openness.

[Further information](#)

Economy & Technology: **Git**

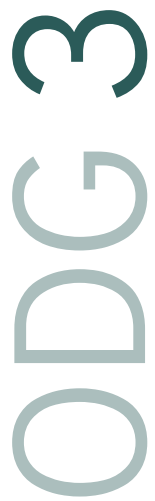
Git is a web-based solution for managing versions of software projects. It enables developers to create software together regardless of time and location. Git makes it easy to track changes, discuss problems and incorporate suggestions and contributions from others. Git itself is also an open-source software. There are several projects centered around Git that supplement it with their own additional tools. The GitHub site is probably the largest platform for open-source software development today. It is also used by large companies for private software projects. A software collaboration solution tailored to the needs of open source has proven to be the superior solution for creating powerful software.

[Further information](#)

Politics & Administration: **Open Government**

The buzzword “open government” covers a range of technologies and endeavors with which governments or authorities can make their work more transparent and participatory. Open source and open data play a key role in this. For example, the more data on the situation of a city that can be freely viewed and technically processed without barriers, the better scientists and citizens can use it freely, productively, and non-commercially to contribute solutions for a better functioning city. Open government is also characterized by a willingness to interact. Citizens are listened to, and their insights and suggestions are incorporated into the political design of the city.

[Further information](#)



ODG 3: Using circular standards

Norms and standards create a common language and therefore potentially serve the common good. They are usually developed collaboratively by actors from business, politics, research, and civil society. They create traceability, ensure quality, and enable compatibility. They are indispensable for a flourishing circular society. However, there are currently many established norms and standards that do not meet the requirements of a sustainable circular economy and need to be revised. An established, widely known and therefore perhaps boring solution is generally always better for creating circularity than a new customized solution that nobody knows, understands, and uses.

STORIES

Culture & Media: **Guides and Green Books**

More and more areas of cultural and media work are beginning to focus intensely on the topic of sustainability. This is accompanied by the distribution of guidelines or manuals that aim to establish standards for sustainable and circular behavior in the cultural sector. One example of this is the Theatre Green Book, which is freely available and has been translated into numerous languages. It provides practical help for theatre makers on how they can adapt and design their productions, buildings, and operations accordingly. Other examples include the numerous “Zero-Waste” or “Green” or “Sustainable Festival Guides”.

[Further information](#)

Education & Research: **Dictionaries**

Reference works, such as dictionaries, can be seen as standardizing education and research in a broader sense. Ideally, they are backed by a recognized and trust institution. Writing down clear and freely accessible definitions of words, including their spelling, enables mutual understanding and fruitful discussions. Imagine German lessons without the Duden dictionary or any written correspondence without clear spelling. The Circular Society also needs “clear words”, i.e. products whose composition can be looked up which allows reuse and further processing.

Civil society: **Repair Cafés**

Repair Café is the name of a worldwide movement. Here people who don't know each other meet, drink coffee and help each other to repair broken items. Essential to their spread are the instructions and handouts for repair cafés, which were developed by a Dutch foundation and are freely available on the internet and have been setting helpful standards for repair centers for some time.

[Further information](#)

Economy & Technology: **The standard well bottle**

The Normbrunnenflasche is a prime example of a reusable solution. It can be used and filled by everyone and is accepted by every bottle deposit machine. Different manufacturers use and produce the same product, which always works the same for everyone and can be combined with each other – thanks to a shared standard.

[Further information](#)

Politics & Administration: **Guidelines and circular standards for municipalities**

With a view to a circular society, cities and municipalities can increasingly build on freely available standards and guidelines. Guidelines, master plans and examples are available for numerous areas and approaches like Cradle to Cradle or Zero Waste. One example are the Cradle to Cradle guidelines for strategic procurement. They support local authorities in structuring their public procurement – i.e. everything that the federal, state and local governments purchase and commission – based on circular criteria or the Cradle to Cradle principles. The potential impact is significant: according to calculations, public procurement in Germany accounts for 15% of gross domestic product and more than half of public procurement is carried out by cities and municipalities.

[Further information](#)

4  
ODG

ODG 4: Favoring simple design

A simple design that can be reproduced without extensive prior training and expensive tools promotes circularity. It increases the amount of people who can work productively and constructively with a product or process. This makes repair, upgrading, reuse, and recycling more likely. High performing, efficient and therefore more sustainable products and processes often go hand in hand with complicated design; simplicity is not always possible. However, it should always be the ideal to strive for. Simplicity is inclusive. The greater the number of people who can participate in the circular society, the better it will work.

STORIES

Culture & Media: **Publishing on the Internet is easy**

Today's Internet is a “participatory Internet”. The barrier to publishing your own contributions is very low. The early web required expert knowledge if one wanted to use and help shape it. Today, user interfaces are mostly graphical and intuitive, allowing more people to share videos, publish texts and much more. Simplicity was the key to participation.

Education & Research: **Science communication**

Whether results from science and research are freely accessible and usable in practice depends in part on their comprehensibility. Scientists and scientific institutions are increasingly concerned with questions of comprehensible language and generally accessible communication. Given the importance of technical language for scientific work, an active design effort is constantly required. Nowadays, there are freely available guidelines for this purpose as well as numerous initiatives, projects and organizations that deal with opening up science and research.

[Further information](#)

Civil society: **Plastic-forging and Precious Plastic**

The Kunststoffschmiede is a non-profit manufacture for recycled plastic in Dresden. Here, plastics are recycled and processed into simple and useful items. The work originated in the “Precious Plastic” project. Precious Plastic has succeeded in simplifying the complex machines required for plastics processing into machines that are much easier to understand and can be built using generally accessible tools.

This is supported by the Precious Plastic project's clear and easy-to-understand open-source hardware documentation. Precious Plastic has thus become a world-wide success. These simple but useful machines, made by local craftspeople, can now be found all over the world – like the Dresden plastic forge.

[Further information](#)

Economy & Technology: **Programming simply**

Arduino is a physical computer platform. It combines easy-to-understand software with an easy-to-understand microcontroller. The project was deliberately designed to be as simple as possible with the goal of enabling artists, designers, and hobbyists to work creatively with electronics and programming without obstacles. This goal correlated with the openness of the project. All of the software and basic parts of the hardware are open source. Arduino has led to an explosion of digital arts and hardware start-ups. Today, Arduino-based solutions can be found everywhere – at CERN, on the International Space Station, on the factory floors of large companies, but also in classrooms or in the drawers of many an electronics workshop. The simplicity and openness have given rise to a worldwide community that now openly exchanges knowledge and solutions for the creative use of Arduinos in several million contributions.

[Further information](#)

Politics & Administration: **Easy language**

It is not only the scientific community that has recognized that plain language is a good way of enabling more people to participate in its development. The importance of plain language has also been recognized in politics. With the introduction of plain language in the communication channels of the federal government and ministries, as well as the local authority level, government work is being opened-up to many groups and the issues being discussed are being communicated more widely to the public. This promotes the active participation of all people in political discourse.

[Further information](#)

5  
ODG

ODG 5: Practicing co-creation

Co-creation means co-determination and co-design. Processes of planning, design, production and utilization can be opened up to external participation. A circular society knows how to constructively integrate external impulses into all phases of a project or product. Participation is a potentially effective tool for strengthening networking, ownership, and the establishment of sustainable cooperation.

STORIES

Culture & Media: **The social web**

A lot of content on the internet is co-created. The value of services such as Reddit, Facebook, Instagram, TikTok, Snapchat, Mastodon and Discourse does not lie in its software. It is the users who post content there and create the diversity of offerings that make these platforms what they are for each of us. Everyone finds something different there. The platforms provide the framework for this huge and decentralized co-creation process. Some platforms also provide users with tools that make it easy for them to “remix” existing content and develop it further.

Education & Research: **Citizen Science**

Citizen science involves citizens in research: they become data collectors or donate thinking or computing power. They count beetles, work on the correct folding of proteins, collect air data, run small programs in the background of their computers and much more. Some of the most impressive citizen science projects co-create data collections that no single research institution could fund. However, collaborative citizen science projects not only use citizens as data collectors. They also make the collected results available and actively involve their community in analyzing the data and the associated knowledge production.

[Further information](#)

Civil society: **Social laboratories**

The One Planet Lab for a resource-light future organized by WWF Switzerland and the Mercator Foundation Switzerland is a laboratory for co-creation. Committed pioneers can work co-creatively on projects for change. The initiative and what it offers are the result of an intensive participatory process. The One Planet Lab makes knowledge from practice and research easily and clearly accessible via its website and with the help of courses on content-related and methodological topics.

[Further information](#)

Economy & Technology: **The establishment of standards**

The importance of norms and standards is the subject of a separate ODG. But how are they created in the first place? How is a DIN standard created, for example? When enough voices from business, politics and civil society come together, the German Institute for Standardization (DIN) initiates a standardization process. All actors with an interest in the topic can participate in this process. It is a co-creative process that ideally results in a solution that is accepted by everyone and strengthens cooperation in the respective area or even takes it to a whole new level.

[Further information](#)

Politics & Administration: **Parliaments**

Elected representatives gather in parliaments to engage in an open competition of opinions, concepts, and best solutions. It is the form of co-creative work that democratic states have relied on to solve and decide on their challenges and problems and that has spread in various forms worldwide. In reality, much co-creative work is overshadowed by issues of power, procedure, and political difference and in the end it is the political majorities that are decisive. In principle, however, parliaments are forums for exchange, discussion, and joint decision-making that are open to every citizen. For example, anyone who is of legal age and has German citizenship can, in principle, become a member of the German Bundestag.

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ODG 6: Understanding processes as open-ended

A product is always only a temporary form; the materials it contains will move on at some point. The Circular Society understands this and always sees materials as “shapeshifters”: the results of one's own work are the starting points for the productive work of others in later phases of cycles. The aim is to keep the scope for transformation open. Productive subsequent processing should be promoted. This begins with openness to the ideas of others and ends with concrete design decisions such as the selection of recyclable materials. A circular society wants to create opportunities and support change.

STORIES

Culture & Media: **Interactive art**

Interactive art is a genre of art in which viewers can participate in real time. They can take part through movements or their voice to help determine the result, the work. Thanks to the possibilities of computer-based interactivity, this has become popular. It is associated with a new way of experiencing and producing art. Audience and machines work together in dialogue and continually create new, unique works of art – without end.

[Further information](#)

Education & Research: **The Wikipedia**

Wikipedia is not only an excellent example of a solution that enables the widespread collaboration through openness. (Due to its openness and accessibility it has become the most successful encyclopedia of all time.) It also achieves this because it is designed as an open process. No article is “finished”. Changes are always possible. Often only a few minutes pass between a news item in the media and its publication on Wikipedia (e.g. the death of famous personalities). Wikipedia is always evolving, and everyone can help to keep it relevant and up to date.

[Further information](#)

Civil society: **Citizens' rooms**

Some municipalities in Germany have community centers or community spaces<sup>6</sup>. As a resident of the city, you can use this space freely – be it for a club meeting, a children's birthday party, a book reading, or a theatre performance. These spaces were deliberately created and maintained to reflect a diverse and changing society. The rooms are often equipped with an infrastructure that enables a variety of uses. Permanent interventions in the space require careful consideration and coordination.

[Further information](#)

Economy & Technology: **Screws instead of glue**

Sustainable design supports repair, upcycling, and reuse. A simple way to do this is to use standard screws – a housing is screwed together and not glued. The screw can be unscrewed and screwed in again using ordinary tools. This allows easy access to the inside of the product – either to repair or to dismantle the components for use elsewhere. A manufacturer who thinks this way sees his product as a starting point for the further work of others. He prepares the components of the product for a creative journey that the manufacturer himself may never know about.

Politics & Administration: **Open urban development**

The Austrian architecture firm nonconform designs unconventional processes of participation for construction and urban planning projects with and for local authorities. The clients must engage in open-ended processes in which all future stakeholders have a say. The results of these processes range from spatial visions for the future of towns and cities to specific plans for schools and other educational facilities.

[Further information](#)

6] The term citizen is not used here in the constitutional sense. It refers to all people who live in a certain place or are involved in a certain practical context.



ODG 7: Being transparent and organizing conducive property rights correctly

Transparency and all forms of freely accessible knowledge support a circular society. Shared knowledge is often the prerequisite for constructive further development and collaboration. However, freely accessible knowledge alone is not always sufficient. If knowledge cannot be utilized in crucial moments, cycles can come to a halt. The freely available blueprint of a spare part remains ineffective if no one is willing (or authorized) to manufacture it. This raises the issue of conducive property rights. Property rights such as copyright, patent law, or design protection monopolize knowledge and its representations. They are intended to support inventors by excluding third parties from using the protected knowledge without explicit authorization. However, if this impedes or makes impossible crucial practices such as repair, creative reuse or recycling, IP rights need to be reconsidered. Open licenses or the targeted renunciation of monopolizing property rights offer a way out in critical cases. Transparency must be designed in a way that has an effect on successful cycles.

STORIES

Culture & Media: **Copyright**

Creative Commons licenses solve a problem that came into the world with the internet: we can all create content and share it with the whole world. However, as authors of texts and images we also have author's rights and a monopoly on the use of our works. This means that no one can use our works without a licensing agreement. Creative commons licenses make it possible to conclude a licensing agreement with the whole world at once. This means you can, for example, freely develop, remix, repost and utilize them. The licenses are transparent and easy to understand. They are an elementary building block for the free sharing and joint further development of knowledge.

[Further information](#)

Education & Research: **Open access in science**

Open access refers to the free access to academic publications and other materials on the internet. Anyone can read, download, save, link, and print an open access document free of charge. Open access is an increasingly popular alternative to publication by academic publishers, who set high financial hurdles for both the process of publication and subsequent access to it, without contributing much added value themselves. Open licenses – such as creative commons licenses – are indispensable for Open Access publications. They offer legal certainty and are a clear path to regulating free use by others. Open Access still has some problems to contend with. For example, the value of a publication is also linked to the name of the journal in which it appears and many of the most prestigious journals today are in the hands of major scientific publishers.

[Further information](#)

Civil society: **OSHWA**

The Open-Source Hardware Association (OSHWA) is an international non-profit organization that promotes open-source hardware. It provides resources such as definitions or best practice collections and generates valuable knowledge, e.g., on the complex issues of open licensing for hardware products and inventions. It helps inventors to understand the problem and make the right decisions, e.g., to enable a truly sustainable use of hardware.

[Further information](#)

Economy & Technology: **3D printing**

3D printing processes have been around since the 1980s. However, they did not experience a worldwide explosion and spread until the early 2000s when the patents for it expired. Until then, the use and distribution of the process was limited; property rights kept the technology small and severely restricted its use and further development. The first major 3D printing project after the patents expired was the RepRap project. The RepRap printer was and still is an open-source hardware. Today, there are thousands of 3D printers. Many of them are direct descendants of the RepRap and are being further developed as open-source hardware. This environment of free licenses has driven innovation in 3D printing enormously. Today you can buy a well-functioning, high-performance printer for less than 200 EUR and access countless freely available resources for the development of products.

[Further information](#)

Politics & Administration: **Transparent households**

The concept of participatory budgeting brings transparency to public budgets. The goal is to enable and increase the active civic participation in discussions about the use of funds. This often involves issues of sustainable development at a municipal level. This strengthens the commitment and participation of citizens because they can actively influence the distribution of financial resources. Pilot projects on “open city” concepts emphasize participatory budgeting as a central theme and are being tested in the Polish city of Gdańsk, for example.

[Further information](#)

REFERENZEN

Potting, J., Hekkert, M. P., Worrell, E., & Hanemaaijer, A. (2017). [Circular economy: measuring innovation in the product chain](#), The Hague.

ODG1

Strengthening decentralized cooperation

ODG2

Favoring open data and open source

ODG3

Using circular standards

ODG4

Favoring simple design

ODG5

Practicing co-creation

ODG6

Understanding processes as open-ended

ODG7

Being transparent and organizing  
conductive property rights

## IV. FOCUS TOPICS

C) COLLABORATIVE  
VALUE CREATION  
IN CIRCULAR  
ECOSYSTEMS

# // Circular Ecosystems

## PROCESS

### // Co-Design in the Team 3

Collaborative value creation in circular ecosystems presents unknown challenges. It is also considered to be a little-explored terrain in research. Although the interest in innovative forms of collaboration and formation of new networks is increasing, the question of how they can be implemented and maintained in the long term remains largely unanswered. Therefore, it makes sense to learn from pioneering projects that have accumulated practical expertise in recent years.

The here presented pioneering projects were selected based on various criteria (see examples of circular ecosystems below). These included, for example, the physical space utilized by the circular ecosystem, the degree of socio-ecological innovativeness of the circular ecosystems or the orchestration model used, i.e., the way in which the circular ecosystem is organized and coordinated. The selection of best practices covers a broad spectrum and the circular ecosystems consequently differ in their respective characteristics. The aim was to gain comprehensive insights into the functioning of circular ecosystems and to identify principles of success across the analyzed cases.

From September 2022 to February 2023, ten interviews were conducted with experts who are either part of the analyzed circular ecosystems or work as researchers or consultants on building circular ecosystems. In addition to these interviews, websites, newspaper articles, publicly available presentations, project profiles and other documents on the respective projects were analyzed and assessed. The analysis and comparison of the four projects applied more than over 40 assessment criteria, categorized into three overarching evaluation clusters (emergence, functionality, conflicts & tensions)<sup>1</sup>. Scientific literature enhanced the theoretical and conceptual knowledge of circular ecosystems obtained by the analysis of the best practice examples. The combination of different data and information sources allowed diverse perspectives to the analyzed pioneering projects.

1] The analysis framework designed by Léon Gross (2022) was originally developed to make the concept of deep experimentation more tangible. It supports the exploration of experimental places that have a high potential for profound socio-ecological transformation. Gross, L. (2022). Deep Experimentation – An Ethnographic Inquiry into the Haus der Statistik in Berlin, Technische Universität Berlin [master’s thesis].

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1. WHY CIRCULAR ECOSYSTEMS?  
// The necessity of collaborative value creation for a circular society

The still novel concept of the circular society defines a target horizon and possibilities for a sustainable future. It also delivers a framework for social change. “Circular society” means aligning economic value creation with the ecological limits of planet earth in a socially just way. Materials and goods should be designed, handled, and managed according to the principles of circularity to absolutely reduce the consumption of energy and resources in production and consumption. New strategic alliances and partnerships for a good life should overcome the one-dimensional narrative of economic growth and reinvent the “What” and “How” of economic value creation.

Promising pioneering projects show that collaborative value creation in circular ecosystems often encounters practical challenges: only in legal, structural, or financial terms, but also with regard to differences in expectations, objectives, needs and resources among the actors participating in the circular ecosystem. Hence, it is important that interested pioneers, sponsors and other relevant stakeholder groups have access to guidance that supports the development and design of circular ecosystems. The following principles do not provide answers to the complex regional problems that may arise during implementation of circular ecosystems. Rather, the principles are intended to act as a compass and to provide practical insights and possible strategies for setting up circular ecosystems. The principles are derived from the experience gained from four pioneering projects, which are presented in the following section.

2. WHAT ARE CIRCULAR ECOSYSTEMS?  
// Four pioneering projects and their selection process

To date, work on the concept of a circular society happens mostly at the level of discourse, i.e., there are only few, isolated examples of how the concept of the circular society can be successfully translated into daily social and business life. However, one thing is clear: the complexity of the necessary changes goes beyond the boundaries of individual organizations. The only way to mobilize the resources and capacities required to overcome social unsustainability is by bundling the expertise, experience, and skills of heterogeneous stakeholders. That is why, collaborative value creation<sup>2</sup> plays a central role in a circular society. Collaborative value creation can only be conceptualized and realized as a system, which is why the corresponding practice of circular ecosystems is becoming increasingly important. Circular ecosystems are dynamic communities of independent actors that closely work together and coordinate their activities and resources in a way that enables joint contribution to the realization of a circular society. The concept of circular ecosystems emphasizes the collective, multi-dimensional nature of socio-ecological innovation over individuals as the main agents of change.

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2] In this guide, “value creation” is defined as both a process (i.e., a series of interactions) and an outcome (i.e., the result of a process in the form of, e.g., intangible services or tangible products).

The conception of “value” used here stems from the understanding that the value of activities or actions and their results depend on how they are evaluated in individual, social and cultural practice (in the form of social prestige, indignation, monetary payment, etc.). Accordingly, value describes the individually perceived benefit of actions, activities, services, physical objects, etc. measured in aesthetic, psychological, physiological, utilitarian, monetary, etc. terms by human and non-human (e.g. institutions or organizations) actors.



[ 25 ] Haus der Statistik

**Model project Haus der Statistik<sup>3</sup>**  
Berlin, Germany  
since 2015

**Characterization**

- // Degree of innovativeness: radical-transformative
- // Spatial scope: localized in the urban neighborhood
- // Orchestration<sup>4</sup>: civic-public-partnership of five co-operation partners
- // Internal exchange of resources: knowledge and experience

The Haus der Statistik close to Alexanderplatz in Berlin is an internationally recognized pilot project for cooperative urban development based on the idea of the common good. After more than ten years of vacancy, the initiative Haus der Statistik – a group of committed artists, architects, cultural workers, and politicians – inverted the sale of the site to investors and its planned demolition in 2015. Today, space for art, culture, social affairs and sustainability, affordable housing as well as a new town hall for the Mitte district and administrative spaces are being created in the existing building and through over 65,000 square meters of new construction. To achieve this goal, an innovative and effective “civic-public partnership” consisting of five co-operation partners (“Koop5”) was formed. This constellation of stakeholders has been working cooperatively and under joint responsibility on the development of the Haus der Statistik since January 2018.

3] [Haus der Statistik](#).

4] Ecosystem orchestrators act as intermediaries between the actors in an ecosystem and create platforms for regular communicative exchange; they coordinate investment projects of the circular ecosystem and are considered a moderating pillar in the strategic progressing of the circular ecosystem (see Principle 4: stabilizing orchestration).



[ 26 ] CEWI

**CEWI – resource-efficient and climate-neutral from 2020 to 2023<sup>5</sup>**

**Characterization**

- // Degree of innovativeness: incremental-industrial
- // Spatial scope: supra-regional
- // Orchestration: Consortium of three independent organizations
- // Internal exchange of resources: knowledge and experience

The CEWI project, led by WWF Germany, the Climate Economy Foundation and the Wuppertal Institute for Climate, Environment and Energy, brought together groups of economic stakeholders over a period of three years to develop transformative approaches for the circular economy. The project focused on testing new forms of collaboration between economic actors across industry lines. The focal point was developing project ideas, exchanging knowledge and experience and initiating mutual learning processes. The practical implementation and stabilization of the approaches developed were not part of the project. Due to their importance for climate and resource protection, the CEWI focused on the two industrial sectors of automotive and construction.

5] <https://cewi-projekt.de/>.





[ 27 ] Zukunftshof – lived utopias

**Zukunftshof in Vienna<sup>6</sup>**  
Vienna, Austria  
since 2019

**Characterization**

- // Degree of innovativeness: radical-transformative
- // Spatial scope: regional
- // Orchestration: hybrid structure of cooperative and association
- // Internal exchange of resources: knowledge and experience, financial flows, product, and material flows

The Zukunftshof in Vienna not only is a flagship project for sustainable urban agriculture with local production, processing and marketing of agricultural products, it also demonstrates economically viable approaches that support the ecological and economic resilience of the region and strengthen social cohesion. The goal of the Zukunftshof association and cooperative is the combination of agricultural co-production with social and cultural activities. In addition to organic food production through vertical and indoor farming (fruit and vegetables, mushrooms, fish, insects, etc.), their utilization concept also includes services such as a farm bakery, farm-to-table catering, carpentry, a communal kitchen, a repair workshop, temporary housing as well as the organization of a series of events on urban agriculture and social participation. The ecosystem's value creation activities are centered around the principle of circularity.

6] <https://www.zukunftshof.at/>.



[ 28 ] Amsterdam (Photo: Hans Sauer Foundation)

**Amsterdam<sup>7</sup>**  
Amsterdam, Netherlands  
since 2020

**Characterization**

- // Degree of innovativeness: incremental radicalism
- // Spatial scope: City
- // Orchestration: Municipality of Amsterdam
- // Internal exchange of resources: knowledge and experience, financial flows, product and material flows

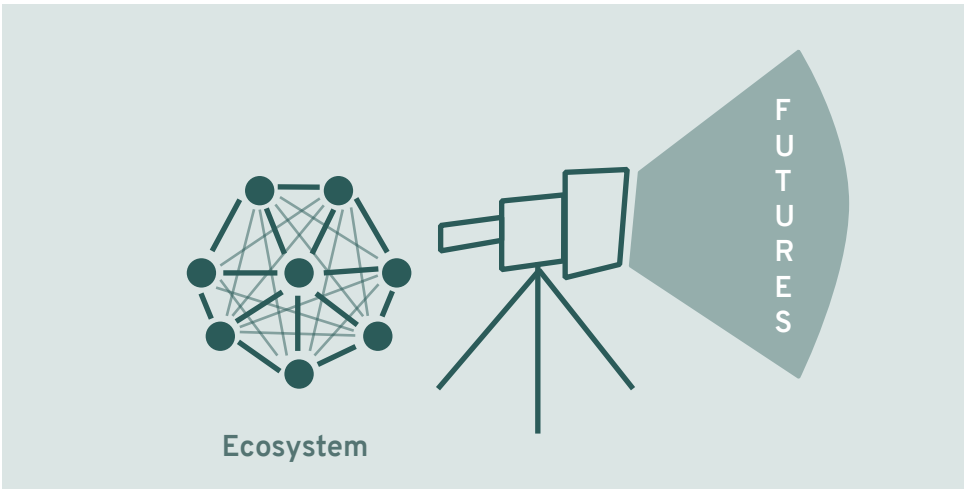
The city of Amsterdam is considered a model metropolis for the integration of circularity into local and regional value creation processes through state institutions. The “Amsterdam Circular 2020-2025 Strategy” was the start of a comprehensive transformation of the city; the goal is a circular society by 2050. The municipality uses the indicator set of the “donut economy” as a monitoring tool to evaluate the transformation process. This set will also be incorporated into long-term urban development as a normative compass for economic thinking and action. For example, a regional and plant-based food system is to be established and net consumption of fast-moving consumer goods is to be radically reduced. The city of Amsterdam is thus committed to pursuing an integrative, science-based, collaborative approach to build an equitable and resilient urban community.

7] <https://www.amsterdam.nl/en/policy/sustainability/circular-economy/>.

3. HOW DO CIRCULAR ECOSYSTEMS WORK?  
// Principles of collaborative value creation in circular ecosystems

The following principles summarize the lessons learned from the examined pilot projects. They zoom in on six selected dimensions of circular ecosystems and explain their inner workings and importance. In this way the principles attempt to make the rather abstract idea of collaborative value creation in a circular society more concrete and tangible. They support municipalities and districts, companies, start-ups, foundations, research institutions, and other relevant stakeholders that are already part of circular ecosystems and those who want to initiate, develop, and establish such ecosystems in the future. The principles are illustrated with examples from the pilot projects.

01. Co-creative vision development



[ 29 ] Co-creative vision development (own illustration)

Circular ecosystems are based on a collectively developed vision of the future. The vision describes desirable, positive, and realizable conditions that the circular ecosystem would like to achieve within a flexible time frame. However, the time frame must be defined in such a way that, on the one hand, there is real potential for realization of said vision, on the other hand, motivation and enthusiasm for achieving the vision among the participating actors does not diminish over time.

Therefore, the vision encompasses a multitude of aspects and stakeholders while it is also explicitly a vision of transformation. Such a shared vision can create a strong bond and sense of belonging among both internal and external actors. In particular, actors actively participating in the circular ecosystem must identify with the vision, which is why a co-creative process of development seems important. The elaborated vision should lay out desirable paths of transformation for society as a whole and at the same time clearly distance itself from undesirable socio-ecological developments. The vision can thus be described as a focal point that links organizational identity and social responsibility of a circular ecosystem. It serves as a frame of reference for decision-making processes and for the development of possible actions.



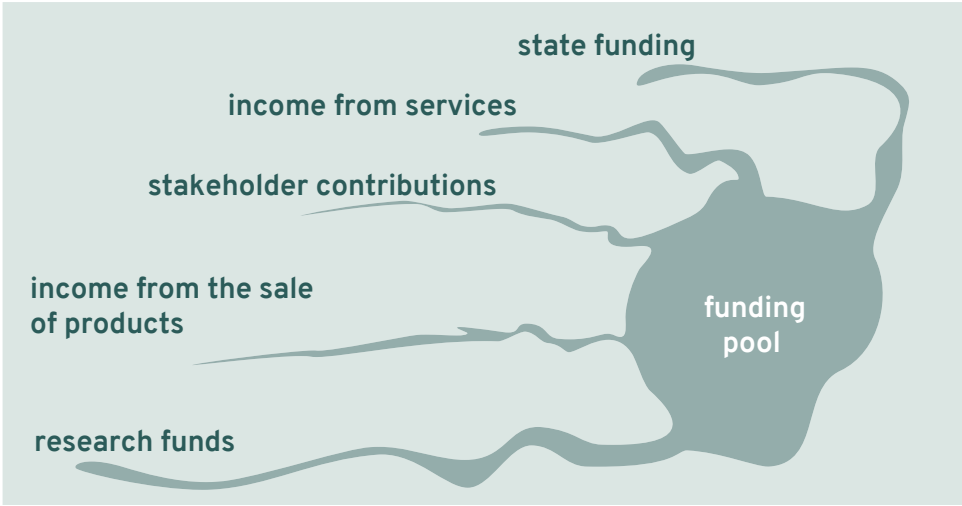
[ 30 ] Allesandersplatz

The vision of a “different place” (for comparison see p.125)

*Bees and swifts, living labs and a circular economy, affordable housing, art and culture instead of the wrecking ball and the profit motive. The vision of the **Haus der Statistik** model project plays with the delineation from the status quo of the well-known Alexanderplatz in Berlin Mitte. The “Allesandersplatz”, marked by large lettering on the roof of the **Haus der Statistik**, deliberately distances itself from the gigantic area of consumption opportunities at the Alexanderplatz.*

*The vision of a “different place” is also embedded locally in neighborhood contexts. The building complex, its history, and its symbolic effect for the urban community are to be preserved and reinterpreted and not just released to profit-oriented investors. As part of an integrated workshop process, the shared vision of the **Haus der Statistik** was gradually developed in several rounds of reflection with the involvement of many stakeholders of the circular ecosystem.*

02. Diversified financing pool



[ 31 ] Funding pooled from various sources (own illustration)

If circular ecosystems are conceptualized not only as walk-in utopias, but also as drivers for changing economic structures, they must be based on a plurality of financing structures. Ensuring robust financing structures does not mean maximizing the monetary profit of individuals in the ecosystem or pursuing debt-driven growth strategies. Rather, the aim is to find a mode of financing that enables circular ecosystems to overcome their experimental status and have a long-term transformative effect on local production and consumption systems. An innovative way to pool funding is essential to lifting circular ecosystems out of their niche existence so that they become economic “mainstream”.

At first glance, the principle of a “diversified funding” appears trivial, the complexity of the idea, however, increases significantly with its practical implementation and harbors major internal points of conflict. The examined pioneering projects were financed during their start-up phase by seed funding in the form of national or federal government programs, foundation grants or project-based research funding, which they received due to the innovative nature of the circular ecosystem. However, after the start-up phase, there tends to be a lack of follow-up funding to transform the initially experimentally designed “living laboratories” into long-term, autonomous circular ecosystems. Accordingly, an early exploration of innovative financing models that not only target a potential source of income, but also include a portfolio of diverse financial inflows, is required.

Financing shared infrastructures (for comparison see p. 127)

*Collaborative value creation and participatory urban agriculture are at the forefront of Zukunftshof. For this purpose, the project is organized as a hybrid, i.e., as a cooperative and an association. The producers of the **Zukunftshof** operate independently, yet there is close cooperation through the shared use of infrastructure (e.g., shared storage rooms, shared energy system and a collectively operated farm shop). The utilization concept of the **Zukunftshof** is built on the idea that merging means of production, cycles of goods, material and energy reduces the total net energy and net resource requirements. This allows for synergies in the production process and promotes the exchange of expertise. Producers make co-operative contributions in exchange for using the infrastructure provided by the co-operative. Customers can join the cooperative and / or the association as supporting members who financially support the development and maintenance of the **Zukunftshof**. In return, they receive, for example, discounts on the products of the Zukunftshof. By offering on-site tours, workshops, seminars, cultural events, or repair services, as well as donations, external business collaborations or participation in research projects, the ecosystem stakeholders of the **Zukunftshof** tap into a wide range of different sources of income to secure the long-term funding of the pioneering project.*

03. Local transformation alliances



[ 32 ] Local transformation alliances (own illustration)

Circular ecosystems are arenas for the concrete negotiation of viable collaborative business models. The practice and scaling of the pioneering works of circular ecosystems depend on additional alliances that enable these projects to develop, consolidate and, if possible, expand their scope for action. This requires looking beyond the ecosystem’s boundaries, i.e., the regular scanning for and evaluation of the social environment for potential transformation alliances. The main areas of activity vary and range from traditional political lobbying to organizing public, local neighborhood discussions and exchanges, or concrete cooperation with local economic players.

Most importantly, if and how circular economic practices, sustainable consumer behavior or democratic participation are put into practice is negotiated directly at the regional and local level. It is cities, municipalities, and districts that make decisions on change for sustainable lifestyles. Hence, most of the analyzed pilot projects focus on urban development oriented towards the common good, and their area of work covers the triad of ecology, social issues, and culture. Circular ecosystems create opportunities of participation by the immediate neighborhoods and strengthen transformation alliances by hosting a variety of events.

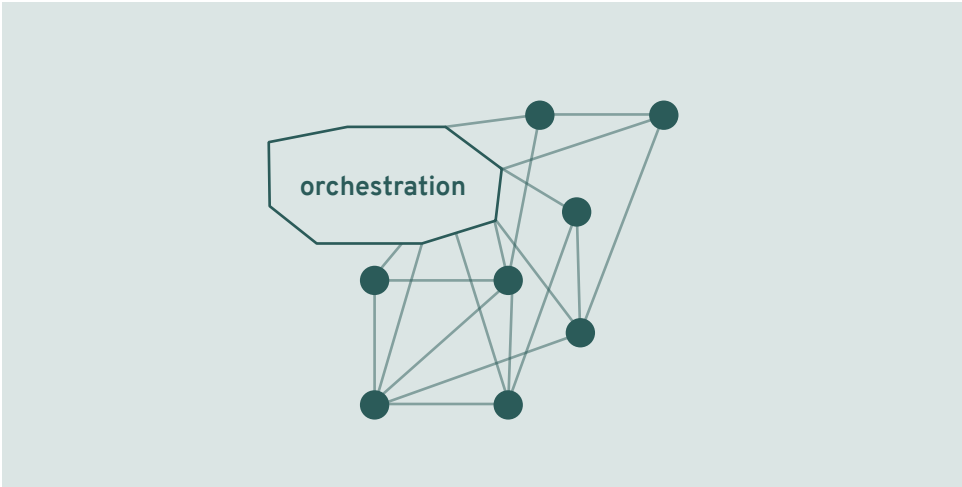
Analyzing the pilot projects highlights the importance of their grounding in local politics. A circular ecosystem, with the goal of contributing to the transformation of local and regional production and consumption systems, can only be effective if it is incorporated into urban and regional development. Close networking within local (urban) societies and raising public awareness on the potential of circular ecosystem can turn their implementation into political priority. Transformation alliances, and the political anchoring within local politics highlight the social and economic benefits of circular ecosystems and thereby increase their attractiveness for future investments.

Political Anchoring (for comparison see p. 125)

*Thanks to great media attention generated by an art campaign at the Haus der Statistik in 2015 and with the help of a strong alliance of social and cultural organizations, the proposals of Haus der Statistik initiative entered the political discourse. The ongoing support by the district mayor after the art campaign was crucial for the project in service of the community. The unanimous decision by the Berlin Mitte district council to communalize the site provided social and political legitimacy to the pilot project.*



04. Stabilizing orchestration



[ 33 ] Stabilizing orchestration (own illustration)

The purpose of a circular ecosystem is to exchange and share tangible (e.g. physical infrastructure) and intangible resources (e.g. technological expertise or social relationships) in order to put product and material cycles into practice in a fair and equitable manner. While those participating in the ecosystem act independently, overarching coordination and organization of the circular ecosystem is essential. Orchestration plays a key role. The orchestrator acts as a mediator between the ecosystem players and creates platforms for regular communicative exchange; orchestration coordinates investment projects of the circular ecosystem and is considered a moderating pillar in the strategic development of the circular ecosystem.

However, it must be emphasized that the role of orchestration should not be seen and interpreted as a kind of central authority that makes forward-looking decisions on behalf of the entire circular ecosystem. Particularly in the context of a circular society, governance, leadership and strategic management of the circular ecosystem, are based on a participatory and democratic system of control and regulation that is designed to prevent structural power asymmetries (see Principle 5: Transparent and open governance structure).

The ecosystem orchestrators in the pioneering projects see themselves as guardians of the interests and demands of those involved and participating in the ecosystem. They act as mediators of internal “collaboration crises”, which are mostly triggered by differences in financial and/or time resources, diversity of perspectives or diverging experiences among the ecosystem’s participants.

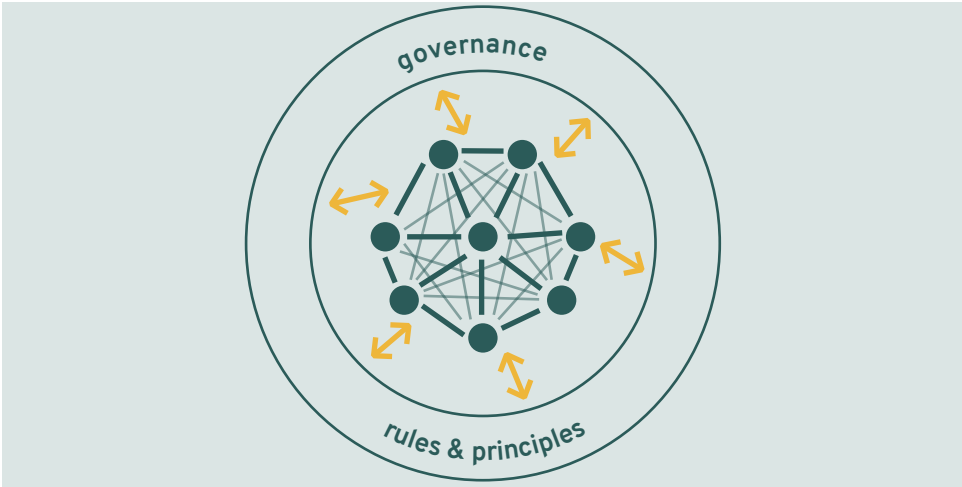
They also systematically arrange and maintain transformation alliances (see Principle 3: Local transformation alliances) and identify sustainable financing models (see Principle 2: Diversified financing) and draw up proposals for the long-term infrastructure development of circular ecosystems.

Whether orchestration is officially constituted as the stabilizing core of the circular ecosystem in the form of a cooperative, an association or through other, new types of collaboration such as civic-public partnerships (e.g. Haus der Statistik and Zukunftshof Wien) or whether existing actors such as a m administrations (in the case of Amsterdam) or an innovative association of independent organizations (in the case of CEWI), depends heavily on the context.

**Build and Orchestrate (for comparison see p. 126)**

*Three independent organization formed a consortium to orchestrate the CEWI project. The consortium created an organizational framework for the operational and strategic implementation of the pioneer project of developing cross-sectoral ideas for implementing a circular industrial transition. The consortium supported the coordination and content management of the six subgroups that formed the ecosystem. Knowledge transfer between the six ecosystem actors was organized through regular bilateral dialogue sessions as well as exchange forums and workshop formats. The consortium was also responsible for the visibility of the project: They presented the objectives, project content or work results to the interested public and explored funding opportunities for the concrete implementation of CEWI-project ideas.*

05. Transparent and open ecosystem governance



[ 34 ] Transparent and open ecosystem governance (own illustration)

“Governance” in the context of circular ecosystem refers to the non-hierarchical structure of circular ecosystems as well as the autonomy of the actors participating in one system. Ecosystem governance refers to a system of rules that were developed by the participating actors in democratic negotiation processes. It encompasses the entirety of collectively negotiated rules and principles applicable to specific problems, decision-making situations, etc. which are justified with reference to the collective interest. Consequently, the set of rules must be structurally flexible to adapt to the constant dynamic development of the circular ecosystem. Additionally, – and this is anything but trivial and probably the greatest challenge – it must consider the respective characteristics and situations of the participating actors without violating or undermining the principles of equality and democratic participation. This includes differences in the organizational size of the participating actors, divergent investment volumes in terms of time, infrastructure and funding, diversity of know-how, and different associated interests of the actors.

Even if the democratic participatory development and institutionalization of an adequate ecosystem governance structure is an extremely complex task, it can present a useful and effective framework of orientation in decision-making processes and situations of conflict. The following selection of questions exemplifies specific areas that could be covered by ecosystem governance:

- How can democratic collective decision-making processes be maintained and improved?
- Who bears the organizational and legal responsibility for decisions in the circular ecosystem?
- How can decision-making processes map the unequal investment volumes of different actors, which they contribute to the development and long-term preservation of the circular ecosystem, without violating or undermining the principles of equality and democratic participation?
- How can interested individuals join the circular ecosystem?  
How does it change the distribution of responsibilities and property rights?
- How can the power of ecosystem orchestrators (see Principle 4: Stabilizing orchestration) be limited to a reasonable level?

Dynamic governance structure (for comparison see p. 125)

The core of the governance structure of the **Haus der Statistik** during the planning, participation, and construction phase is the so-called “Koop5”. Koop5 consists of the Senate Department for Urban Development and Housing, the Berlin-Mitte District Office, the state-owned companies WBM Wohnungsbaugesellschaft Berlin-Mitte mbH and BIM Berliner Immobilienmanagement GmbH as well as the legal representative ZUsammenKUNFT Berlin eG. The five cooperation partners work together striving for consensus and share the responsibility for the development of the **Haus der Statistik** as a communal space. In this way, non-governmental initiative is combined with the expertise and scope for action of the municipal administration. Koop5 is based on constantly evolving collaboration agreements that set out the shared values, property rights, obligations, decision-making competences, and future responsibilities (distribution of space, cost sharing, etc.) among the participating stakeholders.



06. Translocal networks



[ 35 ] Translocal networks (own illustration)

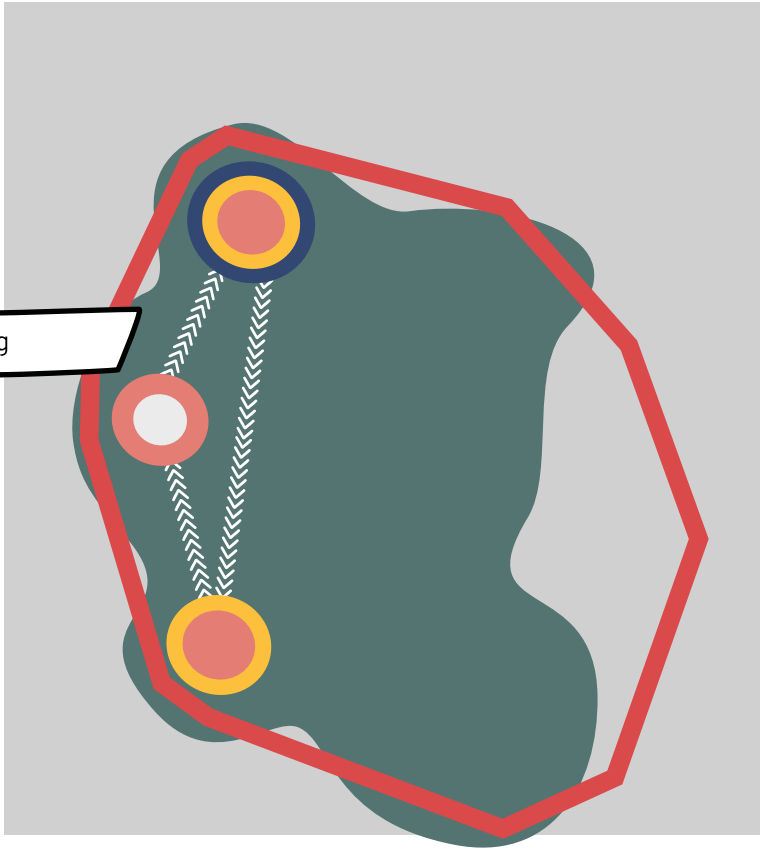
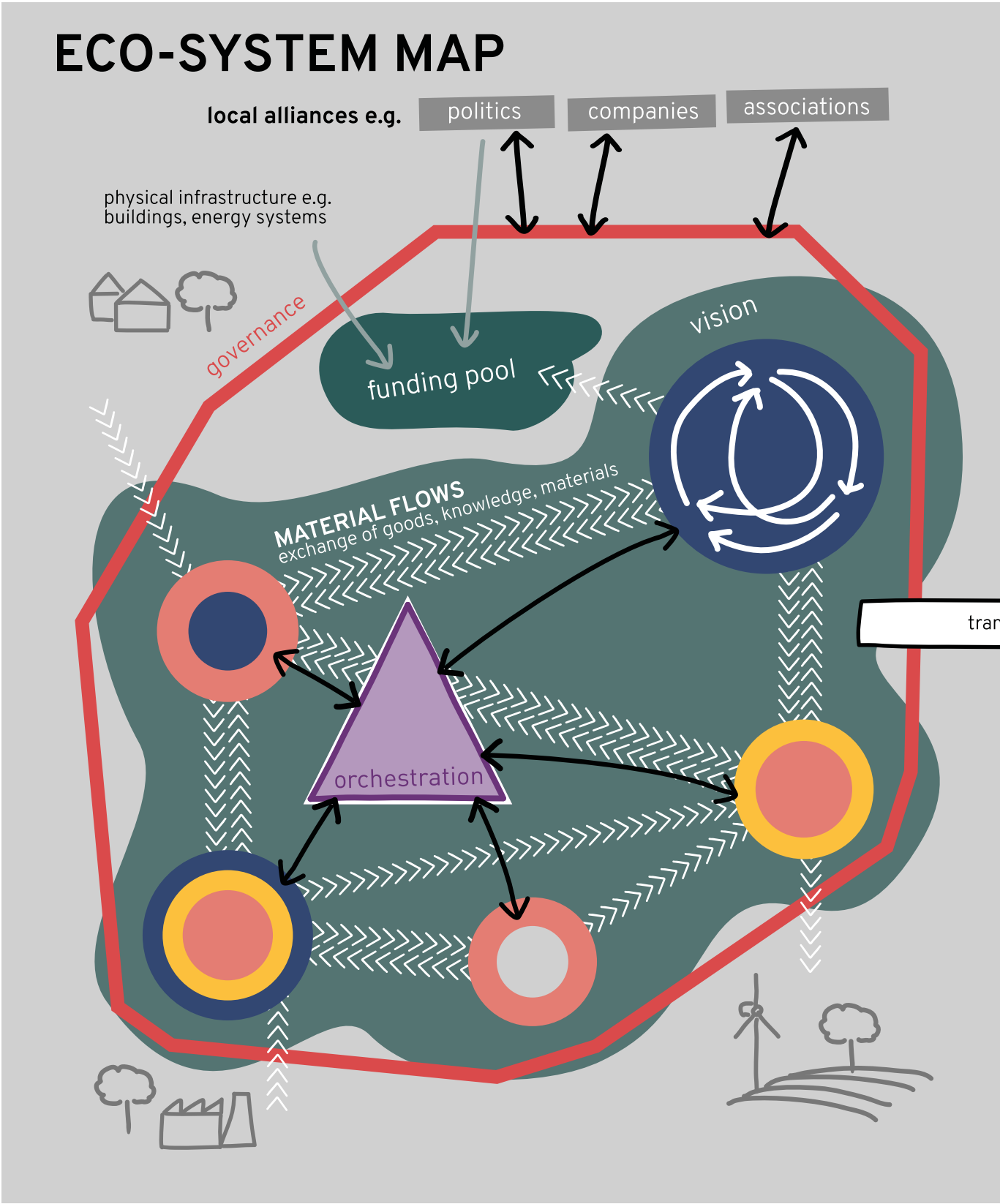
Circular ecosystems are embedded in local cultures and are driven by committed citizens, civic organizations, governmental and economic stakeholder groups that primarily tackle long-term challenges in their specific social environment. In order to scale their transformative effects and replace current production and consumption systems in the future, they must find broad social acceptance and make up a significant part of the future economic mainstream.

To increase their socio-ecological impact and to maintain the necessary economic relevance, circular ecosystems should join forces in translocal networks. In this way, they develop a common transformative identity, exchange ideas and experiences with each other and thus create a terrain that specifically orchestrates reciprocal learning processes. As a result of systematic linking through translocal networks, different types of resources, competences and skills can be bundled to extend the transformative effects to a supra-regional scale. This not only strengthens successful pioneering projects, but also enables their replication in other geographical regions with individual local requirements and conditions. Translocal networks also helps to build cross-ecosystem interest groups and coalitions to incorporate common interests and objectives into the political negotiation process.

Transformation in the making (for comparison see p. 128)

*Amsterdam is a global pioneer as a city-wide circular ecosystem. With various approaches and instruments, such as the implementation of the “Amsterdam Circular 2020-2025 Strategy” based on the concept of the donut economy, a diverse landscape of transformation towards a circular society has emerged in Amsterdam. The example of Amsterdam as a circular ecosystem is already spreading far beyond the Dutch borders and inspiring other cities around the world. Freely accessible publications (Circular Economy Programs: Lessons and Recommendation), lectures, events (e.g. Donut Deal Days), educational opportunities and collaboration networks (C40 Network, Amsterdam Donut Coalition or Amsterdam Economic Board) are helping to spread the transformation knowledge generated to other cities and regions around the world.*

ECO-SYSTEM MAP



[ 36 ] Eco-System-Map (own illustration)

## **IV. FOCUS TOPICS**

D) CIRCULAR LITERACY

# // Circular Literacy

PROCESS  
// Co-design in the Team 4

Team 4 “Circular Literacy” consisted of eleven participants from academia and practice: experts on circular society, skill transfer, and the design of learning environments in education, culture, civil society and politics.

In the first phase of the participatory process “**Understanding & Defining**”, Team 4 compiled a collection of existing circular literacy projects, toolkits, literature and methods. This collection was to be expanded in the following months. Based on the consideration of existing concepts and approaches team 4 formulated a tentative definition. It became apparent that this definition was still very loose and difficult to apply to the existing educational landscape. Accordingly, the definition was revised with an emphasis on applicability to the current field of education. Therefore, a catalogue of circular literacy competences was developed. An exploration of the team members’ priori experiences with circular literacy formats lead to a template for the development of such competencies for circular literacy. The template included principles for a circular society (Chapter II B.), formulated crucial and fundamental skills for “Education for Sustainable Development” (ESD) and identifies various groups which each require a tailored development and application of the different skills.

In the second phase – “**Conceptualization**” – the working group revised and reworked formulations for circular literacy competences through repeated brainstorming and focus group discussions. The group explored how these competences could be fostered in different contexts. In a co-creative moment during a 2.5-day **writing seminar**, formulations of competences were drafted, discussed across teams, and ultimately adopted. Subsequently, the results were systematized and processed.

The group came together for a total of eight digital workshop sessions, supplemented by sub-group and individual work. The process followed the “double diamond method”, working in iterative cycles of creative exploration and targeted convergence. The in-person sessions during the writing seminar proved to be a key moment in the co-creative process.

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1. WHY CIRCULAR LITERACY?  
// The need for circular literacy for a circular society

To strengthen circular production and consumption systems as well as preserve and regenerate natural cycles, an education initiative is needed. Circular practices require knowledge, skills, time, and infrastructure that are not yet widely available in everyday (working) life. Understanding and adopting circular practices is a process of learning that needs to be guided and supported. Circular literacy entails attitudes, practical knowledge, and skills to take circular action and to contribute incrementally to the development of a circular society. Education goals to promote circular literacy are scarcely embedded in our education systems. In Germany, only a few specialized study programs, project days, or trainings address sustainable and circular forms of production and consumption. Additionally, these few offerings generally focus on providing knowledge on specific topics, such as recycling. Education materials are also deficient particularly in German-speaking countries<sup>1</sup>. Existing environmental and sustainability education programs, such as “Education for Sustainable Development” (ESD), often focus on small-scale and easy-to-implement but inconsequential measures. The few explicit learning spaces for circular literacy, often supported by civic organizations, often face temporary or unclear funding.

Politicians, students, researchers, entrepreneurs, and administrative employees as well as citizens must be empowered to contribute to the success of a circular society. The aim is to gain knowledge about circular materials and production processes and to recognize and evaluate the strongly intertwined relationships between biosphere, techno-sphere and socio-sphere and their potential for circularity. Practical knowledge and skills of collaboration and transformation are required to trial and implement circular solutions. Circular literacy must be implemented in all areas of education and supported by the creation of learning and teaching spaces and educational communities within and beyond educational institutions.

1] This was the result of AG4's research.

2. WHAT IS CIRCULAR LITERACY?  
// Perspectives on education and a tentative definition.

Circular Literacy: A tentative definition.

Circular Literacy entails attitudes, practical knowledge, and skills, that make it possible,

- to recognized potentials and risks for a socio-ecological society,
- to evaluate effects and roles in production and consumption systems and
- to act in a circular way, to practice a circular society.

The focus is on enabling a variety of practices – such as repairing, sharing or circular design – as well as critical thinking and collaboration. Circular literacy creates the prerequisites for participating in a circular society and at the same time for proactively shaping it on the individual and structural level. Circular literacy cannot be defined exhaustively and should be understood as an open and dynamic concept. Knowledge is not understood merely as specialized expertise<sup>2</sup>, but also as practical, often implicit knowledge about how to carry out actions.

From educating to empowering: Literacy approaches at a glance

In line with the understanding of knowledge as the “ability to act”, both in the discourse of circular society and in transdisciplinary sustainability research, the term “literacy” is often used instead of “knowledge”. This is intended to emphasize the practical significance of the required knowledge.

→ Circular Literacy Framework

The work of Zwiers et al. (2020) is the only scientific research paper to date that deals with the concept of circular literacy as such. Circular literacy is discussed in the context of other literacy approaches and embedded in the sustainability discourse. From a structural perspective on knowledge and skill requirements for circularity, dimensions (e.g., understanding complexity) and indicators (e.g., consideration of effects throughout the life cycles) of circular literacy are formulated (see Table 1).

2] This is in line with the definition of knowledge in the Duden dictionary: “The totality of knowledge that someone has [in a particular field].” (as of 26/07/2023).

Type of knowledge	Dimensions	Indicators
System knowledge	Understanding of complexity	<ul style="list-style-type: none"><li>• Consideration of the interconnections between diverse components in biosphere, technosphere and sociosphere (or natural, social and technological systems)</li></ul>
Target knowledge	Establishing the circular economy	<ul style="list-style-type: none"><li>• Consideration of the self-organising properties of systems</li><li>• Consideration of de-materialisation and resource efficiency of economic and consumption practices</li><li>• Consideration of a closed-loop approach and feedback systems</li><li>• Consideration of resilience and regeneration of natural capital</li></ul>
	Preservation of natural livelihoods	<ul style="list-style-type: none"><li>• Consideration of planetary boundaries</li><li>• Consideration of impacts throughout the lifecycle</li></ul>
	Intra- and intergenerational justice	<ul style="list-style-type: none"><li>• Consideration of social justice</li></ul>
	Diversity and uniqueness	<ul style="list-style-type: none"><li>• Consideration of substantive, economic, political inclusion</li><li>• Consideration of diversity, local/cultural uniqueness</li><li>• Consideration of the creation of local capacities</li></ul>
Transformation knowledge	Epistemologies of complexity	<ul style="list-style-type: none"><li>• Integration and adoption of different knowledge and various perspectives</li><li>• Addressing multiple means and actors</li></ul>
	Reflexivity and innovation	<ul style="list-style-type: none"><li>• Relational and (self-)reflective knowledge</li><li>• Anticipation of unpredictable developments</li><li>• Creativity and innovativeness</li></ul>

[ 37 ] Circular Literacy Framework (Zwiers et al. 2020)

→ Key competences of Education for Sustainable Development (ESD)

However, it remains unclear which competences encompass the acquisition of knowledge and skills for circularity and what the necessary learning processes can or should look like.

For the former, the key competences of Education for Sustainable Development (ESD)<sup>3</sup> (see ESD info box) provide a point of reference. These eight overarching skills are intended to enable individuals of all ages and locations to contribute to the global sustainability goals. They comprise cognitive, affective, and motivational elements and are an interplay of knowledge, skills, abilities, motives, and attitudes. As these “competences” are acquired by learners through action, experience and reflection they require more than traditional teaching settings.

3] UNESCO (2017), translated by Zimmermann-Janssen et al. (2021).

BNE-Schlüsselkompetenzen

**Systematic thinking competence:** The ability to recognize and understand interrelationships, analyze complex systems and deal with uncertainty.

**Anticipatory competence:** The ability to understand and evaluate different futures – possible, probable, and desirable –, to create one's own visions of the future, to assess the consequences of actions and to deal with risks and changes.

**Normative competence:** The ability to understand and reflect on the norms and values underlying one's own actions, to negotiate sustainability values, principles, goals and targets in the event of conflicting interests and goals, uncertain knowledge, and contradictions.

**Strategic competence:** The ability to collaboratively develop and implement innovative measures that locally expand sustainability.

**Collaboration competence:** The ability to learn from others; to understand and respect the needs, perspectives, and behavior of others (empathy) while relating and responding to them sensitively (empathetic leadership).

**Critical thinking competence:** The ability to question norms, practices, and opinions, to reflect on one's own values, perceptions, and actions and to take a stand in the sustainability discourse.

**Self-awareness competence:** The ability to reflect on one's own role in society (locally and globally), to continuously evaluate and motivate one's own actions and to deal with one's own feelings and desires.

**Integrated problem-solving competence:** The overarching ability to apply different approaches to complex sustainability problems to develop viable, inclusive, and equitable solutions that promote sustainable development while integrating the above competences.



ESD info box:

In 2015, the United Nations passed the internationally applicable Sustainable Development Goals (SDGs) as part of the 2030 Agenda for Sustainable Development. “Quality education” is positioned as a distinct goal (SDG 4) but defined as a cross-cutting task for all 17 SDGs<sup>4</sup>. With the UN Decade of ESD (2005-2014) and the Global Action Program on ESD (2015-2019) as well as the ESD program “Education for Sustainable Development: Towards achieving the SDGs” (ESD for 2030), UNESCO has further committed itself to the goal of empowering people for sustainable development. Since then, ESD has been anchored in curricula in many educational institutions ranging from kindergartens to universities<sup>5</sup>. The development of key competences plays a central role in this. The UNESCO ESD 2030 follow-up program started in 2020 and will run until 2030, with the aim of contributing to the global 2030 sustainability agenda through ESD. Nationally, corresponding endeavors have been translated into action plans.

// The [ESD Roadmap 2030](#) forms the guideline for the coming years for the implementation of the new UNESCO program on ESD.

// The [global sustainability goals](#) explained

// The [guide to learning objectives, topics and learning activities for each sustainability goal](#)

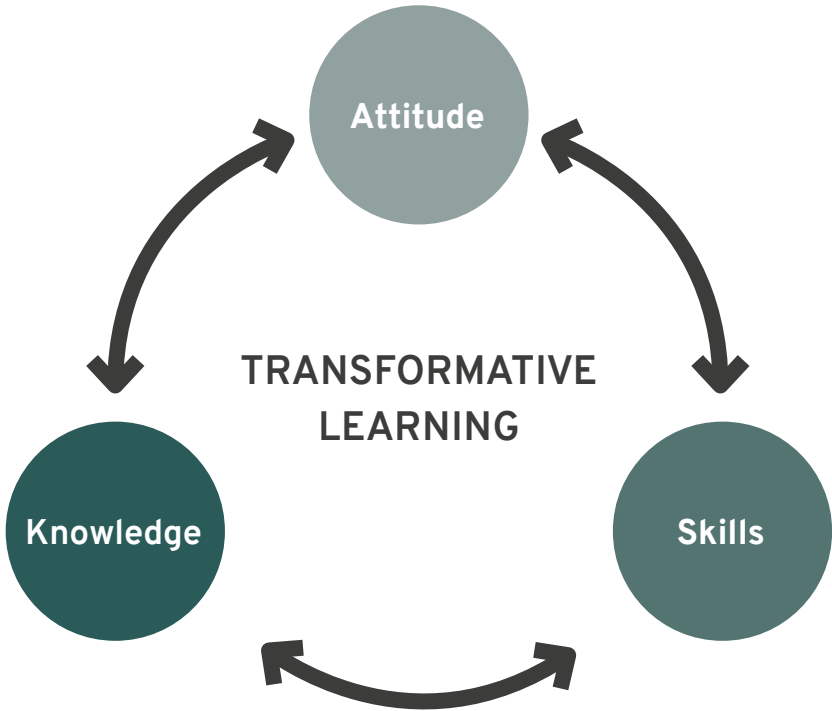
4] United Nations (2015)  
5] Singer-Brodowski (2016)

The “ESD key competences” also provide orientation on how to specify them in the context of circularity and for their acquisition by different groups. However, the ESD approach is also criticized: , for having a weak understanding of sustainability and a moderate willingness to critique existing economic models. Additionally, the ESD’s approach often limits itself to a “treatment of symptoms” through individual action, while “root cause analysis” and effective political and structural measures are rarely addressed<sup>6</sup>.

→ Transformative learning

In contrast, the concept of transformative learning is more concerned with structural and cultural barriers to social change<sup>7</sup>. It goes beyond the acquisition of knowledge and skills and aims to change fundamental behaviors, attitudes, and thoughts<sup>8</sup>. (see Figure 37). Learning is understood as a collective process of gaining awareness and emancipation, as empowerment rather than education<sup>9</sup>.


6] Wanner et al. (2020).  
7] Blum et. al, (2021).  
8] Singer-Brodowski, (2016b).  
9] Singer-Brodowski (2016a).



[ 38 ] Dimensions of transformative learning (adapted from Schneidewind, 2018)

→ Three approaches as the foundation for circular literacy

All three approaches offer different and complementary perspectives on prerequisites, necessary knowledge and skills as well as required learning processes. They enable the integration of circularity into the sustainability discourse, establish connectivity to existing and future ESD programs and have transformative potential. Based on these concepts and the expertise of the team members, a framework of competences for circular literacy were derived, possibilities for their strengthening presented and political demands for action formulated (Demand 01, Chapter I).

	CIRCULAR LITERACY FRAMEWORK <sup>10</sup>	ESD KEY COMPETENCES <sup>11</sup>	TRANSFORMATIVE LEARNING <sup>12</sup>
FOCUS	Dimensions and indicators of circular literacy.	Key competences which enable individuals to implement the SDGs.	Learning processes that stimulate critical thinking, challenge perspectives on meaning and behavior and reveal structural issues.
PERSPECTIVE ON EDUCATION / EMPOWERMENT	Structural perspective on knowledge and skill requirements for circularity.	Individual and system-compliant perspective on the acquisition of knowledge and skills for sustainability.	Collective- emancipatoryand system-critical perspective on learning as a process for transformation.
CONTRIBUTION TO CIRCULAR LITERACY	Integration of circularity into the sustainability discourse.	Connectivity to ESD programs.	Transformative potential of empowerment processes
 <div>Competences, methods &amp; political demands for action for circular literacy</div>			

[ 39 ] Three approaches as a basis for circular literacy (own presentation)

10] according to Zwiers et al. (2020).  
11] according to UNESCO (2017).  
12] according to Singer-Brodowski (2016a/b, 2021).

3. HOW DOES CIRCULAR LITERACY WORK?  
// Competences, methods, and good practice examples for different stakeholder groups

The term “competences” has become increasingly important in recent years in the general educational landscape. The Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany (Kultusministerkonferenz) has defined nationwide educational standards to develop and ensure quality as well as possibilities of evaluation. In turn, competence-level models are meant to enable teachers, learners and caregivers to determine which competences are covered by the standards and how these can be achieved<sup>13</sup>.

- Accordingly, the circular literacy competences developed by the working group: Specify circular literacy to provide a basis for discussion for research and educational institutions;
- Facilitate and make assessable the promotion of circular literacy;
- Make circular literacy compatible with the existing education system (particularly ESD programs);
- Provide methodological approaches for different stakeholder groups.

The competences themselves are divided into three categories according to the definition:

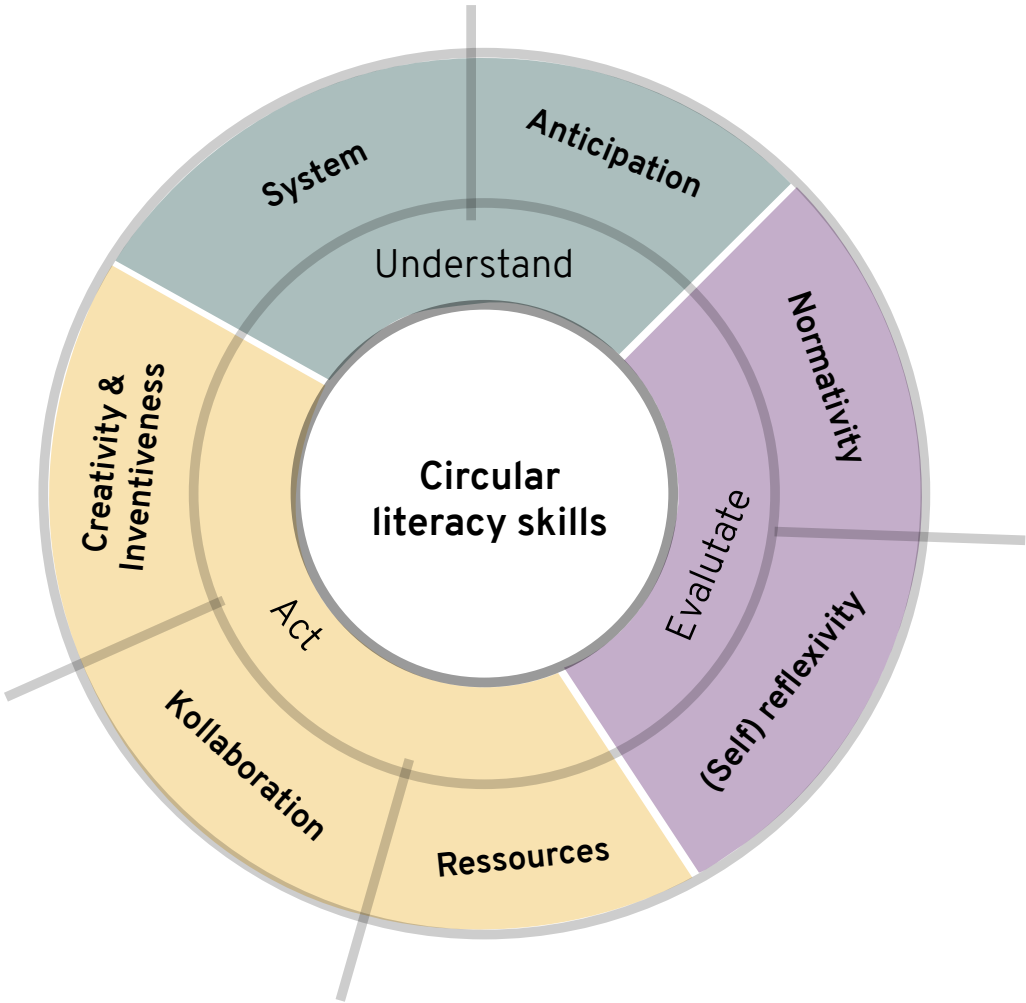
- recognizing** potentials & risks
- evaluating** impact & roles
- acting** collaboratively & creatively

This entails not only specific knowledge and skills, but also the development of personal attitudes and the interplay of cognitive, affective, motivational, and emotional elements. In contrast to the ESD key competences, however, we do not believe that every individual or every organization needs to acquire and practice all competences in the same way; focusing and prioritizing on a selection of competences seems realistic and useful.

The competences are structured according to the three categories of recognizing, evaluating, and acting. As is common in education, the description of the competences follows the standard structure of a brief description and is supplemented by learning objectives. A selection of methods, examples of good practice, literature and toolkits is intended to make the application and promotion of the competences accessible and intuitive for different groups of stakeholders.

13] Further information on the educational standards of the Standing Conference of the Ministers of Education and Cultural Affairs can be found on the [website of the Standing Conference](#).

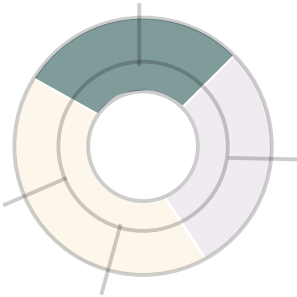
Many of the selected examples strengthen several competences and are relevant for different stakeholder groups; the simplified classification is not exhaustive but provides orientation and inspiration. While some of the examples do not fulfil the requirements of transformative learning (from a structural system-critical perspective) and are largely at the level of a circular economy, they nevertheless represent starting points in the educational landscape that need to be further developed for a future of societal circularity.



[ 40 ] Circular Literacy Competences (own illustration)

# 01

Recognizing



## Systems competence // Understanding systems

The ability to understand complex relationships between different components in the biosphere, techno-sphere and socio-sphere, to analyze their properties and to recognize potential for circularity.

The learners can ...

- Differentiate closed systems from open systems.
- Understand interactions and effects between and within social, technical, and biological systems and deal with complexity.
- Analyze data and experiences on (non-)circularity.
- Recognize interdependencies, needs and potential synergies and conflicts across sectors, industries, and disciplines.

### PROJECTS, TOOLKITS & METHODS:

- **General // Tools & examples** “[Observe and interpret the system I Ellen MacArthur Foundation](#)” (EN): Background information, starting points and good practice examples for understanding your own system. System mapping helps to visualize complex systems in a simplified way and to show relationships and dependencies in order to find out where interventions in a system are opportune.
- **School // Online course** “[Digital Spark Kreislaufwirtschaft I Education Innovation Lab qUG](#)” (GER): The Digital Spark learning platform enables topical digital lessons for pupils from year 9 onwards. Here, teachers can find a free multimedia learning unit to introduce the topic of the circular economy for project-based, creative lessons.
- **University // Guide** “[Circular Economy Competences and Curriculum Development I REFLOW](#)” (EN): The guide provides an overview of the current circular economy teaching landscape and includes examples of university courses that have been developed to teach circular economy.
- **Culture & Media // Exhibition** “[Design im Auftrag der Zukunft I FUTURIUM](#)” (GER): The interactive exhibition on product life cycles and their socio-ecological impact makes the effects of decisions on materials and processes tangible.
- **Policy & Administration // Report** “[Circular Glasgow I Glasgow Chamber of Commerce, Zero Waste Scotland, Glasgow City Council & Circle Economy](#)” (EN): The project analyzes various sectors and areas of the city of Glasgow (including local agendas, resource flows, stakeholders) and identifies levers for the transformation towards a circular economy.

# 02

Understand

## Competence of Anticipation // Designing futures & assessing consequence

The ability to create and understand circular visions and images of the future and to assess their future consequences.

The learners can ...

Design various possible and desirable circular futures, understand them and make them tangible for others.

- Reflect on (their own) visions of a circular society considering possible consequences and side effects.
- Contrast desired visions of the future with the status quo and derive potential for innovation and exnovation.



### PROJECTS, TOOLKITS & METHODS:

- **General // Method** “[Design Futuring / In: Mandir & Groß](#)” (EN): With the help of design methods, Design Futuring aims to enable people to sketch and negotiate different futures. This involves a systematic and strategic examination of the future.
- **Overarching // Project** “[The Mission: Designing Our Irresistible Circular Society / DDC](#)” (EN): One mission, ten actions – the circular society mission developed jointly by 30 Danish stakeholders presents inspiring and motivating ways to achieve circular futures.
- **Economy, politics & administration // Study & recommendations for action** “[Modell Deutschland Circular Economy / WWF](#)” (GER): The study presents a comprehensive path for a German circular economy by 2045 and illustrates which measures can be implemented most effectively in the respective sectors and which policy instruments can be used to drive this transformation.
- **Policy & Administration // Consulting & Toolkit** “[The SOIF Toolkit / School of international futures](#)” (EN): The global, non-profit collective of strategy and policy experts for future-oriented policy, supports governments and other actors with future technologies to make better long-term policy decisions.
- **Politics & Administration // Ideas competition** “[Re-Use im Lebensmitteltransport / Senatsverwaltung für Mobilität, Verkehr, Klimaschutz und Umwelt](#)” (GER): The Berlin Senate Department is exploring ideas and strategies to reduce packaging waste in the food industry while ensuring the safe transport of food.
- **Policy & administration // Foresight study** “[The circular economy and its impact on occupational safety and health / European Agency for Safety and Health at Work](#)” (EN): The foresight project analyzes how different sectors could be affected by the implementation a circular economy by 2040 and the potential consequences for occupational safety and health.

# 03

Evaluate

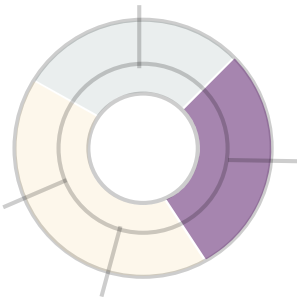
## Normative competence // Reflecting on principles and values

The ability to reflect on, criticize and continuously negotiate values, principles and goals that underlie one's own actions and hinder or promote a circular society in the face of uncertainties and conflicts of interest and goals.

The learners can ...

Understand and critically reflect on (their own) principles of circularity and sustainability and develop them further.

- Question and unlearn patterns of thought, value, and action of linear and growth-orientated practices.
- Negotiate issues of value, justice, participation, and diversity and position themselves accordingly.



### PROJECTS, TOOLKITS & METHODS:

- **General // Card set** “[Mustersprache des Commoning / Helferich and Petzold](#)” (GER): The pattern cards aid reflection on self-organization, solving one's own problems and developing new ideas – always with an emphasis on successful cooperation, successful self-organization and a caring and self-determined economy.
- **Culture & Media // Platform** “[Nachhaltige Ausstellungen / die Etagen GmbH](#)” (GER): The platform offers good-practice examples of sustainable exhibition designs, resources and materials as well as practices of lending and renting.
- **Culture & Media // Publication** “[Zeit für Zukunft / Kulturpolitische Gesellschaft e.V.](#)” (GER): The brochure provides inspiration for climate-just cultural policy by highlighting examples of good-practice, providing input and discussing theoretical and practical implications.
- **Business & Technology // Tools & Examples** “[Rewrite the rules / Ellen MacArthur Foundation](#)” (EN): A toolkit with background information, starting points and good-practice examples for applying circular economy principles to individual or organizational contexts. (Selbst-) Reflexivität // Rollen & Handlungen reflektieren





# 04

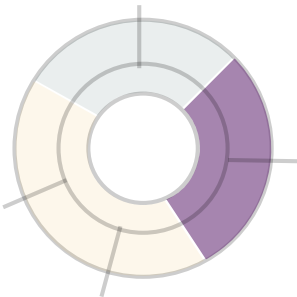
Evaluate

## (Self-)reflexivity // Reflecting on roles and actions

The ability to reflect on roles in a circular society and their associated benefits and attitudes and to continuously evaluate one's own actions with regard to the standards of a circular society.

The learners can ...

- Tentative impact of their individual/organizational actions for a circular society and understand the significance of their activities.
- Differentiate and reflect on their own values, needs and privileges as well as those of a circular society compared to other value models.
- Recognize possible contradictions between values and actual behavior (value-action gaps) and identify reasons and starting points for adjustments.



### PROJECTS, TOOLKITS & METHODS:

- **General // Tool** “[Circular Society Toolkit / Hans Sauer Foundation](#)” (GER): The set of cards for workshops provides an introduction to the principles of the “Circular Society” and guidance for reflection on the respective roles for promoting a circular society. A template can be used to outline (project) ideas.
- **School // Project** “[Nature & Environment Learning Centre / City of Amsterdam](#)” (EN): In the learning center, primary school pupils learn about ecosystems, cycles and much more over the course of a school year. At the same time, the knowledge is put into practice: pupils are given their own plots of land (6 square meters) to plant, tend to and harvest under supervision. A similar Dutch project is the [NatureWise Programme](#).
- **School // Project and tool** “[Schüler-Reperaturwerkstatt / Das macht Schule](#)” (GER): This repair café is located at a school and allows young people to try out repairing instead of throwing away. They can explore their own potential impact for a circular society. At the same time, the repair café is an opportunity to open up the school to the neighborhood.
- **Business & Technology // Tool & Consulting** “[Circular Business Model Assessment / WWF](#)” (GER): WWF presents companies with an approach and accompanying process that shows where they stand in the circular economy and how they can improve.
- **Business & Technology // Strategy game** “[Make it circular! acatech](#)” (GER): Using a set of cards and detailed accompanying material, this strategy game offers small businesses the opportunity to align their business model more with a circular economy.

# 05

Acting

## Resource competence // Developing materials & processes

The ability to understand the material basis of a circular society and to design it with an emphasis on regeneration, resilience and reduced energy and resource consumption.

The learners can ...

- Understand a circular society's demands on materials, compounds and manufacturing processes (e.g. sufficient, efficient, regenerative, circular), as well as their production and processing.
- Anticipate and address the entire life cycle of potential products and systems.
- Recognize and design opportunities for non-material usage and services.



### PROJECTS, TOOLKITS & METHODS:

- **Vocational education // Teaching materials** “[Ressourcenbildung / BillRessNetzwerk](#)” (GER): The aim of the module is to integrate resource conservation and resource efficiency into vocational education and training. Materials for (vocational) school lessons have been customized accordingly and are geared towards the needs of teachers.
- **Culture & Media // Exhibition & Publication** “[Material Loops / Kunstgewerbemuseum Berlin & Hans Sauer Stiftung](#)” (GER/EN): A comprehensive reader accompanying the exhibition presents circular thinking and a selection of action based pioneering design projects. The network of actors and projects stretches from Berlin across Germany to the Italian “Circular City Prato”.
- **Business & Technology // Project** “[C2C LAB / Cradle to Cradle NGO](#)” (GER): The lab is the first building to be comprehensively renovated according to Cradle-to-Cradle criteria. The NGO makes this process transparent and tangible by guiding visitors through the building and its permanent exhibition elements. It also functions as the venue for other educational activities organized by the NGO.
- **Business & Technology // Toolkit** “[Circular Design Guide / Ellen MacArthur Foundation & IDEO](#)” (EN): The toolkit was developed to support innovators in developing smart, effective, and creative solutions for a circular economy.
- **Business & Technology // tool** “[Circular Design Rules / IDRV](#)” (GER/EN): Circular design plays a central role on the path to a sustainable circular society. The “Circular Design Rules” were developed to provide stakeholders in the product development process with a simple set of rules for the design of circular products.

- **Politics & administration** // Guide “[Leitfaden für eine strategische Beschaffung nach Cradle to Cradle / Cradle to Cradle NGO](#)” (GER): This guide is aimed at stakeholders in municipal procurement and is intended to help make public procurement more circular.
- **Civil society & education** // Projects “[Kunststoffschmiede / Konglomerat e.V., Zentrum für klimaschonende Ressourcennutzung / Kunststoffe e.V., Verbund Offener Werkstätten und Repair Cafés](#)” (GER/EN): Free hands-on workshops and participatory offers on plastic recycling, repair and upcycling from open workshops, repair cafés and other lighthouse projects.



[ 42 ] Workshop organised by Kunsstoffschmiede e.V. (Photo: Hans Sauer Foundation)

# 06

Acting



## Collaboration competence // Understanding perspectives & acting together

Appreciate and incorporate different interests, types of knowledge, and perspectives into solutions for a circular society. Create access to collected knowledge and skills for all.

The learners can ...

- Communicate with various stakeholders from different sectors, build relationships, exchange expertise, and develop collaborative solutions in the spirit of a circular society.
- Respect the needs, interests, and merit of living beings and ecosystems.
- Design structures and processes in such a way that those affected can participate in them.

### PROJECTS, TOOLKITS & METHODS:

- **General** // Conference & platform “[Circular Society Forum / Hans Sauer Foundation & BTU Cottbus](#)” (GER/EN): The annual forum offers the opportunity for transdisciplinary knowledge transfer, exchange of experience and networking. The permanently accessible platform enables direct exchange with the community and access to material.
- **General** // tool “[Multi-stakeholder system map / Hans Sauer Foundation](#)” (GER): The map helps finding respective stakeholders for individual projects and gaining a better understanding of them and their interests and relationships.
- **General** // Project “[Ecosystem Map Berlin / Circular Berlin](#)” (GER/EN): The map shows Berlin-based organizations and projects that work in the field of circular society / circular economy.
- **University** // Project “[ZukunftGestalten@HM / Munich University of Applied Sciences](#)” (GER): In the semester projects, interdisciplinary student teams work together with experts on issues of sustainability and circularity.
- **Policy & Administration** // Toolkit “[A Design-Driven Approach to Circular and Digital Partnerships / Danish Business Authority, twin transition & DDC](#)” (EN): The handbook is intended to inspire and guide project managers and executives in city administrations to promote circular digital public-private partnerships and innovation processes.
- **General** // Network “[Circular Berlin](#) and [Circular Munich](#)” (GER/EN): The association of politicians, companies, citizens and civic organizations that is committed to circular infrastructures and offers various services for this purpose.



# 07

Acting



## Innovativeness & creativity // Developing & implementing solutions

The ability to try out, develop, practice and implement various solutions and processes for a circular society.

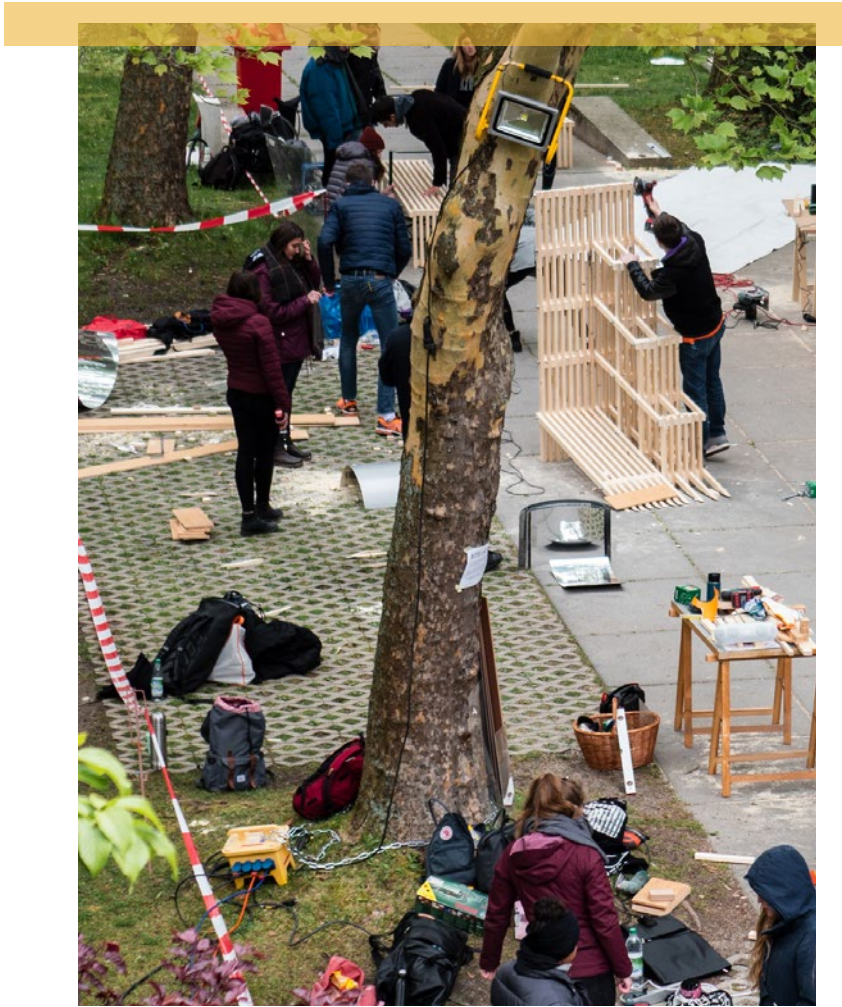
The learners can ...

- Experiment creatively with solutions for different aspects of a circular society, develop them further and prioritize among them.
- Build on existing knowledge about the circular society, exploit opportunities for implementation and find ways of actualization.
- Define milestones and action steps for the design of desired circular futures.

### PROJECTS, TOOLKITS & METHODS:

- **General // Project** “[Upcycling Börse Hannover / Glocksee Bauhaus e.V.](#)” (GER): Provides a space for creative and artistic engagement with “circular society” and the climate crisis. This includes educational programs for schools, multipliers and companies, design competitions, open workshops, art and neighborhood culture projects.
- **University // Project** “[Circular Community / Trier University of Applied Sciences](#)” (GER): The innovative community aims to empower students to act in a circular way and to promote circular literacy on campus. The students have adopted the project and are now working on various topics in self-organized working groups.
- **School // Guide** “[Cradle to Cradle an Schulen: Lernorte neu denken und zukunftsfähig gestalten / Cradle to Cradle NGO](#)” (GER): The NGO offers modular educational materials for the practical implementation of the “Cradle to Cradle” concept as an integral part of teaching on various levels.
- **Vocational training // Training** “[KlimaKompetenz-Camp – Vision Circular Society / IBBF & UfU](#)” (GER): This free training program for HR developers, sustainability officers and teachers at vocational schools in Berlin provides impulses and insights into the practice of the “Circular Society”. Participants are given time, space, and support for developing their own working, teaching and learning materials to strengthen the circular society in their professional context.
- **Culture & Media // Digital Guidebook** “[Tempelhof Lab / Cradle to Cradle NGO u.v.m.](#)” (GER/EN): The Tempelhof Lab shows current possibilities and limitations of climate- and resource-positive event management. This guidebook shares the lessons we learned and “Cradle to Cradle’s” best practices for sustainable event management.

- **Business & Technology // Toolkit** “[Design your Circular Transition / DDC](#)” (EN): The toolkit contains eight tools that provide guidance through a circular innovation process and offer the necessary resources for its implementation. It promotes the development of many circular literacy competences – from system competence to creativity and innovativeness.
- **Business & Technology // Toolkit** “[From ambition to action: an adaptive strategy for circular design / Ellen MacArthur Foundation](#)” (EN): The toolkit provides six tools with background information, examples and guidance on how to use design to enable change in organizations and promote circular literacy competences.
- **Business & Technology // tool** “[CIRCO Workshops / Effizienz Agentur NRW](#)” (GER): The workshop program supports companies in transitioning from their existing linear value chains to new, sustainable business models.



[ 43 ] Project “Markt Schwaben macht sich” (Photo: Hans Sauer Foundation)

- **Civil society // Project** “[\*Werkzeugbibliothek / Erfindergarden Foundation gUG\*](#)” (GER): At this “tool library” in Munich lends out tools such as 3D printers, a candy floss machine, projectors and much more for a small fee.
- **Civil society, politics & administration // project** “[\*Haus der Materialisierung / Initiative Haus der Statistik\*](#)” (GER): The lighthouse project brings together workshops for self-help and project work, a repair café, food distributor, cargo bike rental, a market for used materials and borrowing shop. It is carried out by a collective of various initiatives and institutions that research, practice and work on sustainable management and climate-friendly resource utilization.

**Outlook:** The “Circular Society Principles” (Chapter II B.) provide a framework for the content and process of implementation of circular literacy competencies. In a next step, learning objectives – that take into account the three aspects of recognizing, evaluating and acting – could be formulated for each circular society principle. This would make the competencies more coherent, complete and goal oriented. Similarly, specific ESD learning objectives were formulated for each SDG at different process levels.Ausblick

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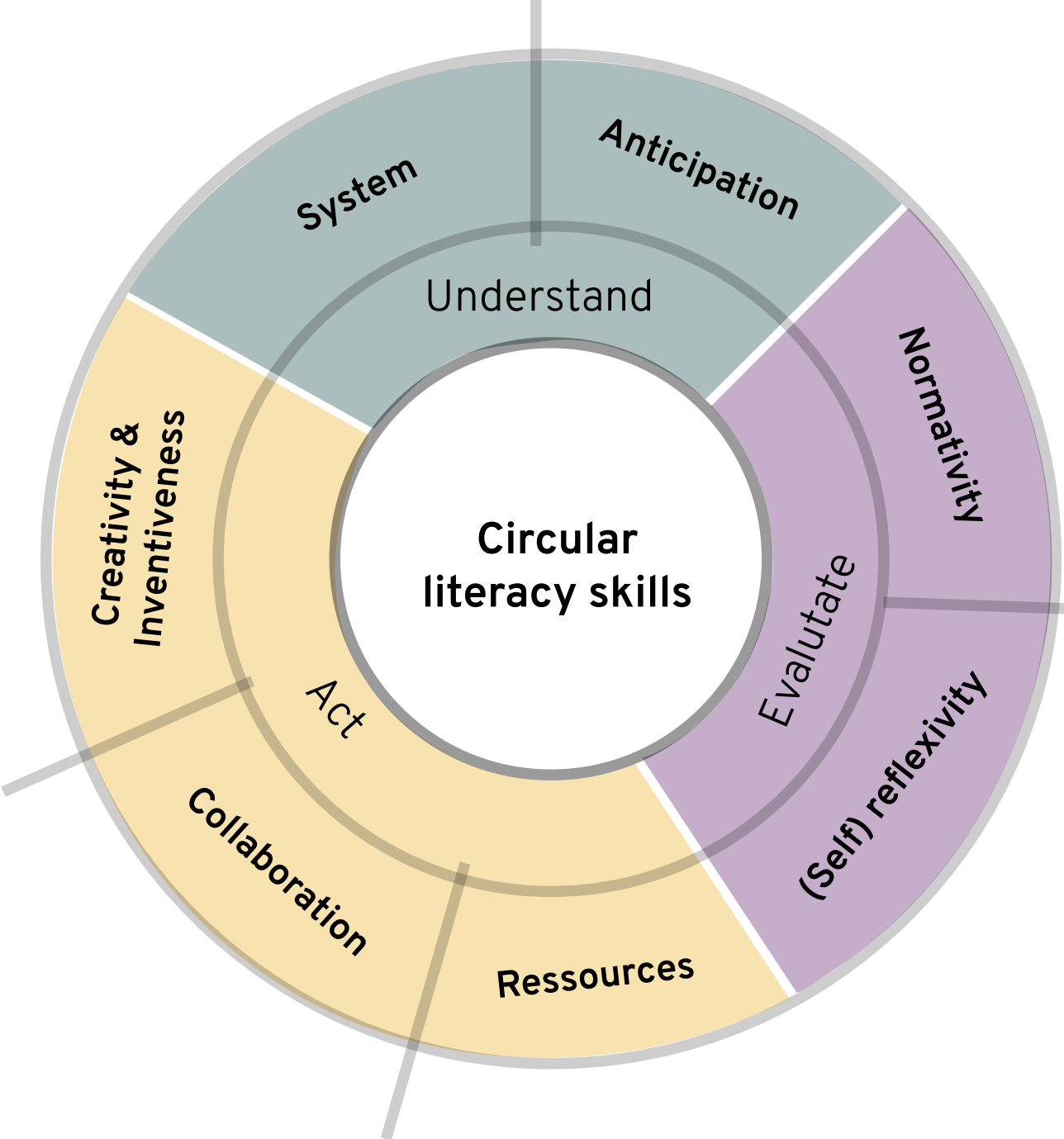
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[ 44 ] Circular Literacy Competences (own illustration)

**Systems competence // Understanding systems**

The ability to understand complex relationships between different components in the biosphere, techno-sphere and socio-sphere, to analyze their properties and to recognize potential for circularity.

**Normative competence // Reflecting on principles and values**

The ability to reflect on, criticize and continuously negotiate values, principles and goals that underlie one's own actions and hinder or promote a circular society in the face of uncertainties and conflicts of interest and goals.

**Resource competence // Developing materials & processes**

The ability to understand the material basis of a circular society and to design it with an emphasis on regeneration, resilience and reduced energy and resource consumption.

**Innovativeness & creativity // Developing & implementing solutions**

The ability to try out, develop, practice and implement various solutions and processes for a circular society.

**Competence of Anticipation // Designing futures & assessing consequences**

The ability to create and understand circular visions and images of the future and to assess their future consequences.

**(Self) reflexivity // Reflecting on roles and actions**

The ability to reflect on roles in a circular society and their associated benefits and attitudes and to continuously evaluate one's own actions with regard to the standards of a circular society.

**Collaboration competence // Understanding perspectives & acting together**

The ability to appreciate different interests, types of knowledge and perspectives and to integrate these as contributions to solutions for a circular society while keeping them accessible for all stakeholders.

# V. APPENDIX

[ 01 ] The participants of the writing workshop on Schwanenwerder (Photo: Hans Sauer Foundation)

[ 02 ] Circular Society Principles (own illustration based on Hempel (2021)

[ 03 ] Circular Society Field Map (Own representation roughly based on the multi-level perspective according to Geels (2011)

[ 04 ] Circular Society Field Map – Discourse level (Own representation roughly based on the multi-level perspective according to Geels (2011)

[ 05 ] Circular Society Field Map - Institutionalized level (Own representation roughly based on the multi-level perspective according to Geels (2011)

[ 06 ] Circular Society Field Map – Pioneer level (Own representation roughly based on the multi-level perspective according to Geels (2011)

[ 07 ] Timeline and work packages: Roadmap to a circular society (own illustration)

[ 08 ] Circular governance (own illustration)

[ 09, 10, 11, 12 ] “for free” corners (Photos: Johannes Staudt)

[ 13, 14. 15 ] Garages (Photos: Johannes Staudt)

[ 16 ] Repairing as a circular practice (own illustration)

[ 17 ] Give-away box (Photo: Johannes Staudt)

[ 18 ] Project “Materialvermittlung”’s Pop-Up Store  
[https://www.zukunftsstadt-dresden.de/wp-content/projektdateien/h3/DSC\\_3234.JPG](https://www.zukunftsstadt-dresden.de/wp-content/projektdateien/h3/DSC_3234.JPG)

[ 19 ] Circular place: Material initiative (own illustration)

[ 20 ] Berlin toilets from Finizio

[ 21 ] Circular space: Public dry toilet (own illustration)

[ 22 ] Circulation locker Pasing (Photo: Gerald Beck)

[ 23 ] Circular Place: Circulation locker (own illustration)

[ 24 ] Circular Governance (own illustration)

[ 25 ] Haus der Statistik [Photo]. AEX Architecture Exhibitions International.,  
<https://www.architecture-exhibitions.com/institution/berlin/haus-der-statistik>

[ 26 ] CEWI [Photo]

[ 27 ] Zukunftshof – lived utopias  
[https://www.zukunftshof.at/wp-content/uploads/ZukunftsErwachen\\_Robert-PuteanuROB\\_9652.jpg](https://www.zukunftshof.at/wp-content/uploads/ZukunftsErwachen_Robert-PuteanuROB_9652.jpg)

[ 28 ] Amsterdam (Photo: Hans Sauer Foundation)

[ 29 ] Co-creative vision development (own illustration)

[ 30 ] Allesandersplatz [Foto]. Berliner Abendblatt.,  
<https://berliner-abendblatt.de/wp-content/uploads/2020/09/imagen0101479139h.jpg>

[ 31 ] Funding pooled from various sources (own illustration)

[ 32 ] Local transformation alliances (own illustration)

[ 33 ] Stabilizing orchestration (own illustration)

[ 34 ] Transparent and open ecosystem governance (own illustration)

[ 35 ] Translocal networks (own illustration)

[ 36 ] Eco-System-Map (own illustration)

[ 37 ] Circular Literacy Framework (Zwiers et al. 2020)

[ 38 ] Dimensions of transformative learning (adapted from Schneidewind, 2018)

[ 39 ] Three approaches as a basis for circular literacy (own presentation)

[ 40 ] Circular Literacy Competences (own illustration)

[ 41 ] Photo Hans Sauer Foundation [Photo]

[ 42 ] Workshop organised by Kunststoffschmiede e.V. (Photo: Hans Sauer Foundation)

[ 43 ] Project “Markt Schwaben macht sich” (Photo: Hans Sauer Foundation)

[ 44 ] Circular Literacy Competences (own illustration)

# VI. IMPRINT

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The project was funded by the German Federal Environmental Foundation.

A small print run of the roadmap is available, we would be delighted if you would share the roadmap digitally and thus save resources. If you have any questions, please send an e-mail to [info@circularsociety.de](mailto:info@circularsociety.de).

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