
Strategic Design for Social Innovation

Mapping a road for Commons Cargobike

Esther Rublack

ID5126 Strategic Design for Social Innovation TU Delft

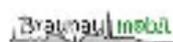
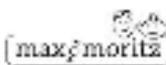
Coaches: Ingrid Mulder & Alicia Calderon Gonzalez

*Cargo bike sharing,
Commons Cargobike,
financial sustainability,
triple-layered business model
canvas*

Cargo bikes are a promising transport mode with the potential to replace a significant number of local car trips. Cargo bike sharing systems provide a first access point for interested users, or solve problems of lacking financial means or parking space. Commons Cargobike is a sharing initiative that originated in Cologne and has spread its idea of simple, free-of-charge cargo bike sharing across Germany since. It successfully uses technology and knowledge-sharing for scaling out. However, in order to achieve their vision to further extend outreach, I argue that financial sustainability is necessary. Applying the triple-layered business model canvas, I identify key areas of improvement as well as value propositions to be capitalised on. These insights are synthesised into a design strategy. The main paving blocks on Commons Cargobike's road to reaching their vision are research, cooperation and marketing.

Contents

Introduction	1
Context	2
Method	3
Case analysis	4
Design strategy	7
Discussion	11
Conclusions	12
References	13



Introduction

The fundamental challenge of our times is climate change. Transportation contributes by about one-quarter to European greenhouse gas emissions (European Commission, n.d.). This also shows at a local scale, where individual motorised transportation leads to air and noise pollution and entails serious health risks (Walter, Wagner, Walkenhorst & Scheffler, 2018, p.12). Furthermore, landscapes designed mainly for car use reduce livability and foster inequities among transport agents (Sadik-Khan & Solomonow, 2017). About twenty percent of trips of individuals are associated with the need to transport something (Weiß et al, 2016). What if a part of these car trips could be replaced by a more sustainable mode?

Cargo (or freight) bicycles are “bicycles optimized for transporting heavy weights and large volumes” (Berger & Dorner, 2020, p.i). Therefore, they are a promising mode to replace local car trips. The advantage of cargo bikes over cars is that they are more sustainable, quiet, fun to drive and still relatively fast in an urban context. However, not everybody has the financial means or the necessary parking space to own such a bike (Berger & Dorner, 2020). In recent years, various sharing systems for cargo bikes have emerged in Germany.

These projects classify as social innovation – not because the technology is new, but because they re-discover an old technology (Manzini, 2014; Becker & Rudolf, 2018b) and create new forms of access to it. This provides an actionable contribution to the transport transition, including all social benefits, such as growing equity on the streets, low-threshold access to freight transport, and a higher livability by reducing the need for cars. Remarkably, Manzini (2015) stresses that bottom-up social innovation like these are the main drivers of a (socially) sustainable vision for the twenty-first century (p.61).

Among the earliest initiatives, *Commons Cargobike* was founded in Cologne in 2013. The vision of the transdisciplinary team of diffuse designers (Manzini, 2016, in Koning, Puerari, Mulder & Loorbach, 2019) was to make

cargo bikes freely available to everyone and contribute to a more equitable and sustainable mobility provision in cities. Over the years, their idea spread to more and more cities and municipalities across Germany.

The six stages of social innovation framework (Murray, Caulier-Grice & Mulgan, 2010) describes an ideal-typical development process of social innovation, moving from prompts, proposals and prototypes (Stages 1 – 3), via sustaining (Stage 4) and scaling (Stage 5) to systemic change (Stage 6). The systemic change Commons Cargobike aims for is replacing a reasonable amount of local car trips that are justified by transporting something (F. Egermann, personal communication, June 18, 2020). Currently, Commons Cargobike can be located in stages 4 and 5.

Zooming into stage 4, Riddell and Moore (2015) distinguish three types of scaling. Commons Cargobike has so far mainly focused on scaling “out” – impacting greater numbers (p.13), in other cities. Instances for scaling “deep” – changing cultural roots (ibid.), or scaling “up” – impacting laws and policy (ibid.), appear less often. However, their vision entails to continue scaling out and to bring scaling to a higher quality by scaling deep and up. I argue that this requires to walk through the sustaining stage as well.

Sustaining requires a financial model that goes beyond public funding, donations and volunteers’ work. Murray et al. (2010) list six aspects that belong to the sustaining process of non-public organisations. While Commons Cargobike has a loose governance model, network and communications models and a local operations management, they lack a sustainable business model, as their sources of finance are irregular, not centrally coordinated and they depend on volunteer work to maintain themselves (Becker & Rudolf, 2018a, p.171).

Therefore, the question this paper seeks to address is how Commons Cargobike can achieve financial sustainability by means of design strategies. The output is an actionable plan, illustrating a possible pathway for the initiative.

Context

The organisation *wielebenwir e.V.* (German for “the way we live”) around Florian Egermann founded Commons Cargobike in 2013. They had discovered the idea of cargo bike sharing in Berlin which they liked and considered it worth spreading (F. Egermann, personal communication, June 18, 2020). The team began developing a concept, aiming to make cargo bikes a visible, viable and experienceable alternative to car use in Cologne (re:publica, 2018).

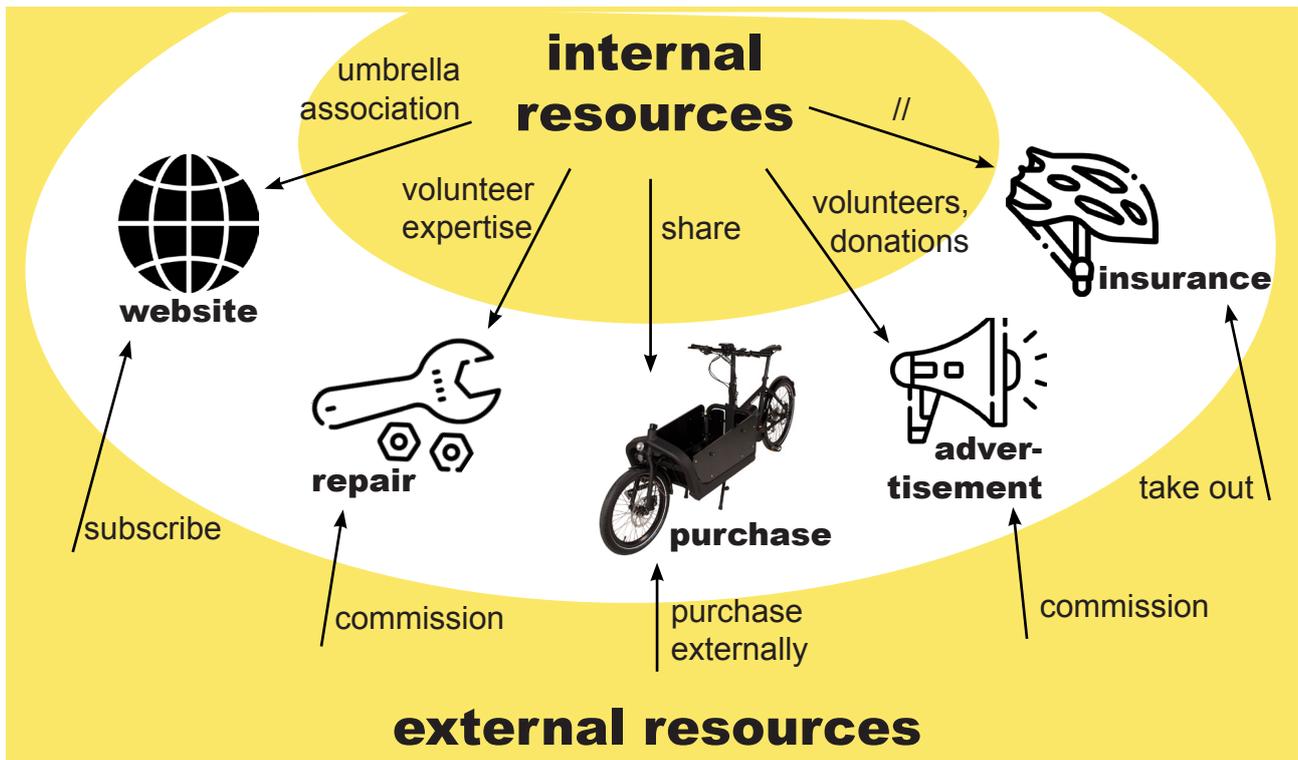
The key characteristics (or principles) of Commons Cargobike I identify are summarised in Figure 1. Due to the fact that all members of the founding team had other occupations, it was no option to become a bike sharing business such as *Call a Bike*. Instead, they invented a host system where shops, cafés or community centres store the bike and hand it over to the users. This system keeps the whole operation remarkably simple, for the Commons Cargobike team as well as the users and the hosts. For booking bicycles, Commons Cargobike developed their own, easy-to-use software. Users book a cargo bike online and



simple local free

Figure 1. The business and scaling principles of Commons Cargobike (image credits: re:publica, 2018; Kasimir, 2019; flaticons)

Figure 2. Costs of Common Cargobike initiatives and how they can be covered (image credits: bizzonwheels; flaticons)



verify before the host by saying a code word and showing their ID.

Taking a shared cargo bike is free of charge. Commons Cargobike does ask for donations to finance repairs, but there is no official payment or a scheme to inform about standard amounts of donations (Forum Freie Lastenräder, n.d.a). The focus on Cologne was more a practical matter than a conscious choice, but it influenced the way in which the initiative spread: The initiators of scaling were always organisations or individuals from other cities, not the founders of Commons Cargobike themselves (F. Egermann, personal communication, June 18, 2020). Hence, Commons Cargobike can be classified as an informal umbrella organisation for all initiatives that operate under this name (Murray et al., 2010, p.63).

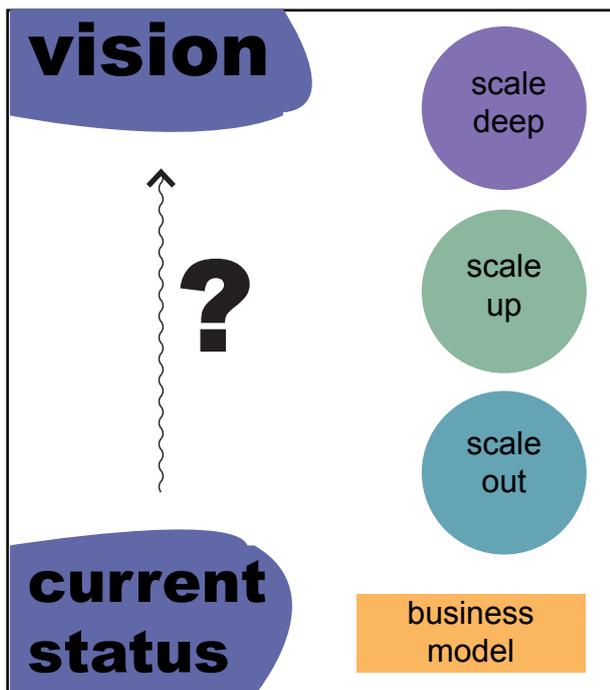
Their success attracted more and more municipalities, initiatives and associations from other cities. At one point, Egermann said, the team noticed how ineffective it was to re-share the knowledge they gathered during the first implementation in Cologne over and over again. To make scaling easier, they created a Wiki with all questions regarding setting up

a new cargo bike sharing system, published their booking software as open source, and established a network of initiatives for regular meetings and knowledge exchange (Figure 1). The initiative has since scaled out to 81 German cities, sharing at least 508 cargo bikes (Forum Freie Lastenräder, n.d.b).

Regarding the financial means, there are several ways to cover the expenses of a Commons Cargobike initiative (Figure 2). The costs are composed of cargo bike(s) purchase, repair and maintenance, operating a website, advertisements and insurance. As you can see, almost all expenses could theoretically be covered internally through volunteers' time and expertise. Where these do not suffice or are not available, the remaining costs must be covered from external sources.

The current model can only persist because it keeps the initiatives' expenses as low as possible, relying on volunteers' work and external funding. However, achieving their vision of systemic change will only work with additional investment. This means that the premise of keeping costs as low as possible becomes unsuitable and that new forms of financial sustainability must be sought (Figure 3).

Figure 3. How can Commons Cargobike achieve financial sustainability?



Method

Answering my research question of how Commons Cargobike can achieve financial sustainability ultimately aims at outputting a strategic design plan. In order to develop that, I take two steps, the first of which is learning about sustainable business models. Due to time constraints, I focus solely on the expert design tool (Concilio & Tosoni, 2019, p.78) of the triple-layered business model canvas (TLBMC) as introduced by Joyce & Paquin (2016), building on Osterwalder & Pigneur (2010). Second, I look for inspiration and good (or bad) practice examples in other (cargo) bike sharing initiatives. The TLBMC mainly informs the following case analysis, while practice examples play into the proposed design

strategy afterwards.

The sources I draw upon are diverse: I use the course papers as theoretical foundation and review academic literature on cargo bikes and (cargo) bike sharing systems. Since literature on my specific topic is scarce, I use a snowballing system where the references of one paper lead me to the next. Additionally, there are a number of project reports of cargo bike sharing experiments, such as TINK – Transport Initiative Nachhaltiger Kommunen (German for: transport initiative of sustainable municipalities), a government-funded experiment for sustainable urban mobility.

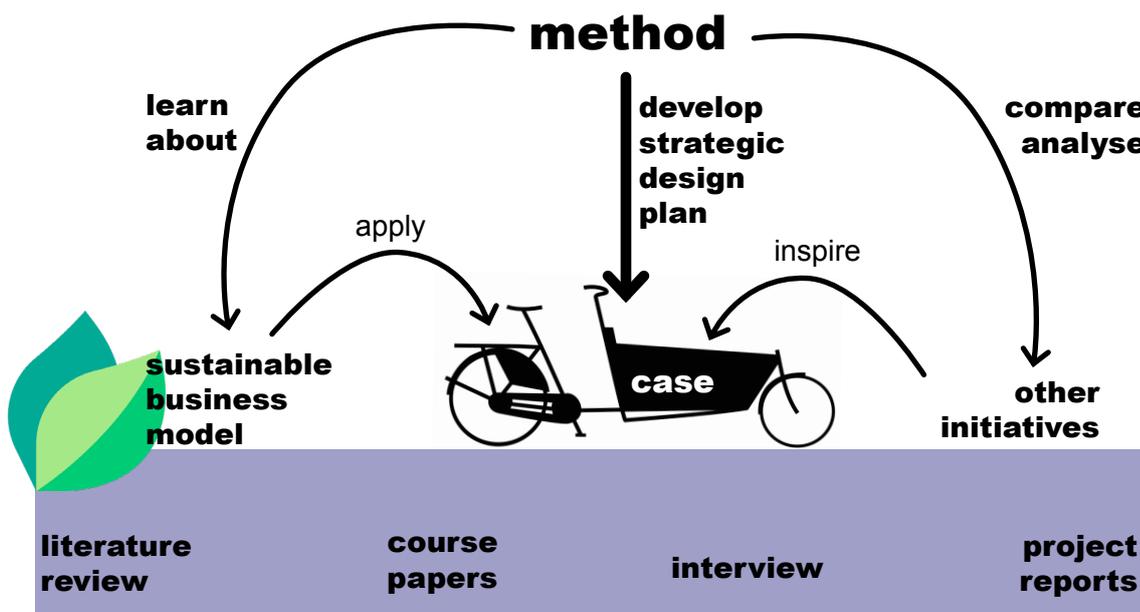
Next, I conducted a 40-minute semi-structured interview with the co-founder of Commons Cargobike, Florian Egermann. To prepare for this interview I went through previous articles and presentations about him and the initiative, to avoid asking redundant questions. The topics covered include the founding of Commons Cargobike, ambitions and vision for the future, the scaling process, the average user, the network of initiatives, potential financing schemes, and end-of-life treatment of cargo bikes. Thus, the interview allows me to verify

my previous knowledge and assumptions and to explore a few topics relevant for my research that were not covered in the media before.

Case analysis

Commons Cargobike moved through the first three maturity stages of social innovation with relative ease. Egermann identifies the early challenge from within the project team where a fault line emerged between grassroots enthusiasts and city-makers striving for increased professionalisation of the initiative (F. Egermann, personal communication, June 18, 2020). Eventually, however, it was this team and its combined expertise that allowed the quick development of the project (ibid.). Additionally, the inexpensive, simple design of the service, as well as an initial demand on the user side contributed to that end (Becker & Rudolf, 2018b). When they started scaling, problems such as the inefficiency in communicating do's and don'ts to new initiatives were resolved

Figure 4. Research method. (Image credits: how to bike; flaticons)



quickly.

So, the challenge I sketch in the introduction might be one that the initiatives do not perceive as one themselves. Alternatively, they might struggle with low funding but do not relate this to a lacking business model or do not see ways to implement financial sustainability. This section shows that applying the TLBMC provides valuable insights into those fields where they excel (highlighted in brighter colours in Figure 6), as well as the aspects that a design strategy could improve (darker colours). The challenge is to find a stable financial basis for Commons Cargobike while keeping the strengths of the initiative: its simplicity, volunteer-support, cost-effectiveness and community-embeddedness.

To begin with the economic layer, Commons Cargobike has a strong value proposition. Solving a relevant mobility issue not just for the users, but also for the cityscape, positively influences the social and environmental layers of the TLBMC as well. This is achieved by a combination of accessibility, convenience and novelty by which Commons Cargobike enables sustainable freight transportation. What is striking, however, is the lack of revenue streams.

The common thread of the course readings regarding funding is that social innovation requires a continuity of resources in order to persist (Strasser, de Kraker & Kemp, 2019, p.9). Apart from enhancing the strategic competitiveness (Casadesus-Masanell & Ricart, 2010), a business model is also essential to ensure sustainability (Murray et al., 2010, p.59) on all three levels: economic, environmental and social (Joyce & Paquin, 2016). For instance, stable financial conditions allow a project to plan ahead, make investments for the future (Abbasi et al., 2019, p.30) and to offer a reliable service to their users (Osterwalder & Pigneur, 2011).

The Commons Cargobike initiatives draw on a diversity of different funding sources (Forum Freie Lastenräder, n.d.a). The easiest option is to join an existing organisation with stable funding sources, such as the German cycling association *ADFC* (Allgemeiner Deutscher

Fahrrad-Club). Joining an association like *ADFC* increases the outreach of the initiative, saves them the administrative effort of setting up an association themselves, and entails tax exemptions for donors.

The second main option is acquiring government subsidies, for instance for the purchase of a cargo bike, or as general support for charitable organisations. Subsidies are available on almost all levels of government, be it national (National Climate Initiative), regional or local (Agenda 21). The website of Commons Cargobike supplies experience reports and application templates. The Commons Cargobike initiative *Hannah* (from Hannover) indicates that they experience it as easier to receive funding for fixed costs than for expenses such as repair and maintenance (Forum Freie Lastenräder, n.d.a).

A third option is generating revenues through advertisements placed on the relatively large transport boxes that some cargo bikes have (Walter et al., 2018, p.15; InnoZ, 2016, p.13). However, generating revenues from advertisements entails opportunity costs in that the initiatives cannot use the same space for their own branding (for an impression of individual initiative's branding, see the picture below contents).

To find collaboration partners for advertisements, connections to local businesses are necessary. The same community mobilisation is important for the fourth funding source: donations and crowdfunding. Users can donate in return for the service or if a cargo bike needs repair, and some initiatives also recruit local small and medium-sized enterprises as regular donors.

Both crowdfunding and donations can be campaign-driven. The initiatives decide for a specific purpose, for example buying a new cargo bike or setting up the project in the first place, and create as much publicity as possible – via information stands, newspaper articles or social media (Forum Freie Lastenräder, n.d.c). Thus, apart from the financial resources, raising awareness is another positive effect of this option (InnoZ, 2016, p.13).

Generally, these funding options have in common that they are irregular and work on a project-to-project basis. Hence, the initiatives always depend on the good will of the users/donors as well as on the effort of volunteers. This makes the financial system supporting the initiatives' actions unreliable and dependent on factors outside their control. Additionally, crowdfunding campaigns can become highly labour-intensive, without the guarantee for effectiveness or proper remuneration.

All in all, generating reliable revenue streams is an essential goal of the design strategy. Continuing the analysis of the economic layer of the TLBMC, general information on how to create and maintain customer relationships are scarce. Egermann indicated that they do not know 90 percent of their users (F. Egermann, personal communication, June 18, 2020) and the information on customer relations in the Wiki is not going far beyond acquisition and organising events (Forum freie Lastenräder, n.d.c,d). The build-up of the initiative does not allow for further competencies – such as working on the abilities and motivation of their (prospective) users (re:publica, 2018). Closely related, the channels by which Commons Cargobike communicates and interacts with its users (Osterwalder & Pigneur, 2011) are neither streamlined nor advised on.

As an initiative with an inherently sustainable vision, the environmental layer of the TLBMC shows mostly positive records. For example, the environmental benefits delivered by Commons Cargobike are real, as they replace car use, reduce material demand through their sharing principle, and advocate a mind shift fundamental to a successful transport transition (Strasser et al., 2019). There is minor room for improvement when it comes to production and end-of-life phases as there is little generalised knowledge on applied sustainability. In the use phase, the process-related sustainability depends very much on the good will and expertise of the people repairing and caring for the re-use or recycling and disposal of (parts of) old cargo bikes.

However, these points are representative for a more overarching issue: there is little

monitoring and, hence, little knowledge about the operations and ways of doing. Even though this can be explained by the decentral organisational structure of Commons Cargobike, a quantification of environmentally relevant processes is important not only for marketing (“We saved our city X tons of CO₂ in 2019”), but also to take strategic decisions (Meroni, 2008).

Moving on to the social layer of the TLBMC, the social benefits include healthier and safer streets, as well as community building (Manzini, 2014). The societal culture they create is one of mutual trust that has not been disappointed so far (re:publica, 2018). They do not generate employment since they rely solely on a volunteer force. Their scale of outreach is widely spread across Germany. Becker and Rudolf (2018b) analyse the clientele of Commons Cargobike initiatives and find a heterogeneity with regard to age and life situation. However, most users express an ecologically friendly attitude, as well as bicycles as preferred transport mode (ibid.). Connecting back to customer relations and channels from the economic layer, the scale of outreach is therefore wide, but not deep.

Likewise, the localism principle keeps the movement embedded in a very specific context which makes it easier to respond to the needs of the community and users. Initiatives can decide and act more freely. Also, the localism principle keeps the power and motivation of the bottom-up movement, as opposed to embedding it in a more centralised structure with reduced sense of ownership over the project (Manzini, 2014). However, localism delimits the range of action, and makes collaboration and information-sharing an extra effort of volunteers rather than an embedded practice. On the one hand, this allows for deep learning about the area of operation, but on the other hand, the learning is not necessarily shared widely.

The key challenge in adding an expert design strategy to the prevailing diffuse design practices (Manzini, 2015) is to find synergies and work with the strengths of the current system. The design strategy has to find ways to capitalise on the values provided by the initiative.

Design strategy

In the current situation, Commons Cargobike has to decide between either keeping their current system unchanged, or altering it towards better scalability. Of course, they could simply keep going as they currently do until they reach the limitations of the system. However, I understand the vision of Commons Cargobike as making a more lasting impact. Consequently, I assume the conscious choice for scaling (Riddell & Moore, 2018) as given. Therefore, the proposed design strategy investigates options to add to the current system, keeping its strengths as much as possible, but making it suitable for scaling deep and up, and increasing the quality of scaling out.

This strategic design proposal necessitates expert design capabilities to complement the diffuse design capacities already in action. Because of the strong bottom-up rootedness, activities have to be a hybrid of design *with* and design *for* communities (Manzini, 2014). In particular, because the design strategy involves such a variety of differently-minded stakeholders, the role of the designer is mainly bringing them together and facilitating the exchange, for instance through participatory design techniques (Concilio & Tosconi, 2019). Likewise, conceptualisation and analysis are important (Manzini, 2014).

The design strategy has three main components. To begin with, knowledge generation is the basis of the strategy. Conducting research on a variety of operations-related topics is a means to develop more tailored solutions (ibid.). Therefore, research also plays an important role in informing the two pillars of the design strategy. The first pillar is collaboration, an essential aspect for infiltrating new areas of life, and to secure stable funding sources. As a second pillar, the strategy proposes to develop effective marketing strategies (see Figure 5).

While it is important to have a good intuitive understanding of the nature of problems, the purpose of extending research on Commons Cargobike's activities is to generate a continuous flow of data on which more informed decisions

can be taken. Previous research is scarce and has left many questions unanswered. For instance concerning the user groups: Why do men use cargo bike sharing more (Becker & Rudolf, 2018b; Berger & Dorner, 2020)? Is the environmental concern still the main unifying criterium across user groups? Are users happy with the service provided, if they have feedback, can they give it easily, and does that lead to change? Such research can form the basis for developing new concepts for user interaction (customer relationship and channels).

For this, there must be good field researchers who are able to retrieve the puzzle piece-like information from (potential) users, volunteers, hosts, officials etc. They must be capable of systems thinking (Murray et al., 2010) to evaluate effects of proposed changes, and to drill down to the core of the problem, rather than formulating ideas for incremental changes (Riddell & Moore, 2015).

Opportunities for acquiring revenue are another important point on the research agenda. The project reports I reviewed agree that, at the sector's current state of development, the financial means deriving from use and membership fees will be insufficient to cover the costs of cargo bike sharing (Moon-Miklaucic et al., 2019, pp.3;18; Walter et al., 2018, p.12; InnoZ, 2016, p.13). The reason is mainly the users' lacking willingness to pay a fee high enough to sustain the sharing business (InnoZ, 2016, p.13). In line with that, Egermann indicated that the profit-oriented electric cargo bike rental company Donk-EE (Cologne) is struggling to cover its costs (F. Egermann, personal communication, June 18, 2020).

This problem leads to the conclusion that cooperation is the way to go in order to achieve financial sustainability. Ideas for cooperation include working together with supermarkets, delivery services, or local businesses and service providers (Walter et al., 2018, p.14). They could use the cargo bikes to pursue their business which would lead to a further dispersion of the concept (InnoZ, 2016, p.7). In order to convince potential partners that the cooperation will be mutually beneficial, the cooperation will have to be informed by best

practice examples and smartly applied to local contexts – a strength of Commons Cargobike.

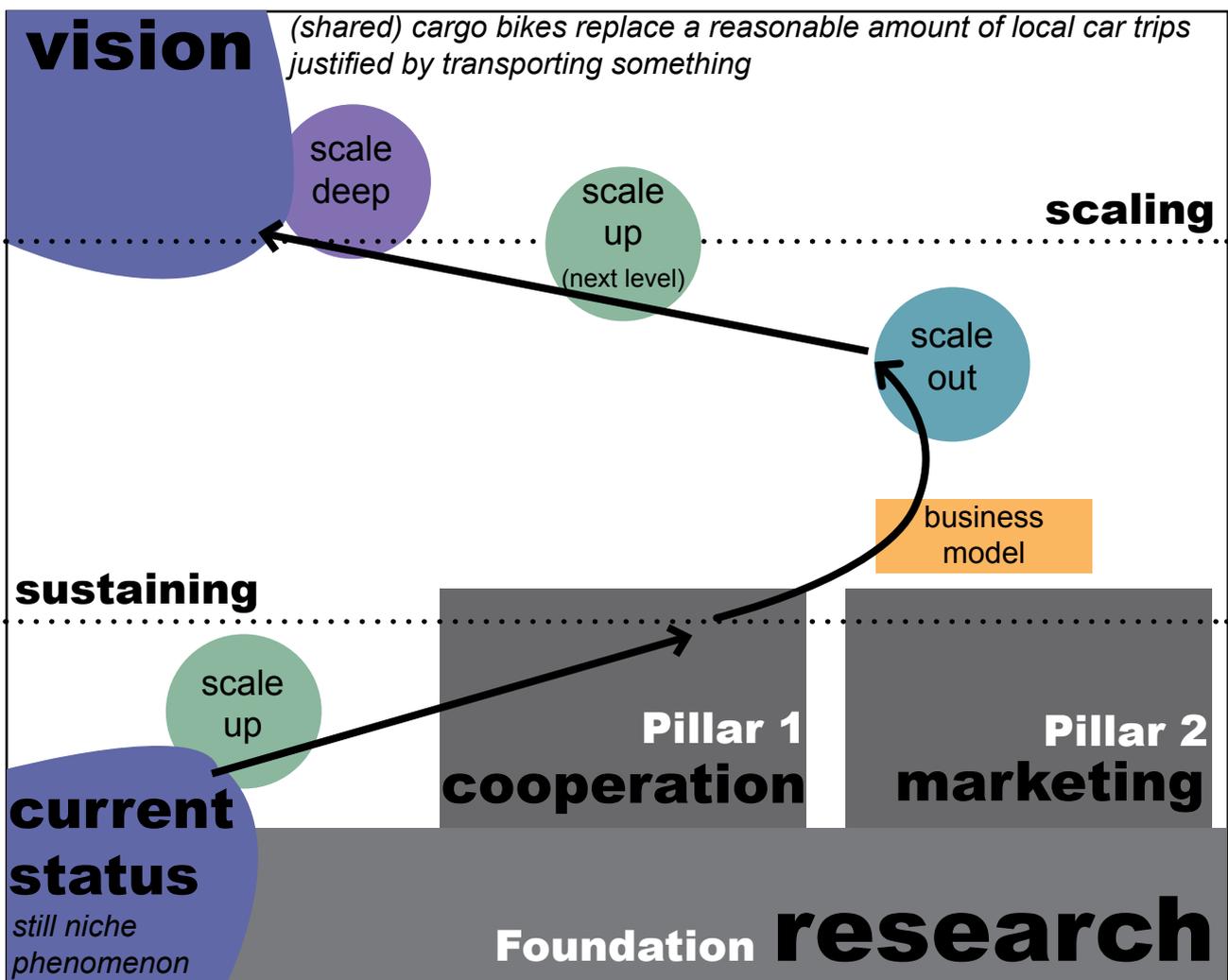
Apart from cooperation with private actors, working together with municipalities seems to be necessary because it creates financial freedom and still upholds the commons principle. Municipalities are expected to have a favourable view on, e.g. the social and environmental value provided, as well as its inexpensive set-up. Ideas for cooperation on this level include creating mobility-funds that are financed by levies on, e.g. car parking, like implemented in Wien Aspern (InnoZ, 2016).

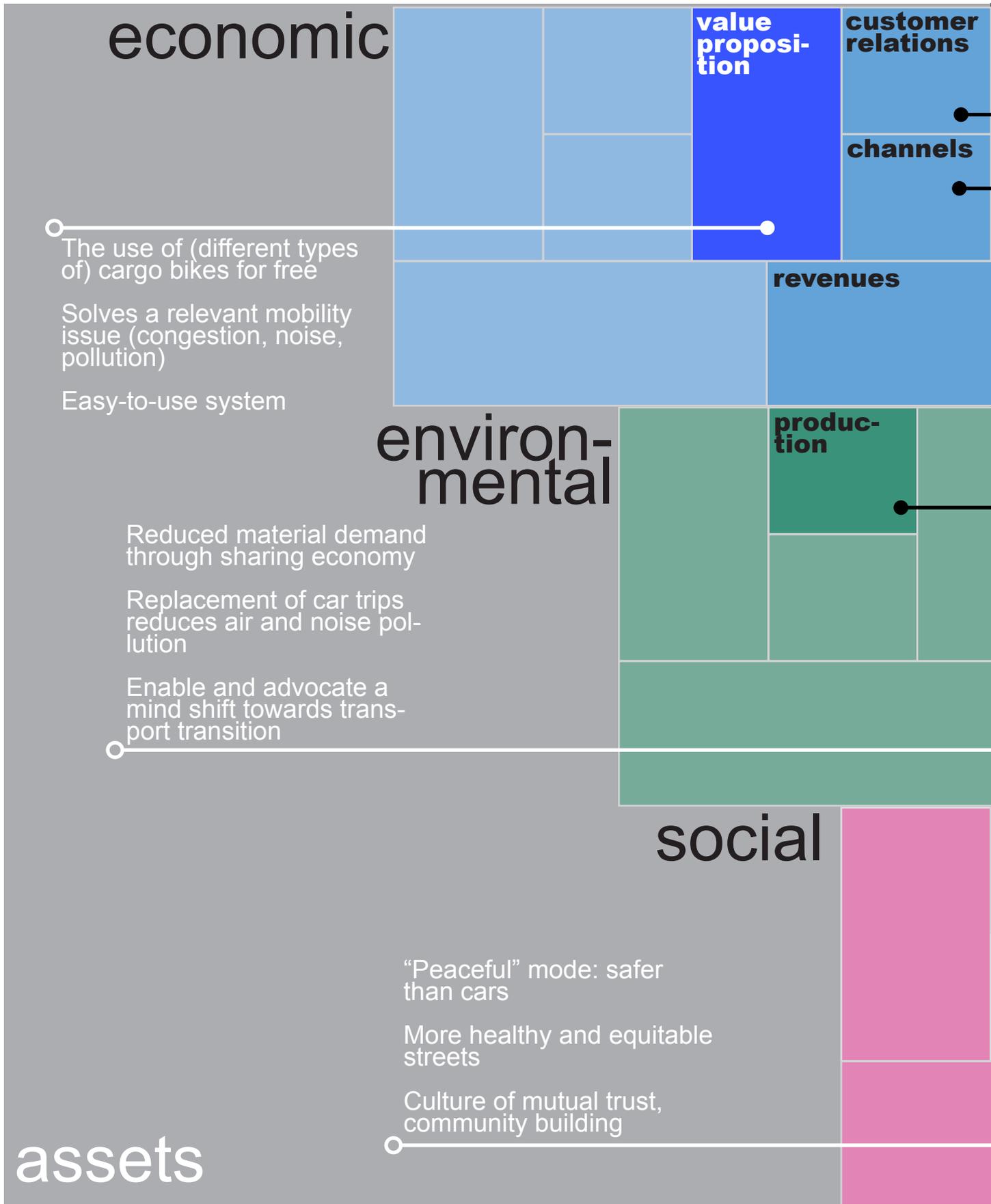
Furthermore, cargo bike sharing could also be integrated in services that the municipalities run and pay for already (Becker & Rudolf, 2018a),

such as sheltered workshops or bike repair facilities. Another possibility is to include the service into public transport subscriptions such as student or job tickets (Walter et al., 2018, pp.14,5). For example, a standard job ticket could include one free day of cargo bike use each month. In general, cooperating with local/regional authorities has the advantage that scaling up is one step closer. If a municipality has a stake because it is directly involved, policies promoting (cargo) bike infrastructure (Moon-Miklaucic et al., 2019) will be much more likely than if it was a passive agent (Manzini, 2015, p.61).

The second pillar works towards increasing the outreach and impact of Commons Cargobike beyond bicycle enthusiasts and

Figure 5. Proposed Design Strategy for moving from the current status towards the Common Cargobike's vision





improvements

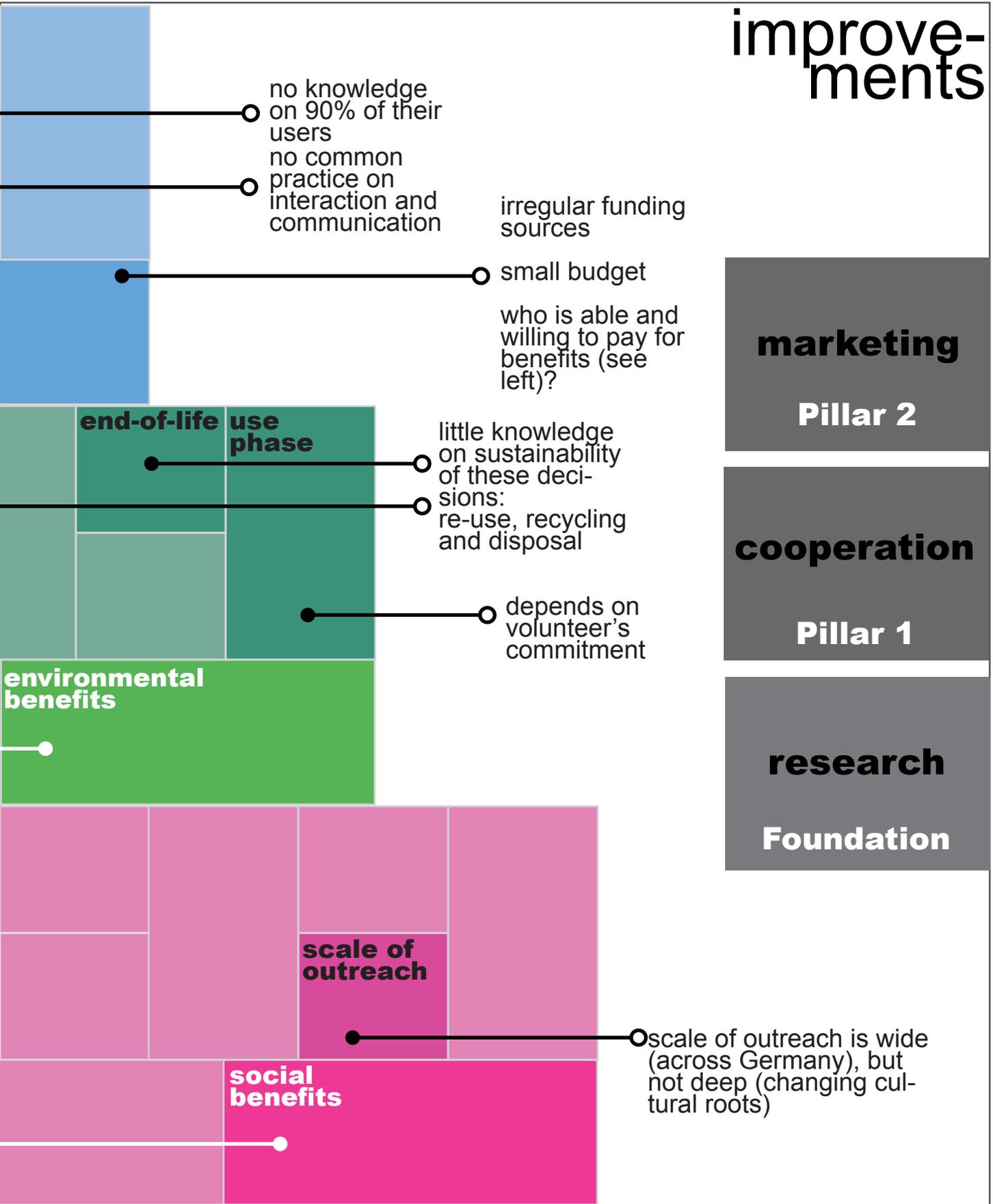


Figure 6. Triple-layered Business Model Canvas applied to Commons Cargobike (based on Joyce & Paquin, 2016; Osterwalder & Pigneur, 2010)

social innovation pioneers. Marketing, to be effective and authentic, heavily relies on solid research, too (Abbasi et al., 2019). Questions to be investigated include: Which channels or campaigns are most effective for which target groups? Which target groups are the “low hanging fruit” (Berger & Dorner, 2020)? How can the service provided be adjusted or expanded to serve the needs of newly acquired target groups better (Moon-Miklaucic et al., 2019)?

Discussion

The proposed design strategy assumes that Commons Cargobike wants to move towards systemic change and walking through the necessary stages, i.e. sustaining and scaling, is not possible under the current structural set-up. Applying the TLBMC, I find items that needed further improvement as well as particularly strong characteristics of the current business model of Commons Cargobike. For instance, the economic value proposition, as well as the social and environmental benefits created are positive. However, the societal scale of outreach can be improved, and knowledge on production and end-of-life of the cargo bikes themselves must be generated. But most strikingly, the underdeveloped customer relations and channels, as well as revenue streams need innovation.

The design strategy responds to these findings by proposing knowledge generation, cooperation and marketing. This solves the main problem of the lacking revenue streams not by creating a profit-based business model, but by searching for partners who possess the financial means to pay for the added societal and ecological value. I decide this because a standard business model cannot be blindly applied to any social innovation initiative (Murray et al., 2010) – and especially not to one that does not identify as a business in the first place.

This strategy would be implemented for each initiative individually. The two pillars of the strategy, cooperation and marketing, can be implemented relatively easily. It would make

a huge difference to have expert designers on board to facilitate the process, but first steps can be done on a diffuse design basis. Also, Commons Cargobike has a great knowledge-sharing infrastructure which they could extend to cover these aspects as well.

Implementing the strategy locally is advantageous in that results will be different for each local context, but it also complicates the execution. For instance, I cannot expect that the required design expertise is present among the volunteers or related stakeholders of the initiative which makes the implementation of this crucial aspect of the strategy either expensive or infeasible. After all, it will be a continuous back-and-forth between steps taken and new ambitions formulated, always depending on the changing circumstances.

Additionally, my design strategy is not yet as out-of-the-box as I would like it to be. The execution of the TLBMC and development of the design strategy is just one of many possible scenarios, and based on my own knowledge and values. In application, the direction for the project depends on many factors, such as the vision of the founders and the decisions made by local branches of the organisation. The degree of out-of-the-box thinking will then show in the solutions found, for, e.g. cooperation or marketing.

Furthermore, assessing the effectiveness of the strategy is beyond the scope of this paper. However, applying my insights from the case analysis to future research, I recommend to get in touch with all individual initiatives and investigate the current state of development, their ambitions with regard to achieving systemic change, the main challenges, knowledge and resources available and ways in which strategic design can respond to all of that.

Conclusions

The research question guiding this paper is how Commons Cargobike can achieve financial sustainability by means of design strategies. To find one possible answer to this question, I use the expert design tool of the triple-layered business model canvas and analyse Commons Cargobike with respect to their current business idea. The findings show that Commons Cargobike provides a number of economic, social and environmental values on which they currently cannot capitalise. Therefore, the design strategy I propose identifies cooperation as one way to access more continuous funding sources. The cooperation partners will be municipalities, businesses and service providers with a green agenda, universities, public transport providers etc. who are willing to remunerate Commons Cargobike for the service they provide.

The other two aspects are knowledge generation, as currently very little is known about the individual initiatives, and marketing, to continue scaling out. There is no clear order

of steps in the design strategy, as processes co-evolve and often have to be reassessed after a while. The expert design capabilities at stake are meant to act in synergy with the present diffuse design practices to enable different qualities of change. Among these capabilities are field research, systems thinking, facilitation of cooperation processes and continuously reassessing the initiatives progress and aims.

All in all, the soft radicality of Commons Cargobike has brought it far and it will definitely find its way without a group of well-meaning white-collar designers putting their oar in. However, what they have to say might allow Commons Cargobike to see themselves in a new light, and to pursue future projects in a more structured way, without forgetting their strengths and qualities. After all, there are few social innovations that would deserve achieving societal change more than Commons Cargobike.

References

- Abbasi, M., Cullen, J., Li, C., Molinari, F., Morelli, N., Rausell, P., ... van Dam, K. (2019). A triplet under focus: innovation, design and the city. In G. Concilio, & I. Tosoni (Eds.), *Innovation capacity and the city: the enabling role of design* (pp. 15–41). Cham: Springer International Publishing.
- Becker, S., & Rudolf, C. (2018a). The Status Quo of cargo-bikesharing in Germany, Austria and Switzerland. In K. Grafl, H. Bunte, K. Dziekan, & H. Haubold (Eds.), *Framing the third cycling century. Bridging the gap between research and practice* (pp. 168-180). Dessau-Roßlau, Brussels: German Environment Agency, European Cyclists' Federation. Retrieved June 7, 2020, from <https://www.umweltbundesamt.de/en/publikationen/framing-the-third-cycling-century>
- Becker, S., & Rudolf, C. (2018b). Exploring the potential of free cargo-bikesharing for sustainable mobility. *GAIA* 27(1), 156-164.
- Berger, M., & Dorner, F. (2019). Peer-to-Peer-Lastenrad-Sharing – Perspektiven verschiedener Zielgruppen. Presented at Real Corp 2019 conference. Retrieved June 16, 2020, from http://geomultimedia.org/archive/CORP2019_64.pdf
- Concilio, G., & Tosoni, I. (2019). *Innovation Capacity and the City. The Enabling Role of Design*. Springer Open.
- European Commission. (n.d.). Transport emissions. Retrieved June 22, 2020, from https://ec.europa.eu/clima/policies/transport_en
- Forum Freie Lastenräder. (n.d.a). Wie kann man Gelder einsammeln? Retrieved June 20, 2020, from https://dein-lastenrad.de/index.php?title=Wie_kann_man_Gelder_einsammeln%3F
- Forum Freie Lastenräder. (n.d.b). Tabellarische Übersicht aller Initiativen. Retrieved June 20, 2020, from https://dein-lastenrad.de/index.php?title=Tabellarische_%C3%9Cbersicht_aller_Initiativen
- Forum Freie Lastenräder. (n.d.c). Wie bleibt das Projekt aktuell und interessant? Retrieved June 20, 2020, from https://dein-lastenrad.de/index.php?title=Wie_bleibt_das_Projekt_aktuell_und_interessant%3F
- Forum Freie Lastenräder. (n.d.d). Wie spricht man die Menschen an, die ein Freies Lastenrad nutzen sollen? Retrieved June 20, 2020, from https://dein-lastenrad.de/index.php?title=Wie_spricht_man_die_Menschen_an,_die_ein_Freies_Lastenrad_nutzen_sollen%3F
- Joyce, A., & Paquin, R. L. (2016). The triple layered business model canvas: a tool to design more sustainable business models. *Journal of Cleaner Production*, 135, 1474–1486.
- Kasimir. (2019). Freie Lastenräder in Köln. Retrieved June 23, 2020, from <https://www.kasimir-lastenrad.de/>

Koning, de J. I. J. C., Puerari, E., Mulder, I., & Loorbach, D. (2019). Landscape of participatory city makers. A distinct understanding through different lenses. *Form Akademi - Research Journal of Design and Design Education*, 12(2).

Manzini, E. (2015). Design in the transition phase: a new design culture for the emerging design. *Design Philosophy Papers*, 13(1), 57-62.

Manzini, E. (2014). Making things happen: Social innovation and design. *Design Issues*, 30(1), 57-66.

Meroni, A. (2008). Strategic design: where are we now? Reflection around the foundations of a recent discipline. *Strategic Design Research Journal*, 1, 31-38.

Moon-Miklaucic, C., Bray-Sharpin, A., De La Lanza, I., Khan, A., Lo Re, L., & Maassen, A. (2019). The evolution of bike sharing: 10 questions on the emergence of new technologies, opportunities, and risks. *World resources institute*. Viitattu, 12, 2019.

Murray, R., Caulier-Grice, J., & Mulgan, G. (2010). *The open book of social innovation*. London: National endowment for science, technology and the art.

Osterwalder, A., & Pigneur, Y. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*. John Wiley & Sons.

re:publica. (2018). *Die Verkehrswende selber machen. Lastenrad-Sharing*. Retrieved June 19, 2020, from <https://www.youtube.com/watch?v=JI3ZfOFHYT4>

Riddell, D., & Moore, M. L. (2015). *Scaling out, scaling up, scaling deep: advancing systemic social innovation and the learning processes to support it*. JW McConnell Family Foundation. Tamarack Institute.

Sadik-Khan, J., & Solomonow, S. (2017). *Streetfight: Handbook for an urban revolution*. New York, New York: Penguin Books.

Strasser, T., de Kraker, J., & Kemp, R. (2019). Developing the Transformative Capacity of Social Innovation through Learning: A Conceptual Framework and Research Agenda for the Roles of Network Leadership. *Sustainability*, 11(5), 1304.

Weiß, C., Chlond, B., Hilgert, T., & Vortisch, P. (2016). *Deutsches Mobilitätspanel (MOP) – Bericht 2014/2015: Alltagsmobilität und Fahrleistung*. Karlsruhe: Institut für Verkehrswesen.

Mapping a road for Commons Cargobike

Esther Rublack

Course: ID5126 Strategic Design for Social Innovation TU Delft

Coaches: Ingrid Mulder & Alicia Calderon Gonzalez