

Final Report

Valuing "repair" in just labour transitions in the Rijnmond region

18 November 2025



Funded by [Convergence Resilient Delta Initiative](#)

Authors

Ilaha Abasli (Project Lead) - PhD Researcher, International Institute of Social Studies, Erasmus University Rotterdam

Ellen Loots - Associate Professor, Erasmus School of History, Culture and Communication, Erasmus University Rotterdam

Solange Hai - Senior Case Writer, Case Development Centre, Rotterdam School of Management, Erasmus University Rotterdam

Karlheinz Samenjo - TU Delft, Design for Sustainability and Circular Economy Group

Lija Groenewoud van Vliet - Co-founder and creative director , In4Art

Joram Groen - Junior Researcher

Contributors

Rodolfo Groenewoud van Vliet - Co-founder and business director , In4Art

Peter Knorringa - Professor, International Institute of Social Studies, Erasmus University Rotterdam & Academic Director of the International Centre for Frugal Innovation

Tao Yue - Managing Editor, Case Development Centre, Rotterdam School of Management, Erasmus University Rotterdam

Daan Wakan - Research Intern

To cite this report: Abasli, I., Loots, E., Hai, S., Samenjo, K., Groenewoud van Vliet, L., & Groen, J. (2025). *Valuing "repair" in just labour transitions in the Rijnmond region*. Erasmus University Rotterdam.



Executive Summary

Research Strategy

- This research addresses a critical gap in circular economy discourse and policy by centering repair work and repairers' experiences in Rotterdam's urban sustainability transition.
- The research team found that repair work remains marginalized in policy narratives despite its fundamental role in extending product lifecycles and reducing waste. The study reveals that repairers possess essential knowledge for circular transitions but lack recognition and integration into the Circular Economy Policy agenda.
- The project employed an action-oriented methodology, with in-depth fieldwork across two contrasting Rotterdam neighborhoods: the gentrified Stadsdriehoek area (Meent and Zwanenhals) and the lower-income Tussendijken district (Grote Visserijstraat and Schiedamseweg). Through 13 semi-structured interviews with local repairers and extensive ethnographic observation, the research team documented the diverse challenges and opportunities facing repair businesses in different socioeconomic contexts.

Key Insights

- **Economic Disparities:** Repair practices vary noticeably between neighborhoods. In gentrified areas, modern repair shops with appealing aesthetics face economic pressure to charge prices to match the area's upgraded business model and image. Conversely, traditional repair shops in lower-income areas struggle with business viability as they must keep prices low to serve their communities, pushing many toward closure.
- **Community Function:** Despite economic pressures, repair serves as an important community anchor in both neighborhoods, merging economic, environmental, and social value while strengthening neighborhood social fabric. They serve as a service point when they need technology assistance, and sometimes just a casual meeting place in their neighborhood.
- **Business Model Tensions:** The research identified significant tensions between innovation-focused "new-age" repair businesses and traditional craft-based practices, as well as concerns that policy's emphasis on trendy repair practices may undermine established repair knowledge and community roles.

Fair Repair Practice Framework

Through collaborative analysis with repairers, the research team developed and validated a three-pillar Fair Practice Framework:

- **Fair Product Cycle:** This first pillar addresses the material aspects of repair, including spare parts accessibility, repair feasibility, required skills, and enabling legislation. Key challenges include the rising costs of spare parts, constraints related to their availability, and technology barriers.

- Fair Work: The second pillar addresses repair viability through the profession and supported by education, fair pricing strategies, sustainable business models, and job satisfaction. Critical issues include declining craft education, pricing pressures, and limited recognition of repair as professional work.
- Fair Repair Culture: The third pillar addresses repair's diverse and community-embedded nature, encompassing customer education, sustainability awareness, and respect for various repair identities across different neighborhoods and cultural contexts.

Future Steps

- The research highlights that current circular economy policies need to address repair work's complexity and community functions. Policy implications include that repair's professional status and community value are recognized, that both traditional and innovative repair practices are supported, and that repair businesses are integrated into circular economy policy plans.
- The project produced multiple knowledge products including a teaching case study for academic use, a "[30-minute Repair Society](#)" urban planning concept, and a continued partnership including a collaboration with the municipality of Rotterdam's circular program. These outputs translate research insights into practical tools for education, policy development, and urban planning.
- Moving further and relying on established partnerships (for example, with the municipality), the research team aims to validate the Fair Repair Practice framework. The project positions repair work within circular economy initiatives, contributing to broader goals of just and sustainable urban transitions.

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1. Introduction and Background

1.1 Project Rationale

Repair is one of the key strategies and driving forces of the Circular Economy (Lechner et al., 2021) enabling extended product/service use, reducing materials consumption, and minimizing waste (Stahel, 2016). Providing important maintenance and repair services on an industrial and household level, repair professions and their labor value are often overlooked in policy and academic discussions. However, as a theme, repair becomes increasingly relevant in light of the EU legislation known as the "[Right to Repair](#)," which advocates for the repair of consumer goods.

In their recent academic report on Environmental Justice, Pansera et al. (2024) suggest that repairers feel that the existing policies failing to address their needs and labor value might enervate social and economic inequalities in this transition. Llorente et al. (2020) state that, despite being labor-intensive, repair work is one of the most underpaid, undervalued, informal, and less regulated forms of circular labor in the EU. Multani et al. (2024) outline the importance of developing appropriate skills and policy frameworks in shaping a resilient workspace and labor sector for a just circular transition. The research team calls for a closer look at the repair labor's economic and non-economic value.

Despite its significance, there is a lack of empirical and action-oriented research on the repair sector globally, as well as in the Netherlands. Therefore, the project aims to fill this practical and academic void by exploring repair labour and repairers' perspectives on repair and its role in the transition to circularity. The project focuses on the Rijnmond region, Rotterdam City, known for its high concentration of repair work within the Netherlands' industrial hub. The region is characterized by diverse socio-spatial layers and significant economic inequalities, also reflected in the repair sector (Musterd et al., 2020). These disparities suggest the need to consider economic and non-economic aspects of contextualized just transitions in repair labor.

1.2 Repair in the Netherlands: Brief Summary

Repair is experiencing a resurgence in the Netherlands, driven by consumer demand, policy changes, and circular economy initiatives. Nevertheless, the focus of policy and practice has mostly been on repair cafes, where volunteers repair various items from clothing to electronics. The country now hosts over 500 repair cafés since the first one opened in 2009. In recent years, a few new business models have emerged, exemplified by United Repair Centre in Amsterdam and Oxious in Rotterdam,

which combine environmental goals with social goals by employing skilled workers with a distance to the labour market to repair textiles and clothing.

Current barriers to repair include limited access to spare parts, legal restrictions on repairing discarded items, uneven taxation, and manufacturers' design choices that favor proprietary repairs. However, this may change with recent European action. The EU's Circular Economy Action Plan (2020) addresses products throughout their lifecycle, focusing on durability, reparability, and sustainability. Priority product groups include electronics, textiles, and furniture. However, critics note that current policies do not fundamentally challenge linear, profit-driven business models. In addition, the European Union's Right to Repair directive, adopted in early 2024, represents the most significant policy development. Member states have two years to implement this directive, which includes the extension of warranty periods for repaired products, an obligation of manufacturers to facilitate post-warranty repairs for certain goods (washing machines, vacuum cleaners, smartphones), the provision of spare parts at reasonable prices, and the prohibition of design choices that discourage independent repairs. Critics of the directive argue the scope is too narrow and the "reasonable" pricing that it demands remains undefined.

The Netherlands' adoption of Europe's plans happens stepwise. Overall, Dutch national policies toward repair are limited. The recently launched national repair register aims to provide consumers with certified repairer locations but currently lists only one repair service in the Rijnmond region, indicating limited initial adoption. It must be noted that the tax system applies 9% VAT to repairs of clothing, curtains, bedlinen, towels, and shoes, while electronics, carpets, couches, and chairs face 21% VAT. This uneven taxation affects prices and may discourage certain types of repair. Additionally, Dutch law distinguishes between broken products and trash; this implies that once items are discarded, they cannot legally be repaired without a technical certification, making it practically impossible for independent repair shops to handle such items.

1.3 Research Objectives and Questions

This project aimed to center the labor of repairers and product cycles within the repair discourse and practice, enhancing focus on the importance of labour and existing practices in the repair sector. The research examined multiple dimensions including the economic aspects (upskilling and payment structures), social dimensions (acceptance, stigma, and perceived attractiveness of repair jobs), technological considerations, and institutional challenges (legislative gaps). The project launched empirical research into the repair sector and validated it in Rotterdam city through practical research

activities including the development of Repair Labour Imaginaries and a Fair Repair Practice framework.

The study addressed two primary research questions: First, *how do repairers envision a just transition in the repair sector and what technical, institutional, social, and economic aspects are needed for this circular transition?* Second, *what could a Fair Repair Practice framework look like, to facilitate the valuation of labor in the Repair Sector?* The research investigated the spectrum of repair labor practices through a focus on repair shops (such as shoe, clothing, jewelry, and electronics) in two neighborhoods of Rotterdam.

2. Repair Practice Mapping and Methods

2.1 Overall Research Approach

This project took up an action-oriented approach, aimed at talking with- rather than about - repairers to result in a fair practice framework that reflects the wide range of repair practices in Rotterdam. A number of conditions facilitated the research.

First, an interdisciplinary team allowed us to look at repair from different angles. The team consisted of researchers with backgrounds in social sciences, innovation, and cultural studies. The idea for a Fair Repair Labour framework was inspired by a Fair Practice code in the Dutch cultural sector; the fair chain part of the framework was inspired by product life cycle analysis; and the focus on just transitions was inspired by social sciences research. The main data collection methods were qualitative methods. Second, multiple check-ins with the Rotterdam Municipality's circular team ensured that the research remained relevant for policy makers. This action-oriented approach required various disciplines and expertise to make sense of the empirical findings.

In short, the research process went as follows. First, desk research was conducted to map repair practices in the Rijnmond region and to familiarize ourselves with the (policy) context of repair. A research design consisted of a comparison between two neighborhoods in Rotterdam. By comparing repair practices in a high-income and gentrified neighborhood with a lower-income neighborhood, various types of repair practices and their specificities could be identified. Interviews and repeated field visits were the main source of data. How this data was used to co-create a fair practice framework can be read in chapter 3.

The next section offers an overview of the research process. The project started with desk research and field visits to Rotterdam. Then, the case selection and fieldwork protocol are discussed.

Interviews and field-work visits were used to collect data in two neighborhoods. In the last section, the challenges and surprises will be discussed.

2.2 Desk Research

The desk research consisted of two parts: 1) the creation of a repairer database and 2) initial research to get an overview of the policy landscape of repair in the EU, the Netherlands, and the Rijnmond region. First, a repair database was created in excel to map the repair practices of Rotterdam and the Rijnmond Region. For every entry, the name of the business, the type of repair model (e.g., repair cafe, repair shop, repair service, or industrial repair), the city it is located in, the sector in which it operates (e.g., clothing, bikes, electronics), and contact information is listed. The team used this database to guide the initial field visit.

A few policy developments stood out as being relevant for this research. The EU's Right to Repair directive extends warranties for repaired products, forces manufacturers to provide spare parts at a reasonable price, and prohibits product design choices which discourage independent repair of a product. Focusing on the Netherlands, it was found that the Ministry of Infrastructure and Water Management, together with Techniek Nederland, started a national repair register (National Repareteursregister) aimed at making repair options easier to find for consumers.

2.3 Methodology Rationale

The practice mapping and field visit revealed two different types of repair practices in Rotterdam. In the more affluent parts of the city - such as the area of Meent- there are repair stores with modern and appealing storefronts and interiors. The Phone Lab is an example of this type of repair, as can be seen in Image 1. Here, customers could drink a coffee while waiting for their phone to be repaired or watch how their phone is being repaired in the middle of the store. The other type of repair practice is a more traditional type of repair. Often, these repair stores are run by one person and have a community function in the neighborhood. There are no slick marketing or appealing store fronts in these stores. An example of such a store can be seen in Image 2. The research team focused on repair practices in Rotterdam across two neighborhoods with large socioeconomic differences.

Image 1. The interior of the Phone Lab; Meent, Rotterdam. Image taken on March 6th, 2025.

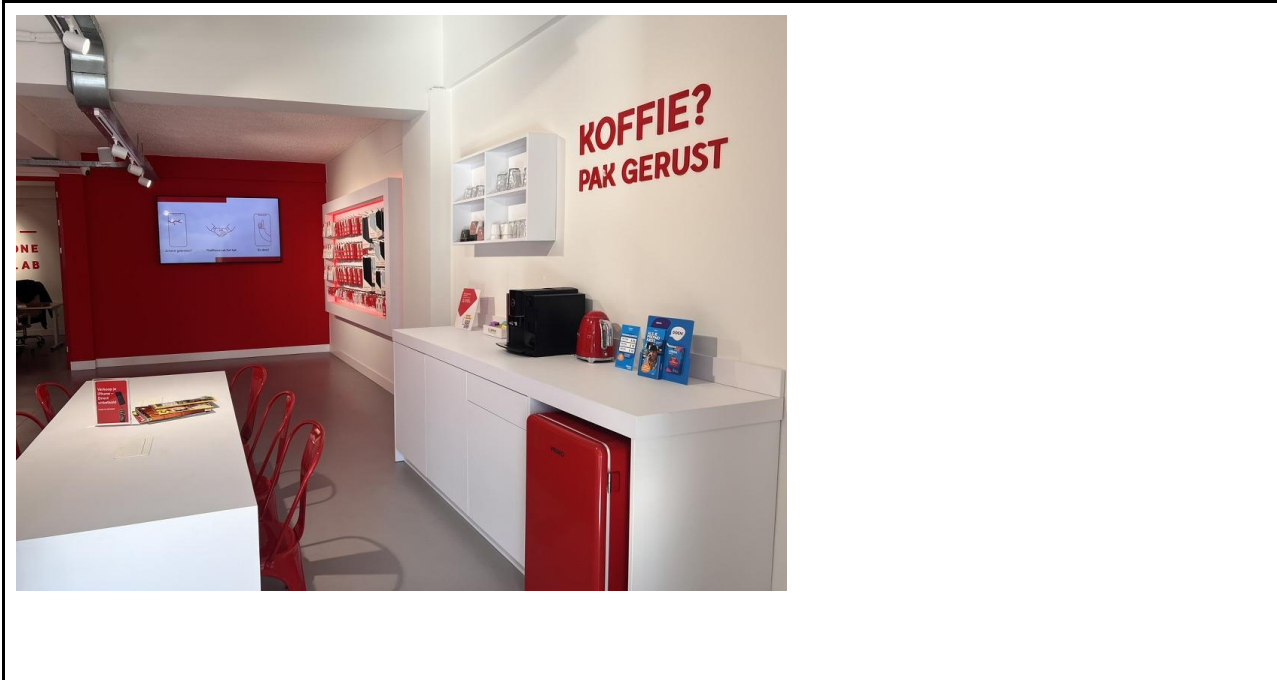
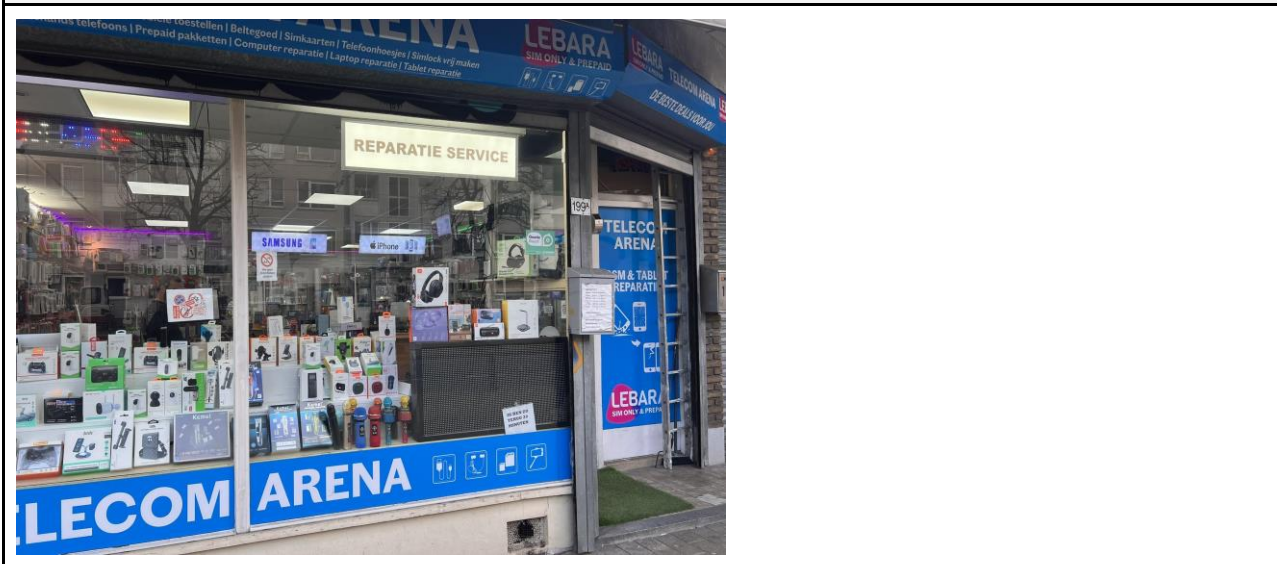


Image 2. The storefront of Telecom Arena; Schiedamseweg, Rotterdam. Image taken on February 6th, 2025.

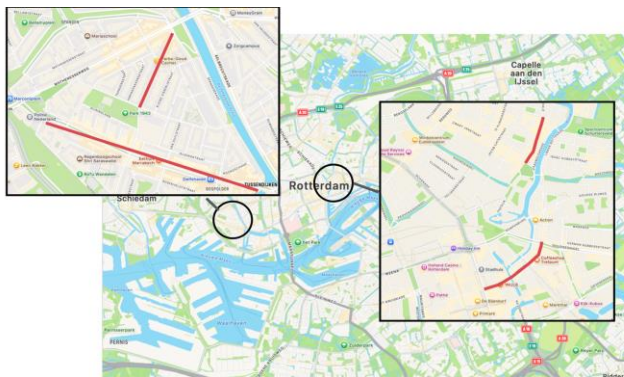


2.4 Case Selection and Fieldwork Protocol

To further investigate these two types of repair practices, the team decided to do a comparative case study, with field-work and interviews conducted in two neighborhoods - a higher- and lower-income neighborhood. First, neighborhoods with at least five repairers, with different types of repair (e.g., shoe, bike, clothing) were listed, based on the collected repairer's database. Then, basic socio-

economic indicators (see table below) were gathered to identify the neighborhoods. This led to the consideration of two streets in Stadsdriehoek, which flow into one another (see map below) for the high-income neighborhood, and two perpendicular shopping streets in Tussendijken for the lower-income neighborhoods. Two field visits were conducted to validate this choice (6-2-2025 & 13-2-2025). It was found that both neighborhoods had various repairers, with the aesthetics and business models of the repairers differing across neighborhoods. In Stadsdriehoek, repairers had modern-looking stores. In the Phone Lab, the team was offered coffee, could take a seat, and look at how the repairers were working on phones. In Tussendijken, however, stores seemed less well-designed and were generally smaller. There was no branding in or around the stores here. By studying two very different neighborhoods, different viewpoints on what a just transition to a circular society could look like were gathered, which served as inputs for the Fair Repair Practice framework.

Image 3. Tussendijken and Stadsdriehoek in Rotterdam.



Tussendijken (Left) and Stadsdriehoek

Table 1. Socioeconomic indicators for chosen neighborhoods and Rotterdam overall¹. Green indicates the percentage is higher than the overall Rotterdam average, and red indicates the percentage is lower than the overall Rotterdam average.

Street	Rotterdam average	Zwaanshals	Meent	Mathenesserweg and Schiedamseweg

¹ Data comes from <https://onderzoek010.nl/home>, accessed in April 2025

Neighborhood			Oude Noorden	Stadsdriehoek	Tussendijken
Percentage of income per neighborhood 2019	Low	10.2%	10.5%	6.4%	12.6%
	Middle	24.2%	25.4%	17.4%	34.1%
	High	65.4%	64.1%	76.2%	53.3%
Percentage of social housing units per neighborhood 2024		43.7%	57.5%	16.4%	59.2%
Percentage of residents with migration background 2024		56.5%	66.0%	59.9%	77.8%
Labor participation rate per neighborhood, netto 2022		64.8%	62.9%	69.3%	57.3

In Stadsdriehoek, the higher-income neighborhood, interviews could easily be conducted in the store as other employees continued working. In Tussendijken, conducting the interviews was more difficult. Despite having agreed to come back, some repairers were unexpectedly closed or too busy on the days for which an appointment was made. In other stores, the interview had to be paused or abruptly ended because the repairer needed to help a customer that just entered the store.

Table 3. Shortened interview guide
What kind of repair services do you offer?
How do you charge customers / how do you decide what is a fair price?

Can you repair everything related to your sector?
How do you get the spare parts? Is it easy/expensive?
Do you feel proud of your work? Do you think it is a valuable/ good job?
What are the opportunities for your practice (extra skills, support needed)?
What are the constraints for your practice?

3. Fair Repair Practice Framework: Fieldwork Findings

3.1 Co-creation of Fair Repair Practice Framework

The co-creation of the Fair Repair Practice framework took place in the following steps: data analysis, two team workshops, validation with repairers, and validation with policy makers.

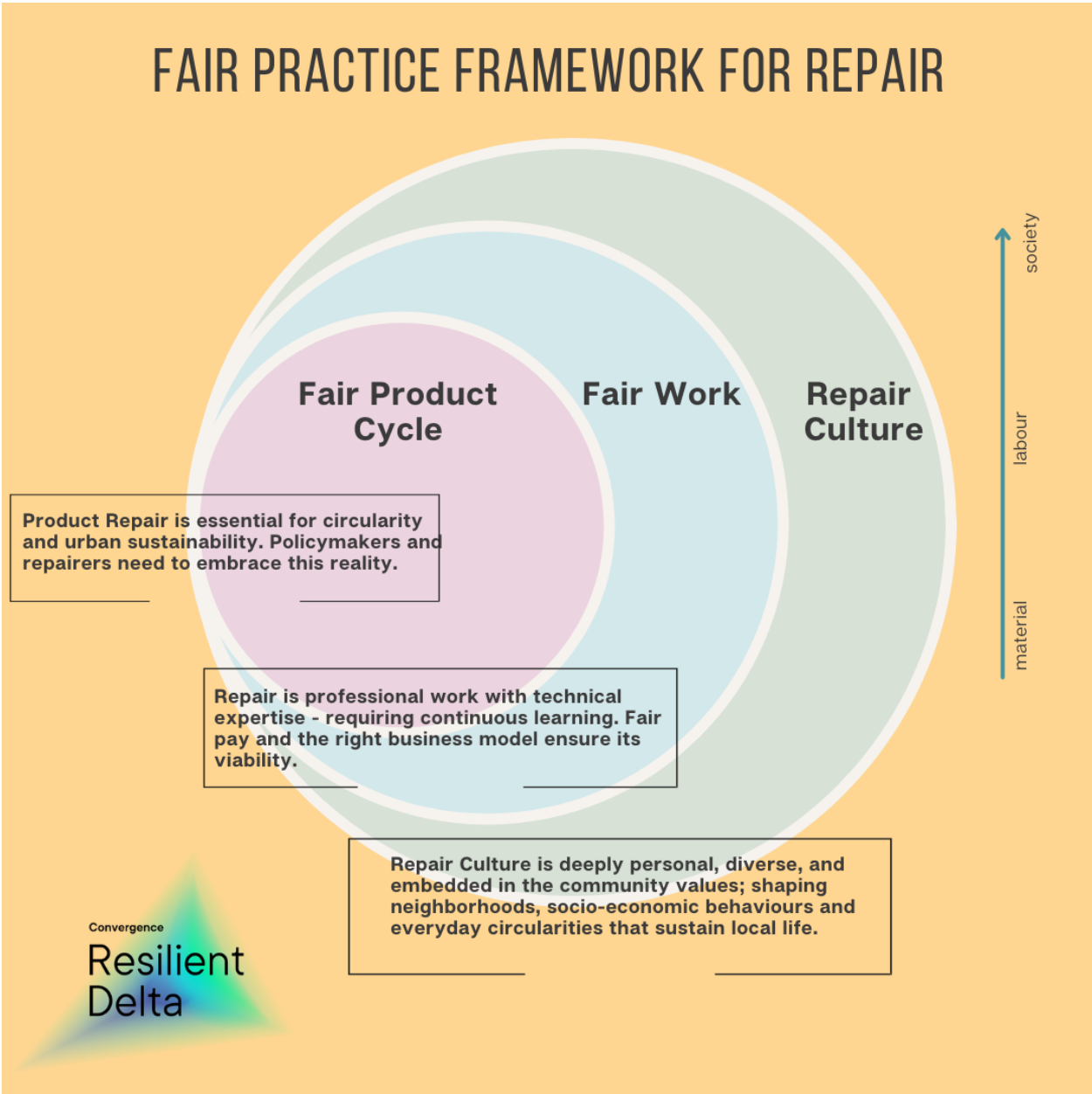
First, interviews were transcribed and analyzed. Then, inductive coding was used to find patterns across interviews. This resulted in an initial fair practice framework with three main themes (derived from the cultural sector's fair practice code), [\(sub-\)codes](#), preliminary findings, quotes from the interviews, and field observations. Second, a workshop was organized for the whole team to challenge the initial analysis. This led to the creation of the draft [Fair Repair Practice framework](#), consisting of 3 main themes (Fair Product Chain, Fair Work, and Fair Repair Culture).

A draft version of the Fair Repair Practice Framework was presented to repairers to get their validation, feedback and comments. Nearly all repairers who had the time to talk with the team had a positive impression of the framework draft. An overview of the feedback from repairers can be found in Table 4. Crucially, repairers saw their own experiences and thoughts reflected in the framework.

Table 4. List of Feedback from Repairers

Function	Neighborhood	Reflection on Fair Practice Code
Electronics repairer	De Meent, Stadsdriehoek	The overall framework makes sense. Add more points: repair culture being honest is important according to him. Fair communication with clients, other repairers, and giving honest advice also on warranty. Center: add how to recycle batteries and how to save money with a phone
Store Owner	De Meent, Stadsdriehoek	The store manager liked the concept and indeed saw that most mechanics saw repair just as a job, not as circularity
Sneaker repairer and store owner	De Zwanenhals, stadsdriehoek	Fair work not only here, but also where the sneakers are being made (as in, sneakers being made in low-income countries with poor work conditions). Not only sustainability, but also people having less money bc of inflation
Jewelry repairer/owner	De Zwanenhals, stadsdriehoek	More practical steps, how to get to fair. The model makes sense, he hopes it helps to put repair on the map.
Electronics repairer	Tussendijken	The fair practice code took the words right out of my mouth. Makes perfect sense. Everything is clear, especially the fair product cycle is the key message.
Shoe repairer	Tussendijken	People are less likely to get their shoes repaired than an expensive coffee machine. That's why he is investing in word of mouth advertising. He agrees with the presented framework.

3.2 Main Findings of Fair Repair Practice Framework



The Fair Repair Practice framework consists of three key principles: *Fair Product Cycle*, *Fair Work*, and *Fair Repair Culture*. Together, these principles form the starting point for guiding and evaluating just labor transitions in the repair sector. Fair Product Cycle is the first principle and describes the material side of repair. Fair work is the second principle and aims to ensure the viability of repair as a profession. The third and most broad principle is Fair Repair Culture, which captures the ways in which repair is embedded in communities and neighborhoods. Each principle can be

broken down in more detail, which will happen in the following sections, but the three key principles are meant to be more general and adaptable to other contexts.

3.3 Fair Product Cycle

Fair Product Cycle addresses the material aspects of repair. The main takeaway is that *Product Repair is essential for circularity and urban sustainability. Policymakers and repairers need to embrace this reality.* The following themes came up during the empirical work as being important for a fair product cycle: the feasibility of repair (how is the ease of doing repairs influenced by materials), the skills for repair (which level of skills is necessary to repair a product), co-opetition (repairers cooperate while still maintaining competitive interests), and legislation (how does policy influence the wide range of repair practices).

The **feasibility and affordability of repair** are crucial to a fair product cycle because there are many factors that make repair a less attractive option, compared to, for example, replacing or recycling. These include: the lack of spare parts, and necessary technology. A key factor is spare parts, more specifically the affordability, availability, and accessibility of spare parts. Some repairers indicated that the prices of spare parts have increased significantly in the past five years. This increases the overall cost of repairs, which makes it more likely that customers will choose to buy a new product. Another factor is the availability of spare parts. Not all parts can be accessed by all repairers. Other parts are available for repairers to buy, but difficult to access. For example, one bike repairer explained that certain bike parts come from abroad and have long shipping times. An important point, however, is that not all types of repair need spare parts. Clothing repair requires fabrics and threads, which are commonly generic and widely available. Phone repairs, in contrast, often require original parts from the original manufacturers. The longer it takes for a spare part to arrive, however, the higher the chances that a customer will decide not to get their item repaired. Another factor is technology. Various repairs require very little to very high levels of technology. One clothing repairer, for example, occasionally receives boots that are too long for their sewing machine. Similarly, a sneaker repairer does not repair soles, because the required machine would take up too much space for their small workplace. Overall, however, the team found repairers able and willing to repair most of the items that they received.

The **skills** required to repair a product are important to consider for a fair product life cycle because some common items that are being brought in for repair require advanced skills. The Phone Lab, for example, receives phones with a broken processor. This repair is too advanced to do in-store, with

the Phone Lab shipping these phones to a more specialised repairer that has the skills to repair processors.

Co-opetition - the concept where organizations simultaneously cooperate and compete, is important for enabling a fairer product cycle. Increased collaboration among repair initiatives could help lower the cost of repair, broaden the range of products that can be serviced, and, through referrals, ensure that each item is matched with the most suitable repairer. While these initiatives share the common goal of promoting repair, they also compete for customers. Co-opetition offers a useful lens to navigate this dynamic, fostering mutual support without undermining individual business viability.

3.4 Fair Work

Fair Work addresses the labor aspect of repair. The main takeaway is that *repair is professional work with technical expertise - requiring continuous learning. Fair pay and the right business model ensure the viability of repair work.* The following themes came up during the empirical work as being important for fair work: education, job satisfaction, pricing strategy, business model & operations, and intersectionality. With these principles, fair work ensures that repairers can live a good life.

Education is key to key work because it is key in allowing people to choose repair as a profession and to continue growing as a professional. Education and training help repair to be recognized as a mainstream job. In recent years, however, the availability and quality of schooling in crafts has diminished. Some programmes, such as the education for shoemakers, have disappeared completely, only being offered as a single elective in other degrees. Despite that, students can still learn through internships and on the job. In various stores there are interns who first learn the trade and get offered a job later down the line. Notably, not all repairers have the capacity to take on an intern. Another way that repairers learn is through in-house upskilling. Companies like the Phone Lab and Trek Bikes offer various courses for employees. This is important, especially for the real crafts, since repairers indicated that high-quality repairs require years of practice. Overall, education thereby ensures that repair skills are preserved and transferred to the next generation of repairers.

Job satisfaction, it was found, is very much impacted by feelings of pride. Being recognized by customers and society as a skilled craftsperson that delivers high-quality work, is a key motivator for repairers.

Pricing strategy describes the decisions that repairers make when assessing the price for a repair. They need to take into account the variable costs of the repair in terms of materials and time, as well

as the fixed costs of running a business. At the same time, they are aware of the price of alternative options, including new purchases.

Business models and operations determine in a large part how repair contributes to the overall business, and therefore, to fair work. Many repairers run a micro business as a self-employed individual and charge one-time fees per repair. Franchised ventures are less common, but the Phone Lab successfully applies this model and benefits from economies of scale. Here, experimentation with new models is awaited.

Finally, **intersectionality** highlights the barriers that prevent repair from being a good job for a more inclusive group of people.

3.5 Fair Repair Culture

Fair Repair Culture addresses the role of repair in society and how repair is perceived in society. The main takeaway is that *repair culture is deeply personal, diverse, and embedded in the community values; shaping neighborhoods, socio-economic behaviours and everyday circularities that sustain local life*. The following dimensions were found to be important for fair repair culture: educating customers, sustainability, and recognizing various repair identities.

First, repairers highlighted the importance of **educating customers** on how to treat their product. Maintenance - which is scheduled, whereas repair is unplanned- can extend the life cycle of a product, but not all customers know how to maintain their products well. Repairers can teach customers how to maintain their bike chain for example.

Circularity is an important, but not always recognized aspect of a fair repair culture. The fact that repair is a sustainable practice is important to the people working at the sneaker bar for example, not just on a business level, but also on a personal level. For them, the circularity of repair is a source of pride. Other repairers do not think about circularity much, just noting that a successful repair means that an item gets to be used for a while longer.

3.6 Infield observations

While the above dimensions are applicable to repair in general, across sectors and repair types, there is also some differentiation.

Repair practices varied notably between gentrified and non-gentrified neighborhoods in Rotterdam. In gentrified, trendy areas, newer and more visible repair shops - such as the Phone Lab and specialty sneaker stores - were more prominent. In contrast, in non-gentrified neighborhoods with lower

socio-economic status, low-key repair shops, like quick phone repair stores, were less prevalent and often harder to find.

A notable pattern emerged regarding the demographic composition of repair businesses across neighborhoods. In traditional neighborhoods, many repair shop owners had migration backgrounds, including owners from Somalia, Suriname, and other non-Dutch speaking backgrounds. This demographic distribution reflects the broader socio-economic makeup of the two different neighborhoods the research team studied.

Business Models and Aesthetics

New-Age Repair Stores	Traditional Repair Practices
<ul style="list-style-type: none"> → Modern repair establishments present a fresh aesthetic and innovative business model characterized by quick, transparent, and accessible repair processes. → These shops feature welcoming, hip aesthetics with in-house coffee service and identifiable business color codes and branding. → For example, the Phone Lab model with its transparent repair lab where customers can observe the repair process and receive upfront pricing from established pricing models. 	<ul style="list-style-type: none"> → Traditional repair businesses operate under different constraints. They are often single-person operations (ZZP - independent contractors) with limited time availability for extended interactions. → These businesses focus on craft-based repair traditions and typically integrate repair services with retail sales of related products such as jewelry, shoe products, and phone accessories.

Repair as a Social Function

<ul style="list-style-type: none"> → Both gentrified and non- gentrified neighborhoods' repair shops serve as community gathering spaces, but with different characteristics. → In gentrified areas, repair shops provide known, transparent spaces for community interaction, while in non-gentrified areas, they serve as established community spots where people have known each other for years.

Traditional Repair Challenges

- Shoemakers noted their declining numbers in Rotterdam and the Netherlands
- Many struggle to survive on high-end streets
- Reluctance to participate in workshops due to solitary work arrangements
- Diversification into retail sales as a survival strategy

Innovation vs. Tradition Tensions

- There is a significant risk of losing traditional repair knowledge when focusing primarily on trendy, new repair methods.
- Funding disparities create concern that innovation-focused funding may not support existing repair practices.
- The research identified techno-driven approach in narratives positioning repair innovations as the key to circular economies, despite existing business innovations.
- Current policy emphasis on individual consumer self-repair may undermine professional repairers' community roles, creating tension between individual and collective approaches.

Research Access Challenges

- Conducting interviews revealed significant access disparities between neighborhoods.
- In gentrified neighborhoods, repairers were generally available for sit down interviews in English.
- While in non-gentrified neighborhoods, the research required multiple visits to build trust, with many repairers too busy for extended interviews or lacking English proficiency.
- Some traditional repairers were intimidated by workshop participation proposals.

Repair Identity and Positioning

- Not all businesses identify primarily as repair practices.
- Trek Bike Repair identifies as a bike shop with repair as one component, while Ewald's Mode views repair as a diluted version of traditional tailoring craft.
- Repair is often positioned alongside other circular economy activities such as refurbish and reuse.

4. Teaching Case and Educational Aspects

The project collaborated with the Case Development Centre of the Rotterdam School of Management on developing and writing the case. The teaching case supports learning objectives related to repair, entrepreneurship, circularity, and stakeholder management. It is being considered for use in courses offered by the Erasmus School of History, Culture, and Communication, as well as in sustainability and circularity-focused minor programs jointly offered by Leiden University, TU Delft, and Erasmus University. It will allow the students to gain more in-depth familiarity with the repair sector practice, outlining interdisciplinary approaches to circularity, repair work, and just transition.

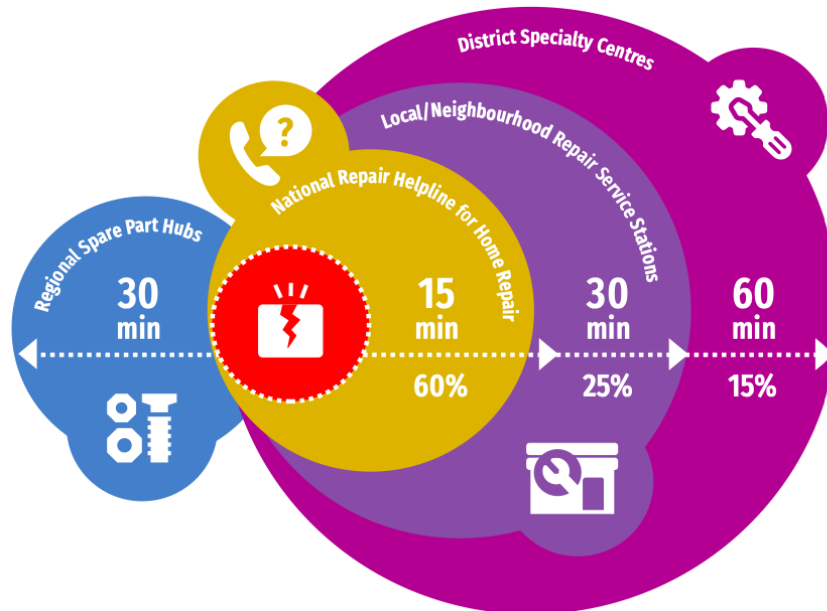
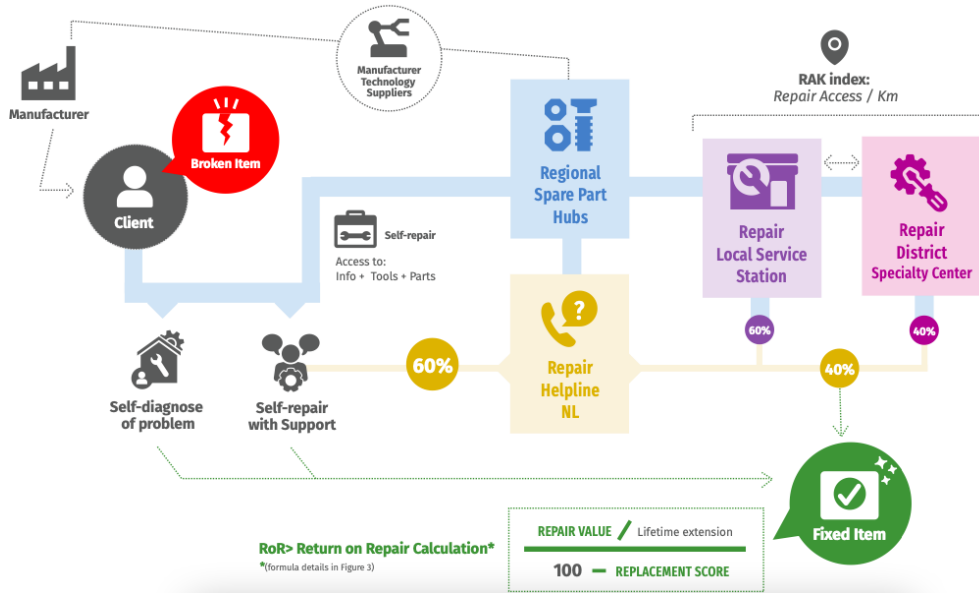
This case study (Appendix C) with accompanying teaching note follows Boris Blijham and The PhoneLab, a Dutch electronics repair company that grew from a university startup in 2013 to a leading repair chain with 12 stores by 2024. The case centers on The PhoneLab's ambitious growth strategy after raising over one million euros through crowdfunding, with goals to expand to 93 stores by 2030, enter international markets, and extend the life of 2 million devices to reduce electronic waste. The company evolved from a simple iPhone customization business started by two students into a professional repair service emphasizing transparency, quality, and customer trust, while navigating challenges including a partnership dissolution, regulatory changes around the EU's Right to Repair legislation, and the shift toward B2B services and insurance partnerships. The core question examines how The PhoneLab can maintain its market leadership in the repair sector while balancing rapid expansion with operational quality, environmental impact, and financial sustainability in a changing regulatory landscape that increasingly supports repair over replacement.

5. In4Art Collaboration: 30 minute Repair Concept

["30-minute Repair Society."](#) (see, Appendix D) is an urban planning imaginaries designed to stimulate repair culture and counter throwaway consumerism by making repair services accessible within 30 minutes for city residents. The concept proposes a four-tier ecosystem consisting of a national repair helpline for remote digital support, regional spare parts hubs, local repair stations within 15-minute city boundaries, and district specialty centers for complex repairs. Using Rotterdam as a case study, the authors demonstrate how 85 neighborhood repair stations and 4 district hubs could serve an entire urban population, transforming repair from individual problem-solving into collective community capability while creating measurable value through new metrics like the Repair Access per Kilometer (RAK) Index and Return on Repair (RoR) formula. The model aims to shift cities from a "waste-and-replace" mentality back to a "make it last" culture by combining

traditional repair wisdom with modern convenience infrastructure, ultimately positioning repair as a form of urban stewardship that maximizes the energy and resources already captured in material objects.

30-minute Repair Society Concept



6. Open Access Dissemination

Building on the findings from this Kickstarter Grant, the research team is pursuing a multi-phase validation strategy for the Fair Repair Practice framework. The first phase involves direct collaboration with Rotterdam municipality's circular economy team to pilot-test the framework's applicability in policy design and implementation. This partnership will enable empirical validation of the framework's three pillars (Fair Product Cycle, Fair Work, and Fair Repair Culture) within existing municipal circular economy initiatives, while identifying necessary adaptations for policy contexts. The framework validation process aims to: test practical applicability - assess how the framework can guide policy decisions regarding repair sector support and circular economy planning, and refine through iteration - incorporate feedback from multiple stakeholder groups, including municipal policymakers, repair practitioners, and community organizations.

All project outputs (Teaching Case, Fair Practice Framework and Sub-Codes, and 30-minute Repair Society) will be made publicly accessible through open-access repositories, ensuring availability to academics, students, practitioners, and the broader public. This commitment to open knowledge sharing reflects the project's action-oriented ethos and supports ongoing engagement, critique, and refinement by diverse stakeholders.

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Appendices

Appendix A: Fieldwork Materials and Templates

Extended Interview Protocol

<p>Target: small repairers in Rotterdam’s shopping streets Length: short, small repairers value their time Focus: three main themes of potential fair labor code</p>	
Intro	<p>Thank you for meeting with us today. The research team are [Name(s)] from Erasmus University Rotterdam and Delft University of Technology. The research team would like to talk to you about your experiences with repair work.</p> <p>The research team is researching repair practices in Rotterdam, specifically looking at both labor-intensive and technology-intensive repair work. The goal is to create a Fair Practice Framework for repair work in Rotterdam.</p> <p>The research team will be taking notes and transcribing the recording of our conversation. With your permission, the research team would like to record the interview. Your data will be either fully, pseudo-, or not anonymized, depending on your preference. The data may be used for this project, future research, funding applications, and academic publications. It will be stored for 3 years, and only the project group will have access to it. the research team will not publish the data or related codes.</p> <p>The research team doesn't want to inconvenience you, so this conversation does not have to last long. The research team will ask you questions about various aspects of repair work. There are no right or wrong answers, as the research team is interested in your views and experiences.</p> <p>Do you have any questions before the research team begins? Does the research team have your consent to record and start our conversation?</p>
Fair Pay = work is paid for in a just way	<ul style="list-style-type: none"> - What skills do you need for your work? (Start broadly, then focus on repair-specific skills.) - Where and how did you acquire these skills and technologies? - Do you need to update your repair skills regularly? If so, how do you go about reskilling? - What are the costs—both financial and time-related—of learning new repair skills? - How do you get paid for your repair work? (e.g., per service, fixed wage, commission-based, informal exchanges, etc.) - Are you satisfied with your earnings? Why or why not?

	<ul style="list-style-type: none"> - What policies or financial support (such as subsidies, training programs, or tax incentives) help or hinder your repair work?
<p>Fair Chain = actors in the chain pay what they can and get support when they're in need</p>	<ul style="list-style-type: none"> - What challenges do you experience in the industry due to other actors (e.g., manufacturers, suppliers, policymakers, competitors)? - How accessible and affordable are spare parts for your work? - How do you assess whether a product is repairable? - Are there any specific products or components that you do not repair? If so, why? - Are you on an authorized list of repairers for certain products? Do you see this as a beneficial mechanism? Why or why not? - Have you faced challenges in using advanced technologies for repair? If so, what kind? - How has technology changed the way you do repair work over time? - Are there any digital platforms or software tools that support your repair business? <p>Extra questions:</p> <ul style="list-style-type: none"> - Do you have open access to repair manuals, or are they restricted by manufacturers? - How transparent are manufacturers about repair processes? - How does the level of standardization by manufacturers impact your repair work?
<p>Fair Share = fair social share</p>	<ul style="list-style-type: none"> - When do you feel most proud of your repair work? - How do you think repair work can gain more recognition and respect in society? - What would you like to change about how repair work is valued? - Are there any legal or policy changes that you believe would improve the repair industry? - What role should government policies play in promoting repair work?
<p>Rounding up Clarifying questions for participants / Questions from participants Consent / Thank you</p>	<p>Summarize main themes and answers from participants. Ask last clarifying questions. Space for participant(s) to ask questions about research, themes, repair, consent, etc. Repeat consent Thank for participation and end the recording</p>

Appendix B: Fair Practice Framework Sub-Codes

[Fair Practice Framework Sub-Codes](#)

Appendix C: Teaching Case Study

This case is built on published sources. The case is written to provide material for class discussion rather than to illustrate effective or ineffective handling of a management situation.

The Circular Fix: Reinventing Electronic Repair at ThePhoneLab

Introduction

Boris Blijham could hardly believe it. As the founder and CEO of ThePhoneLab, a leading electronics repair company in the Netherlands, his wildest dreams were coming true. By the end of 2024, he had been able to raise over one million euro through a share funding campaign, with 600,000 of it being committed in one day from the company's customer base. Boris had been going against the grain for over a decade. And this funding campaign was no different. He wanted to show that there was support from the customer base, from people who see that a place for repair in society is worth investing in and fighting for. Boris had big goals, among them, increasing the number of stores in the Netherlands as well as opening stores internationally, increasing their partnerships with insurance companies, and growing their B2B strategy with corporates.

There had been shifts in the regulatory frameworks, particularly with the EU Circular Economy Action Plan adopted in March 2020 and the so-called Right to Repair rules that were approved by the European Parliament in April 2024. Although EU member states were only required to implement the Right to Repair in August 2026, visibility of the new rules and their voluntary implementation were slow. Boris asked himself: how can we remain a market leader in the repair sector as well as show there was a way to contribute to reducing the volume of electronic waste? He was determined to press forward, but needed to ensure that all new plans prioritized the company's survival in the long-run.

Repair as a Sector

Repair has been experiencing a resurgence after a period of being more of an activity in the shadows. Forty years ago, repair was still common practice for a diverse range of items, think household appliance repair and shoe repair shops, there was even a market for repairing complex surgical instruments. However, as technology advanced and production at mass volumes decreased prices, a

replacement culture emerged and replaced repair. It became cheaper to buy new items rather than to repair older ones. This shift was exacerbated by the ease of online ordering (e.g., with a single click), making repair not only less appealing but also more difficult to even find places to repair appliances. Additionally, for electronics, such as mobile phones and tablets, the devices were designed, in the best case scenario, that if they were opened or repaired by independent repairers the warranty would be voided, and in the worst case, that the product was intentionally designed to make repair impossible.

In the last ten years, there has been a shift back to repair, both in policy and society as a whole. The EU's legislation on the Right to Repair, passed in 2024, was the biggest shift in consumer law in at least 30 years. This directive made clear that repair must be prioritized in the two-year warranty period, unless replacement is cheaper or repair is not feasible. The law also stipulates that spare parts and tools be available for purchase by independent repairers, and that electronic devices must be designed so that they can be repaired.

Additionally, policies were in place internationally, as well as in the Netherlands on Extended Producer Responsibility (EPR). The EPR policy approach made producers and manufacturers responsible for the proper disposal and waste of their products. This policy was mandatory in the Netherlands for batteries and electrical and electronic equipment. Manufacturers and importers of electronic and electrical devices were required to properly collect and recycle devices, as well as transparently provide information to processing companies on how to reuse and recycle the products.

Smashspiration

In 2013, when Boris Blijham, a business school student in Amsterdam, reached for his phone when he woke up after a long party evening, he realized he had more than a hangover; his iPhone 4 screen was totaled. He started looking into repair shops and was frustrated when all he found were options that were too expensive or looked too shady to trust. Official vendors, like Apple, Samsung, or Coolblue, were focused on selling new devices, with little attention to repairing existing devices.

Overwhelmed, and frankly annoyed, he put his broken phone in his bag and went to class. He found himself seated next to his friend and classmate Danny ten Nijenhuis, who was tech savvy having started his own YouTube channel with half a million subscribers, and expressed his anger at the whole situation. Danny calmly asked, "You know you can just order those parts in China on AliExpress, right? And there are videos online on how to repair your phone yourself."

After class, Boris found vendors for spare parts in China and a whole new world opened up. He could even pick colors for the spare parts, and at a fraction of the price offered in the Netherlands. Two

weeks later, he had a bright green phone. Other classmates and friends started approaching them to customize their phones. As the requests flooded in, Boris and Danny decided to start their own company, IDABO (iPhone DAnny BORis), focused on iPhone customizations. They built a simple website and started advertising on Facebook.

Getting Wired Up

After about two and a half years, Boris and Danny decided to formalize their business and see where it would take them. The concept was built in response to what they called the “out-of-control phone shops” which could be found all over but lacked a confidence inspiring appearance. These shops often only did the repair work in a backroom and had unclear pricing structures.

They were recent graduates and wanted to put their business studies to work. They found a commercial property to rent and consulted a real estate lawyer in their network to ensure that they were doing everything correctly, and also to protect themselves against any scams. They rented the property and got to work: painting the store and acquiring the right furniture.

They wanted the look and feel of the store to inspire trust, professionalism, and transparency, while still remaining cozy and informal. The stores were simple in design, painted red and white. The workspace was open to the customer, so if one wanted to watch the repair, they could do that, even with a free coffee. They both understood that a phone is an important asset to people, almost like an extension of their arm. They wanted the setup to allow people to not worry that something weird was happening, and that the repair would be handled as promised. In most cases, repairs could be handled in 30 minutes: a proposition that signaled clear expectations to the customer.

The two likened their relationship to a complementary partnership, with Boris “looking up the ladder” and Danny “checking if it’s in the right place.” In other words, Boris was forward-looking and Danny was the builder. For the day-to-day business operations of ThePhoneLab, Boris oversaw technology, procurement, and finance, while Danny specialized in the brand, business market, and marketing.

They decided to reinvest all profits back into the business. They were ambitious and also cautious at the same time. Danny recalled that “service, quality, and the availability of parts can’t be scaled up.” Growing too fast had its risks. They had seen a French repair company, Save.co, scale up to 83 stores with an investment of 16 million euro, but did not manage it well and were bought out. Boris and Danny wanted to continue developing ThePhoneLab and were not aiming to be bought out. Boris and Danny decided to remain full owners and not take in investments that would give a stake in the company away. Maintaining full decision making between the two of them, and no one else, was a priority.

System Upgrades

By 2017, two years in, Boris and Danny employed 17 people across 3 stores in Amsterdam. They continued building their brand and looked ahead at opening new stores. In 2020, they launched a new service beyond repair: insurance. Typically, insurance companies had been hesitant to insure a used or refurbished device since they have difficulty assessing the actual condition of the device and thus cannot calculate the risk. Through ThePhoneLab partnering with Harmony, an insurance provider, they've been able to find a way to solve the issue. ThePhoneLab, through this partnership, was responsible for checking the phone to determine whether to insure the device or not. Once the phone is approved, then the customer can opt for one of two policies: the basic that covered damage from dropping the device, water damage or technical defects, and a plus package that included theft. ThePhoneLab streamlined the repair process. Normally, a customer might have needed to send the device to the insurer, or authorized repairer, and not have access to the device or data for a number of days. Under this new partnership, customers could get their device fixed in the shop, completed within 30 minutes, in most cases.

Cracks in the Partnership

In the beginning of 2020, Boris and Danny parted ways professionally. They had a can-do attitude in the beginning, having just graduated from university. By the time they were eight years in, they had a staff of 30 people and had formalized the business. They both started to notice that they had different visions for the future. After open discussions between the two, Danny decided to leave ThePhoneLab to pursue other opportunities. Boris bought out his shares. The company was their "baby" and they both wanted the best for it, however working together did not seem to be the way forward anymore.

To continue with a strong foundation and push forward, Boris brought on Jeffrey Vossen and Matthew Bregman, as CFO and operations manager, respectively. Boris wanted to ensure a smooth transition after Danny's departure and usher ThePhoneLab into a new phase. The three put their heads together and decided to strengthen their strategy for the business market.

New Business Plug-ins

In 2022, Boris decided to add expansion into the B2B as a new strategic focus for the company. The COVID pandemic changed the way that people worked, with an increased amount of working from home, some of which was a permanent shift. For companies, this meant employees needing a work phone, tablet, laptop, or accessories at home. Boris saw an opportunity. While previously only 5% of the store sales came from business customers, this new strategy aims to increase that share.

Companies were realizing that devices and equipment could last longer than in the past, especially if the policy was to try to repair first. Boris remarked, “We see an increase in companies that want to do business in a socially responsible way and can save costs as a result. We also see that employees are becoming increasingly vocal about sustainability. And do not need a new smartphone every two years. They also understand that this does not contribute to a better environment.”

Additionally, there were advantages to ThePhoneLab besides increased sales. With B2B repairs, they could plan repairs in bulk around off-peak hours. This meant that they could still offer quick turnaround time on repairs for individual customers and plan the business customer repairs throughout the day.

With over one million euro raised at the end of 2024 through their crowdfunding campaign, Boris sat down with Jeffrey Vossen and Matthew; the current management team at ThePhoneLab. They had committed to extending the life of over 2 million devices by 2030, aiming to contribute to a significant reduction in e-waste. Among their other goals, ThePhoneLab wanted to have at least 93 stores by then, up from their current 12. They wanted to further consolidate their B2B strategy, as well as their insurance partnerships. With the cash injection, they also wanted to finally make the move to branch out internationally (e.g., Germany, Belgium), and by 2030 be the market leader in five countries.

Boris knew he had big ambitions. That had not ever been hard for him. He had told investors that they’re not “investing in anything new”; the concept for ThePhoneLab was tried and tested already for almost a decade. Therefore, he wanted to make sure he was taking calculated risks, and not jeopardizing everything he had built for over a decade. He wanted to review his plan with the management team. Should they consider franchising instead? How fast should they grow? What’s at stake in terms of the environmental and social impact of this growth plan? Can we keep our quality standards high with this way forward?

Appendix D: 30-minute concept

[IN4ART 30 Minute Repair Society](#)

Appendix E: Ethical Approval Documentation

Repairers were informed about participating in the research project, so they had the option to withdraw or participate anonymously if that better suits their choice. Ethics and data management was handled by the ISS-based project team under the advisory of the Grant office and Data Privacy officer (ETH2425-0156).

The project adhered to the Ethical and Data Management Guidelines of Erasmus University of Rotterdam and TU Delft. This project followed the ethical guidelines of the Netherlands Code of Conduct for Research Integrity (2018), EUR Policy on data management, and the European Union's General Data Protection Regulation (2016), which mandates that (a) personal data will be collected only if necessary and relevant for the study, and anonymisation of personal data including information on gender, age, ethnicity, and religion will be applied; (b) data will only be used for academic purposes, and only anonymous data will be displayed in the published research; (c) after the completion of the research, raw and processed data will be stored at the International Institute of Social Studies (Erasmus University Rotterdam) for 10 years for scientific integrity purposes and (d) to prevent potential misuse of the research results, external parties will not have access to the stored data, and after the expiration date, data might be destroyed.