HOW TO USE

Get inspired about how to change business models for Circular Economy.

Two types of Pattern Cards are available:

- **Green**: changes in value proposition, delivery and capture
- **Blue**: changes in value creation and network of partners

Each card presents a question to support brainstorming about the possibility of adopting a specific business model pattern, and a case demonstrating its application in manufacturers.

✔ Screen through the cards and select the ones that are applicable to your company.

✔ Combine cards of different colours to achieve fully circular configurations of business models.

Detailed information, tools and templates for choosing and combining cards are available at circitnord.com (workbook 2, activity 3). References available in the digital version of the cards (circitnord.com).
How could you offer solutions to access real time information about products (e.g. location and usage history, enabling collection, reuse and refurbishment)?
Globelet is a New Zealand-based company that provides reusable systems and products for cities and events.

Globelet has developed a trackable coffee cup system for cities. With this system, users will be able to check out cups when buying their beverages by paying a deposit. After using the cups, they can deliver the cups in collection points and receive part of the deposit back.

The cups are collected, washed and redistributed. When they are no longer proper for reuse, the cups are sent to recycling facilities.

The tracking system supports Globelet with the demand management of cups by customers. [1, 2]
MAINTENANCE MANAGEMENT AND PREDICTION

How could you offer monitoring services that allow for product failure prediction and product lifetime extension?
Caterpillar is a multinational provider of mining and construction equipment and solution.

One of their offerings, Cat Minestar, enables the monitoring and management of mining technology applications and network services.

The system is supported by the Cat Connect technology, a machinery management solution that offers insights into mining operations (e.g. location, fuel consumption and fluid contamination).

Cat Minestar enables predictive maintenance and an extension of the equipment lifetime. [1, 4]
How could you support a maximisation of productivity through managing the operational efficiency (e.g. reduce idleness of products based on usage data)?
The Swedish company 3TEMP/PLAE2TECH develops and manufactures high-end quality coffee machines for the professional market of coffee chains, cafes and restaurants.

As the machines are equipped with sensors and Internet of Things technology, 3TEMP/PLAE2TECH is able to provide services for remote control of machines and recipes, enabling enhanced coffee brewing operations and maintenance.

Moreover, the data-driven services contribute to energy saving, reduced downtime due to failures and extended machine life. [5]
CONSUMPTION RATIONALISATION OR DEMAND REDUCTION

How could you offer solutions to help customers to rationalise consumption (i.e. buy the right quantities at the right time)?
Gispen is a Dutch company that provides office furniture to companies.

One of their solutions, the “Quickscan Circular Economy” provides insights to customers regarding the possibilities and benefits of reusing furniture.

The Quickscan helps customers to rationalise consumption and think about other options before replacing their furniture by new items.

In addition to new furniture, Gispen provides maintenance, refurbishment and upgrade services for furniture through the REVIVED line; and remanufactured and repurposed furniture through the REMADE line. [1, 6]
Digital service packages and dematerialised solutions

DIGITAL PRODUCTS

How could you digitalise your products (e.g. though a digital service or a platform solution)?
The multinational Xerox provides Electronic Data Management Services to support their customers that are moving to a digitised strategy of document management to avoid physical copies.

Xerox also provides printing services in a pay-per-copy base coupled with a Printing Awareness Tool that uses gamification to improve users’ awareness and printing behaviour.

With these synergistic offerings, Xerox is able to balance the reduction of revenues as a consequence of reduction in physical copies with the increase in revenues from Electronic Data Management services. [7]
EXPERIENCE OR RESULT AS SERVICE

How could you meet customer needs by providing services to deliver the expected results/performance or experience?
Philips, the global leader in lighting, offers lighting as a service to buildings (e.g. Schiphol Airport).

The customers pay only for the light they use, while Philips remains the owner of all fixtures and installations.

Philips and partners take full responsibility for the performance and durability of the lighting system and ultimately its reuse and recycling at end of life.

With this, optimisation and efficiency are enabled, contributing to up to 50% reduction in electricity consumption. [1, 8]
Performance-based services and solutions

ACTIVITY MANAGEMENT SOLUTIONS

How could you meet customers needs by providing services to perform specific activities (i.e. outsource some of their key activities)?
Dutch aWEARness creates workwear and corporative clothes from recyclable polyester, which can be recycled up to eight cycles. To enable a closed loop, Dutch aWEARness created a business model that allows shared ownership of materials throughout the value chain.

Dutch aWEARness takes back all products after use and process them into recycled materials and products.

Through a “Circular Content Management System”, Dutch aWEARness controls the use of the recycled materials by providing first right to value chain partners. [1, 9]
FUNCTION AS SERVICE
customisable time-based contracts

How could you meet customer needs by providing pay-per-period contracts that deliver the agreed functionality?
Martela is a Finnish company that specialises in furniture for public spaces, businesses and schools.

Martela launched two functional oriented solutions called “Workspace as a Service” and ‘Learning Environment as a Service’. The pay-per-month contracts include the development of user-centred environments, continuous monitoring and optimisation to fulfil the changing life-cycle needs of workspaces and learning environments.

Martela also offers rental and leasing, as well as repair and refurbishment services. End-of-use furniture can be returned to Martela to be reprocessed. Reusable parts are remanufactured into new assemblies and wood, metal and plastic recyclables are reclaimed as secondary raw materials or recovered for energy production. [10]
FUNCTION AS SERVICE
per subscription

How could you meet customer needs by providing pay-per-use contracts (i.e. service subscriptions) that deliver the agreed functionality?
The Dutch company Bundles provides a subscription service for washing and drying solutions.

The subscription service works in a pay-per-use model, in which the user pays a fee for using the dishwashers, washing machines, and tumble dryers (e.g. pay per wash), complemented by a monthly base-fee.

This model includes transportation, installation, repair and maintenance of machines. Additionally the users can have access to automatic detergent replenishment and online usage insights for a complete washing and drying solution.

Bundles retains ownership of the machines and takes responsibility for their availability. [1, 11]
How could you facilitate access to products and attract new customers by creating a sharing platform that enables sequential use of products by several users with the potential to reduce idleness of products?
The Dutch platform Lena Fashion Library allows customers to borrow clothes the same way one borrows books for a monthly subscription fee.

Depending on the subscription package, the customer gets between 100 to 300 points, which acts like a deposit to allow them to trade for clothing. The customer can switch clothes indefinitely, as long as they have enough points.

Lena’s Fashion Library doesn’t have any minimum borrowing period. [1, 45]
How could you facilitate access to products and attract new customers by creating a pooling platform that enables simultaneous use of products by several users with the potential to reduce idleness of products and enable better use and for longer?
ShareDesk is a digital marketplace providing a platform for mobile professionals to discover and book workspaces and meeting rooms by the hour, day, or month.

The platform connects users in need of a workspace with thousands of available coworking spaces and business centres around the globe that are advertised by venue operators.

By doing that, offices and furniture are used for longer periods, sharing the costs among a number of users. [13]
How could you attract new customers or generate more revenues by offering products as service in pay-per-period contracts?
Mitsubishi is a multinational company that provides high quality elevators with guaranteed availability at low initial investment for the customers.

Mitsubishi keeps the ownership of the elevators, while customers pay a fixed (all inclusive) annual amount for the use. Clearly defined indicators and corresponding fines are defined in service contracts.

In addition to the lower up-front investment, customers can benefit from lower operational costs along the elevator lifetime due to enhanced care and life-extension services. [1, 14]
How could you attract new customers or generate more revenues by offering products as service in pay-per-use contracts?
Auping aims to make exclusively recyclable products and have all its processes set up in a circular manner. The Dutch company focuses on expanding the production of beds made entirely of recyclable materials, collecting old mattresses when it delivers a new one, and switching to renewable energy for production.

Auping started to pilot the offering of bed-as-a-service to businesses via a pay-per-reclination hours scheme.

This offering can fulfil customers such as hotels that are frequently in search for higher flexibility and convenience of frequent upgrades and maintenance of furniture. Meanwhile, Auping can take the mattresses back for reuse or recycling. [1, 15]
How could you attract new customers or generate more revenues by offering products as service per subscription?

PRODUCTS AS THROUGH-LIFE CARE SERVICE
pre-configured packages (e.g. per subscription)
Products as through-life care service

CIRCOS AND VIGGA - BABY CLOTHES THAT GROW WITH CHILDREN PER SUBSCRIPTION

The American Circos and the Danish start-up Vigga (acquired by Circos) are examples of companies offering subscription to baby clothing.

Customers pay a subscription fee, that varies according to the number of items. As the baby grows, the clothes are returned and replaced by larger clothes.

According to Vigga, this business model is 80% less wasteful in terms of resources, as multiple customers reuse the otherwise short-lived items of clothing. Additionally, customers benefit of not having up-front investment with clothing. [1, 3, 16]
How could you attract new customers or generate more revenues by offering long-term leasing contracts?
IKEA, a large home and office furniture manufacturer from Sweden, is piloting leasing schemes in Finland, Norway and the United Kingdom. For a monthly fee over an agreed period of time, customers have access to a package of furniture.

This offering benefits customers with temporary need for furniture (e.g. travelers, pop-up shops) or with budget restrictions for acquisition of furniture.

When IKEA receives the furniture back, they can extend its use to other customers, avoiding premature disposal. [17]
How could you attract new customers or generate more revenues by offering short-term renting contracts?
Caterpillar is a multinational provider of mining and construction equipment and solutions.

In the Caterpillar Rental web-store, customers design the required solution and rental contracts together with a Cat distributor from the global network.

A large inventory of equipment is available for rental. With this offering customers can benefit from flexibility during periods of seasonal demands, while Caterpillar can make the most out of equipment, enabling their use by multiple customers. [18]
How could you offer lifetime value through high quality and highly durable products (e.g. jewellery)?
Miele offers durable and reliable white goods that are tested and approved for a service life of 20 years.

A large number of Miele appliances are updatable. This makes it possible to refurbish the appliances to a certain extent, to re-program electronic units and to upgrade products to include the latest technological advances.

Their washing machines can be modified via software, which makes it also possible to upgrade the washing programs according to the availability of new cleaning products.

With this, machines can be used for longer and customers do not need to spend with buying new equipment. [1, 19]
Long life & next life products

PRODUCTS SALES WITH THROUGH-LIFE CARE SERVICE PACKAGES

How could you enable long-term relationships with customers through high service level contracts (e.g. maintenance, repair, refurbishment and upgrades)?
Konecranes is a Finnish company that provides lifting equipment with complementary services that enable the extension of the equipment lifetime.

The “Lifecycle Care” programme provides different maintenance packages ranging from simple inspection and preventive maintenance, to more comprehensive packages including spare parts, refurbishment, predictive maintenance and performance-based maintenance.

Konecranes also provides “Lifecycle Care in Real Time”, which uses remote sensing to collect crane usage data in real-time. This provides insights and real time reporting to the customer about running time, motor starts, work cycles and emergency stops of cranes. The collected information can be used to detect overloads and overheats so to allow predictive maintenance. [3, 20]
How could you motivate customers to return products to you via a deposit, reimbursement or swapping system?
The Dutch company Snew is specialised in reverse logistics services for telecom and Information Technology (IT) electronic products.

Snew offers cash back and bonus for customers that hand in used electronic equipment.

Additionally, Snew provides services to extend the life of electronic equipment, including maintenance, service parts, refurbishment, and recycling.

As a benefit to customers, Snew provides information and support with Corporate Social Responsibility reporting. [1]
Long life & next life products

BUY-BACK SCHEME OF PRODUCTS
based on vouchers or coupons of discount on next purchase

How could you motivate customers to return products to you by offering vouchers or discounts?
The Norwegian company Bergans provides outdoor apparel, tents, canoes, and backpacks.

In its flagship store at Oslo, Bergans offers repair services and the option for customers to return no longer in use clothing. Customers can get a 20% discount on a new item that is bought at the same time that they return used clothes.

To facilitate returning an item via the post, mailing bags can be ordered via text or online.

Returned products that can no longer be refurbished or reused are repurposed into redesigned items or donated to charity for repurposing into insulation or filler materials. [3, 23]
How could you provide services to enable new life cycles for the same products and obtain revenues with this?
The Dutch furniture manufacturer Rype Office offers two furniture renovation options for customers: Refreshed or Remade. Each offering appeals to different customer preferences and openness to new business models.

For the Refreshed offering, existing items are refurbished to as-new condition with an outsourced service.

For the Remade offering, a range of used products cores are remanufactured in a make-to-order process.

Additionally, Rype Office offers new products that can be purchased with the option of a buy-back or leased for a monthly fee. [21, 24]
How could you obtain more revenues by reselling products that are refurbished or remanufactured?
Caterpillar is a multinational provider of mining and construction equipment and solutions. With Cat® Reman offering, Caterpillar takes back products and materials and employs environmentally sustainable practices to restore components to as-new condition.

In addition to offering Cat® Reman parts for own brand machines, Caterpillar remanufactures other products for their customers as well.

Caterpillar also provides the Cat® Certified Rebuild program, which increases the lifespan of equipment and enables updates for a fraction of the cost of buying new. Trained dealer service technicians perform the rebuilds by using genuine equipment or parts. [21, 22]
How could you encourage customers to take responsibility for resource conservation and facilitate the direct reuse of products?
Patagonia is an American company that created a second-hand market in partnership with e-Bay to encourage clothing trade among customers. The original business model evolved into a store-front called WornWear.

Customers that return worn clothing to Patagonia’s platform get credits to buy other new or reused items.

To promote the initiative, Patagonia encourages the sharing of reused stories of the clothing in their web-page.

Returned garments that are in poor condition and can not be refurbished are recycled into fibres to be inserted in fleece jackets. [21, 25]
TRADE OF SURPLUS FOOD OR AGRICULTURAL PRODUCTION IN PLATFORMS

How could you encourage customers to take responsibility for resource conservation and facilitate trade of surplus food or agricultural products to avoid waste?
Farmigo is an American start-up providing a service that allows customers to purchase fresh foods from local farms online and pick them up at a neighbourhood location.

The offering includes any kind of produce, meats, dairy, baked goods, and snacks.

Farmigo focuses on improving the software platform where the farmers can keep inventory of their produce and use that for managing sales and orders. With that, they help farmers to find customers and demand for their produce, control stocks and avoid food waste. [26]
How could you obtain more revenues by transforming bio-based resources such as rests of consumables in new products?
Bio-based products from cascaded ingredients or nutrients

KAFFE BUENO - BIO-REFINED COSMETICS AND FOOD FROM SPENT COFFEE GROUNDS

The Danish company Kaffe Bueno is a start-up specialised in producing natural ingredients for cosmetics and functional food from recycled coffee grounds.

Kaffe Bueno established the first bio-refinery in the Nordic countries. Kaffe Bueno Recycled Coffee Oil and Coffee Flour are examples of products commercialised by them.

Kaffe Bueno provides a collection and recycling service for coffee grounds to cafes, hotels, offices and canteens in Copenhagen. In exchange, the commercial establishments can get benefits such as information for Corporate Sustainability Reporting, training on waste management, workshops and network.

With the collection service, Kaffe Bueno can obtain the required supply of spent coffee grounds for the bio-refinery. [27]
How could the use of biodegradable and renewable materials help reducing costs or attracting new customers for your company?
Circular supplies

CELLULAC - BIOPLASTIC FOR SINGLE USE PRODUCTS

Cellulac is an industrial biochemical company specialised in producing low cost bioplastic by using second-hand generation dairy and agriculture feedstock.

To guarantee appropriate treatment for the bioplastic-based products after their use, Cellulac established a partnership with Pharmafilter, which is a complex waste management company.

Together, they managed to produce disposable single use items and personal hygiene products compatible with the Pharmafilter recovery system in hospitals, which is capable of generating energy and cleaning wastewater. [1]
How could the use of recovered resources (e.g. ocean plastics) help reducing costs or attracting new customers for your company?
The multinational company Interface produces modular carpet tiles that are fit for customisation.

Following up with its “Mission Zero” goal to source 100% recycled material, Interface established a “Mission Zero” goal, which aims to source used or recycled materials.

As synthetic fibres could be difficult to recycle and increase costs for manufacturing, new external sources of recycled material are explored to seize the opportunity of closing loops from other value chains. For example, discarded fishing nets are used to produce floor covering modules.

This business model from Interface is profitable and benefits poor communities enrolled in the collection of the fishing nets. [28]
How could the use of recycled or recyclable materials help reducing costs or attracting new customers for your company?
Schijvens is a Dutch company that produces recycled workwear for different industries.

The workwear is produced with yarn made of post-consumer textiles, cutting waste and recycled PET from bottles, fishing nets, and polyester clothing. This mixture of textiles is mainly thought as a way of providing wear resistant garments.

To secure enough supply of post-consumer textiles, Schijvens collects end-of-use items from their customers. In return for delivering the items back, customers get discounts when they receive new workwear items. [29]
INDUSTRIAL SYMBIOSIS

How could you optimise the use of raw materials and by-products and make the most out of them?
Kalundborg Symbiosis is a collaboration among Kalundborg Municipality in Denmark and eight companies such as Novo Nordisk, Novozymes, Statoil, DONG Energy (Ørsted), Saint-Gobain Gyproc, Kalundborg Utility, Kara/ Noveren and Avista Oil.

More than 30 exchanges of energy, water and materials take place in the industrial complex. Companies buy and use the residual products from nearby facilities and, in turn, sell on the by-products of their processes, enabling a network of exchanges.

A recent addition to the scheme is Kalundborg Utility’s heat pump that recovers heat from industrial wastewater for use in district heating. [30]
Effective and efficient procurement

ASSETS AS SERVICE

How could you reduce idleness of your company’s own vehicles, equipment and infrastructure while optimising costs?

circitnord.com
The Dutch company FLOOW2 offers a marketplace for sharing of equipment and services among companies.

The sharing of equipment can occur among participants in the same organisation or among different organisations.

Varied industry sectors joined FLOOW2, with a higher occurrence of electronic equipment for medical purposes. Hospitals can relocate equipment to make the best use of assets they already own, decreasing redundant purchases and costly rentals.

Different subscription options are available for companies to join the platform with varying fees according to the number of users/employees. [1, 12]
How could you change the relationship with supplier to obtain supplies (e.g. parts, chemicals, materials) as service?
CPH Village is a Danish start-up that offers a student housing solution by building compact quality homes. CPH Village uses Mærsk discarded shipping containers and transforms them into functional housing facilities.

The houses can be moved when needed and are designed to be disassembled. This opens up for the possibility to utilise vast empty areas that for different reasons are temporarily unused. When landowners need their land back, the village will simply be moved to a new location.

CPH Village sources “materials as services” from many suppliers to facilitate the end-of-use and reduce their total cost of servicing housing. This includes for example, windows, heating systems and furnishing. [31]
How could you benefit from sourcing and producing products locally to avoid unnecessary transportation?
The American company BrightFarms uses indoor farming solutions to produce locally-grow food for densely populated urban communities.

The company provides long-term and fixed price purchase agreements for retailers. With this, customers are able to get fresh products with a steady supply and pricing.

Challenges to implement this model were related to upfront legal costs for drafting agreement contracts with suppliers and convincing supermarket retailers to disrupt their common way of operating. Despite the challenges, BrightFarms managed to achieve large retailers as partners. [1, 32]
ON DEMAND

How could you avoid stocks with a new way of producing?
On demand

OPENDesk - Furniture for Workspaces
Made Locally and On Demand

Opendesk is a global platform that provides workspace furniture, which can be made locally on demand all over the world.

The platform connects customers, local makers and designers. Customers can choose from a range of products from international designers and have them produced by local makers using digital fabrication.

This model can reduce inefficiencies with time-consuming and expensive shipping, showrooms and storage. [33]
How could you operationalise the provision of support services such as upgrade, repair & maintenance and refurbishment to extend the lifetime of products?
Danelec Marine is a Danish company that provides Electronic Chart Display and Information System (ECDIS) for vessels. Malfunctions in navigation equipment of ships can be costly, as ships cannot leave the harbour. To avoid that, Danelec offers high-quality services to customers that own ECDIS equipment. More reliable navigation and reduced downtime constitute the core of Danelec’s value proposition.

Danelec has an extensive service partner network that allows for speedy installation, repair and support services globally. If quick on-board repair is not possible, the modular design of ECDIS allows the ship’s software module to be removed from the faulty unit and placed into a new one so that the ship can continue, whilst the ECDIS is repaired on-shore. [3, 34]
OWN REVERSE OPERATIONS
reusing or refurbishment

How could you operationalise the collection and refurbishment of products after they reach the end-of-use to enable re-commercialisation?
The medical devices manufacturer Ethicon (from Johnson and Johnson group) and the Intermountain Healthcare deployed a comprehensive refurbishment program called Performance Certified Harmonic Program.

This is a product-level approach in the healthcare industry, involving the manufacturer, customers, and service partners for refurbishing the medical devices. When Ethicon surgical devices come back from the refurbishment process and thorough sterilisation they are like “brand new” devices.

The benefits claimed by the program are: delivery of upgraded quality products, establishment of reliable supply and service, enhanced clinician confidence and more predictable spend by clinics. [35]
OWN REVERSE OPERATIONS
remanufacturing

How could you operationalise the use of core parts of returned products to manufacture new products?
ARMOR is a leading European group in compatible cartridges for laser, inkjet, and impact printers and faxes.

ARMOR remanufactures laser and inkjet cartridges from collected empty cartridges. Up to 90% of the components of these cartridges can be employed in new products.

With this, they avoid producing new cartridges and can optimise energy and natural resource use (e.g. aluminium, oil and wood). [36]
OWN REVERSE OPERATIONS
recycling process

How could you operationalise recycling of returned products to obtain post-consumer materials and supplies?
The Dutch company Tarkett offers a biodegradable and reusable carpet under its brand Desso, which includes a carpet take-back programme called ReStart®.

The program aims at collecting post-consumer flooring to allow recycling of carpets.

To enable the collection and sorting of carpets, Tarkett partnered with waste collectors and transporters such as Veolia in France and Germany.

All partners offer multiple drop off sites to Tarkett’s customers. After collection and sorting, carpets are recycled with an innovative separation technique developed by Tarkett. [1, 37]
Effective and efficient production

DEVELOPMENT AND MANAGEMENT OF DIGITAL TECHNOLOGIES AND SERVICES

How could you develop digital and logistics solutions to operationalise longer use of products, for example, through sharing or reusing?
Kaiyo (previous Furnishare) is an online marketplace offering good quality and pre-owned furniture in the region of New York.

Buyers of pre-owned furniture from Kaiyo can save up to 90% on top brands furniture.

Sellers can benefit from convenience as Kaiyo picks-up furniture and delivers them to buyers, and offers infrastructure for advertising and financial transactions. [1, 42]
Effective and efficient production

COLLABORATIVE VALUE CREATION
service suppliers - e.g. maintenance and repair, upgrades, installation, transportation and logistics

How could you establish collaborations to operationalise life extension services for products?
The American company CTC Medical repairs and refurbishes varied medical instruments, devices and specialised tools.

Every device has a life expectancy that can be extended if serviced properly with regular maintenance and repairs performed.

CTC Medical supports these processes by providing maintenance and repair services that meet the quality guidelines and testing required by the medical industry. [43]
How could you establish collaborations to operationalise the provision of digital services for circular business models?
Datacity is a pioneer and leader of the French innovation ecosystem in partnership with the city of Paris. The company builds innovative solutions to tackle challenges of cities.

One of those solutions includes using data to predict and optimise street furniture maintenance. A predictive model with a visual interface enables technicians to anticipate and react to malfunctions before they appear.

Based on data and real-time approach, technicians can optimise their predetermined schedules to enhance servicing of street lights, traffic lights and other street furniture. [1, 41]
How could you establish collaborations to operationalise the provision of financial services to enable circular business models?
JLG offers refurbished or remanufactured equipment such as lifts in the United States.

Supported by the finance partner DLL, JLG strategically expanded their capabilities and infrastructure to refurbish and remanufacture equipment, which enabled them to capitalise on multiple life cycles.

With refurbished and remanufactured equipment, customers are able to save up to 35% when compared to the acquisition of a new equipment. [21, 40]
Effective and efficient production

COLLABORATIVE VALUE CREATION
reprocessors and redistributors - e.g.
re-commerce, collection, cleaning and
refurbishment

How could you establish collaborations to
operationalise the necessary infrastructure
for collection and reprocessing of products?
Orangebox, a leading furniture manufacturer from the United Kingdom, made a joint venture with Premier Sustain to enable the remanufacturing of office chairs that are in the final period of their warranty.

The chairs are returned to Orangebox where they are collected by Premier Sustain for remanufacturing.

Orangebox provides a warranty for all remanufactured chairs that are remarketed through Premier Sustain. [1, 39]
COLLABORATIVE VALUE CREATION
transformation or recycling technology,
facilities, alliances, clusters and platforms

How could you establish collaborations to operationalise recycling infrastructure?
The Spanish company Recover produces recycled cotton fibre from old clothing and cutting scraps.

Recover offers an end-of-life management programme for clothing brands, retail and factories. With this, they recover cotton textile remains from producers in exchange for new textile.

After collecting and sorting the textile, Recover recycles them into yarns for fashion and accessories.

Due to the experience of Recover with recycling, they have developed capabilities that make the quality of Recover’s upcycled yarn comparable to virgin textile. [1, 44]
How could you establish collaborations to operationalise the end-of-life treatment of products and materials?
The Norwegian company Norsk Ombruk offers services to extend the productive life of household electrical equipment, such as freezers, fridges, stoves and washing machines. Electrical equipment can prematurely reach their end-of-life due to faults that require only relatively minor repairs. Norsk Ombruk collects the equipment and sorts those that are relatively new and energy-efficient.

To offer a reliable and competitive alternative to the informal sector, Norsk Ombruk established effective logistics, a modern repair facility with skilled staff, and established test and repair procedures. Moreover, the company built strategic alliances with take back systems and dealers of electrical and electronic equipment waste, retailers, municipalities, second hand shops, and original manufacturers. [46]
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