



# CANON

## A Circular Economy Business Model Case

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**NOTE: This project deliverable has not yet been officially approved for release by the European Commission.**



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## Executive Summary

This report presents the case study of Canon's EMEA business for Document Solutions (DS), with a focus on the business model for remanufacturing and refurbishment. It was chosen as it provided an example of a mature remanufacturing model, as well as potential for further circularity and business benefit through expansion of refurbishment activities. Canon EMEA has also been growing services such as Managed Print Service (MPS) – a service-based model for providing printer copiers – which, while not a focus of the case study, provides opportunities for both remanufacturing and refurbishment.

Canon operates in a market which is currently in decline, with vendors competing intensely for market share. This is creating a stark contrast between a business model driven by new product sales, and one that emphasises the cultivation and reutilisation of existing deployed assets. In this context, it is important to emphasise that this case study focuses on the circular business models and potential for Canon EMEA, whose business is principally a combination of sales/marketing and service delivery. This is in contrast to Canon Inc. (Japan) who manufactures and supplies equipment for Canon EMEA to sell and integrate into its service offerings.

This case study explores the opportunities, as well as enablers and barriers, to Canon expanding the role of remanufacturing and refurbishment within its circular business models. We believe this will have important positive implications for Canon given the broader strategic challenges it faces.

### Insights for business guidelines

This case study highlights the following key insights relevant to companies in similar industries or sharing a similar context:

- Remanufacturing requires a high level of investment and capability development to create products that are sold in an 'as new condition'. However this can provide significant cost advantages compared to producing an equivalent new product.
- Product refurbishment is often a lower-priority area for manufacturers, often left to brokers and aftermarket players. However, if companies can retain control or enable the end-of-cycle takeback of their products, refurbishment and re-sale can provide an important new area of business. This can be particularly beneficial in a highly competitive business environment where pricing pressure makes even re-manufactured products relatively high-cost, whereas refurbished products remain attractive and profitable.
- In order to make the business case for a re-manufacturing or refurbishment model, companies need to take a lifecycle perspective: considering products in the field (installed base) as a key asset with the potential to drive new and recurring revenues, and that products at end-of-cycle have significant value and potential for re-sale or life extension. Furthermore, companies should note that losing control or visibility of products at end-of-cycle is a potential loss or opportunity cost: if products are sold on to the second hand market they may compete with their own new products. They also lose the benefit of generating further revenue (either resale and/or recurring revenues from services and consumables).
- In order to effectively implement a circular business model, remanufactured and refurbished products need to be considered part of a manufacturer's overall product portfolio. This allows the company to strategically plan new product design and production, as well as give the right level of priority to developing a remanufacturing and/or refurbishment business. This also



creates the foundation for orienting sales team incentives and behaviour towards integrating remanufactured or refurbished products within their sales processes and targets.

- Transitioning from a product focus to a service/solutions focus (a form of ‘servitisation’) is a key enabler for circular business models. Offering products as a service creates a focus on value generation and customer satisfaction based on delivering overall performance and outcomes, rather than on the specifics of a product. This allow manufacturers the opportunity, for example, to embed remanufactured and/or refurbished products together with new products.

### Insights for policy recommendations

One of the key issues arising from this case study which has direct policy implications is with regards to public sector procurement.

The exclusion of products considered ‘second hand’ from tenders and procurement decisions is a significant barrier. If Canon (and other suppliers) were able to access public contracts with remanufacturing and refurbishment offerings, this would create a significant boost to the business.

A further challenge encountered by many suppliers is that public sector procurement tends to be focused on product specifications and less amenable to service-focused and performance-based offerings. One of the reasons why this occurs is to ensure transparency and comparability between tenders. Public procurement processes may therefore need to find new metrics and approaches to assessing the value of vendor bids if governments wish to promote circular economy. This requires changes to rules and guidelines, as well as improving awareness and education of procurement managers.



# 1 Introduction

## 1.1 Background and context

R2π – Transition from Linear to Circular is a European Union Horizon 2020 project focused on enabling organisations and their value chains to transition towards a more viable, sustainable and competitive economic model in order to support the European Union’s strategy on sustainability and competitiveness.

R2π examines the shift from the broad concept of a Circular Economy (CE) to one of Circular Economy Business Models (CEBM) by tackling market opportunities and failures (businesses, consumers) as well as policy opportunities and failures (assumptions, unintended consequences). Its innovation lies in having a strong business-model focus (including designing transition guidelines) as well as in the role of policy development (including designing policy packages).

The ultimate objective of the R2π project is to accelerate widespread implementation of a circular economy based on successful business models and effective policies:

- to ensure sustained economic development,
- to minimize environmental impact and
- to maximize social welfare.

The mission of the project is therefore to identify and develop sustainable business models and guidelines that will facilitate the circular economy, and to propose policy packages that will support the implementation of these sustainable models.

A core part of this project is to work with organisations who are on the journey towards developing circular economy business models, as well as those who have the ambition to do so but haven’t yet begun. The project has conducted case studies of 18 selected organisations.

The 18 chosen cases covered all five priority areas highlighted in the EU Action Plan on the Circular Economy: plastics, food waste, biomass/bio-based, important raw materials, and construction & demolition. Additionally, the cases were selected to ensure learning in each of the seven business model patterns defined by the R2Pi project: re-make, re-condition, circular sourcing, co-product recovery, access, performance and resource recovery, and these will be discussed in more detail in this report. To gather wide-ranging lessons from differing company sizes and maturities, the following were selected: 7 large corporations, 8 small, medium enterprises, 1 public entity, 1 entire value chain with both public and private organisations and 1 ongoing social project.

This report presents the case study of Canon’s EMEA business for Document Solutions (DS), with a focus on the business model for remanufacturing and refurbishment. It was chosen as it provided an example of a mature remanufacturing model, as well as potential for further circularity and business benefit through expansion of refurbishment activities. Canon EMEA has also been growing services such as Managed Print Service (MPS) – a service-based model for providing printer copiers – which, while not a focus of the case study, provides opportunities for both remanufacturing and refurbishment.

The next section provides a more detailed overview of the case organisation’s business.



## 1.2 Business overview

This case study focuses on the Document Solutions (DS) business of Canon Europe. Document Solutions products and services are part of the broader Office Business Unit, which includes the following (as stated in Canon’s 2017 Annual Report):

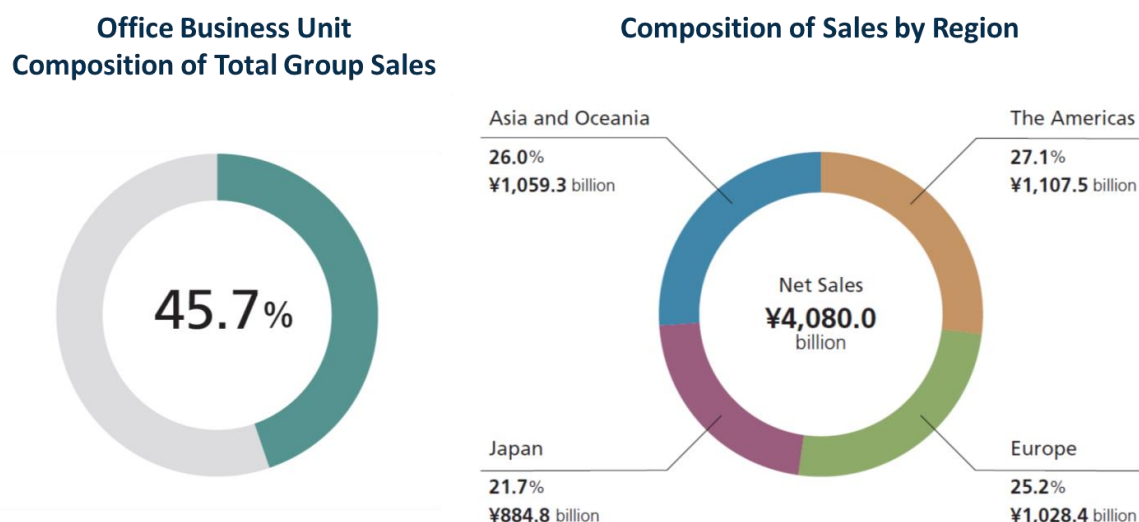
- Office multifunction devices (MFDs)
- Laser multifunction printers (MFPs)
- Laser printers
- Digital production printing systems
- High speed continuous feed printers
- Wide-format printers
- Document solutions

The Office Business Unit contributed over 45.7% of Canon’s global revenues in 2017 (see Figure 1), and is the largest business unit in terms of sales. The Canon group includes three other business units:

- Imaging Business Unit (27.8% of sales in 2017). This includes a diverse product range from digital compact cameras to photo and inkjet printers, projectors, and calculators).
- Medical Systems Business Unit (10.7% of sales in 2017). This unit includes magnetic resonance imaging, x-ray and other types of medical radiology and diagnostics equipment.
- Industry Business Unit (17.9% of sales in 2017). This business includes high-tech manufacturing equipment such as semiconductor lithography as well as specialised products such as network cameras.

Canon Europe was responsible just over a quarter of Canon’s global sales in 2017 (across business units).

FIGURE 1 COMPOSITION OF GROUP SALES FOR THE OFFICE BUSINESS UNIT AND TOTAL SALES BY REGION



Source: Canon Annual Report 2017



## 1.3 History and context of circular economy at Canon

Canon frames its approach to ESG (Environment, Social and Governance) as part of the “Kyosei” philosophy it adopted in 1988. Kyosei (共生) translates as “Living and working together for the common good”.

Circular Economy is stated as part of Canon’s vision for the ‘Environment’ aspect of ESG. The company acknowledges the importance of resource circularity through product-to-product recycling, and specifically mentions the circular economy activities it has undertaken in its printer business (including Document Solutions) such as remanufacturing of devices and closed loop recycling of toner cartridges.

Other aspects of Canon’s commitments towards the environment through its product and operations include: contributing to a low-carbon society; and eliminating hazardous substances and preventing pollution, and contributing to a society in harmony with nature.

### 1.3.1 Printer cartridge recycling

In 1990 Canon was the first company to successfully introduce a toner cartridge recycling programme. The operation has been expanded from Japan to China, Europe and North America. By the end of 2017 (latest year for available figures), Canon reports to have collected 394,000 tonnes of cartridges under this system globally.

In Europe, Canon EMEA’s toner cartridge recycling program is a zero landfill closed loop programme in which every component of a used toner cartridge is re-used or recycled. Mechanical parts are meticulously cleaned and inspected for quality to ensure suitability for re-use.

### 1.3.2 Printer machine reuse and recycling

This case study focuses on the business models, barriers and enablers of two key circular economy models with regard to Canon EMEA’s printer machines: Remanufacturing and refurbishment. A brief overview of these activities is provided here, while Section 3 provides a detailed assessment of the business models.

For office printer machines returned to Canon EMEA at the end-of-contract (EOC), a decision is made on the next route of the machine based on Canon EMEA’s European guidelines. The three main pathways include: remanufacturing; resale or refurbishment; or scrapping and recycling. These are described below.

#### Machine remanufacturing

Canon EMEA specifies certain machine models as earmarked for remanufacturing under its European Remanufacturing Policy.

Remanufacturing is the process of returning a used machine to as a new condition, with a new serial number and warranty of quality. Specified models which have been selected for remanufacturing are stripped down and thoroughly cleaned, specified parts are exchanged and software is updated to the latest versions. Before shipment, the printer counter is set to zero and products are supplied with a warranty equal to that of a new Canon EMEA product. The result is a product similar to a new product, but with greatly reduced resource use as remanufactured machines do not require significant new raw material input when compared to a new machine. In fact, up to 91% of parts by weight are reused in the remanufacturing process.



### Machine refurbishment or re-sale

Machines that are not designated under the European Remanufacturing Policy may be resold as a second-hand machine. These machines may be re-sold with only minor refurbishment work (a “dust-off”) or more extensive cleaning and reconditioning. Refurbishment is not as extensive a process as remanufacturing and usually only requires that the machine is cleaned and worn parts and consumables are replaced. This helps divert second hand machines from potential waste streams and allows customers access to quality products at reduced costs.

### Machine scrapping and recycling

Machines that are no longer functioning and are not suitable for the routes above will be sent to a Canon EMEA approved WEEE recycler to be treated in line with the legal requirements set out in EC Directive 2012/19/EU.

## 1.4 Strategic context of circular economy for Canon EMEA’s DS business

Canon EMEA operates in a market with vendors competing intensely for market share. This is creating a stark contrast between a business model driven by new product sales, and one that emphasises the cultivation and reutilisation of existing deployed assets. In this context, it is important to emphasise that this case study focuses on the circular business models and potential for Canon EMEA, whose business is principally a combination of sales/marketing and service delivery. It should be noted that Canon Inc. and other Canon group sales companies also operate remanufacturing and refurbishment businesses of Multi-functional Printer (MFPs).

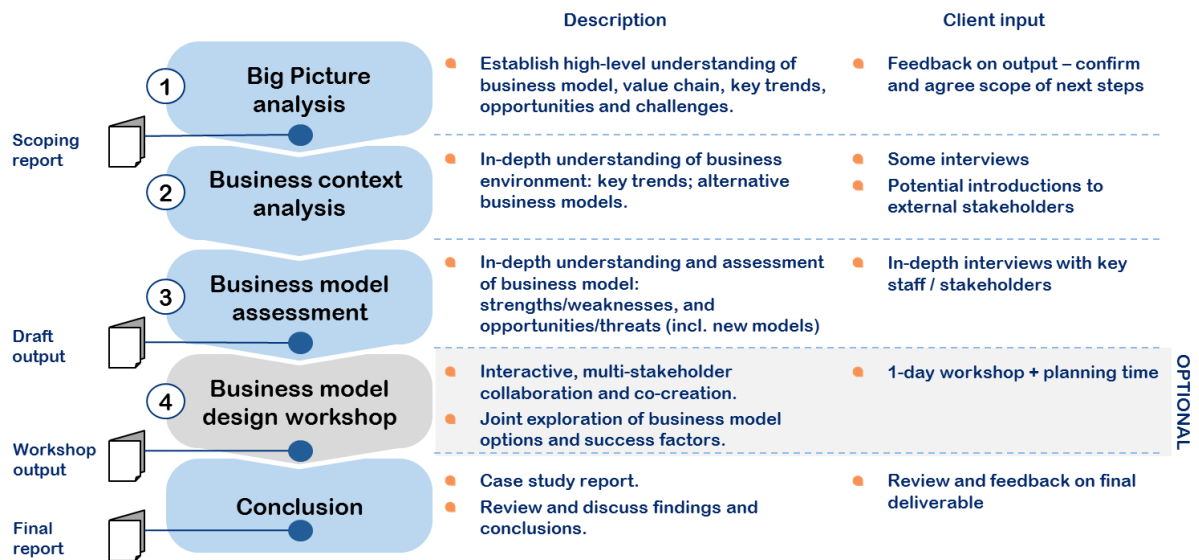
While Canon EMEA employs remanufacturing and refurbishment, its overall business model is still targeted at new product sales. A characteristic arising from this (common to many other companies) is that the secondary market of used equipment is often not considered of key importance.

This case study explores the opportunities, as well as enablers and barriers, to Canon EMEA expanding the role of remanufacturing and refurbishment within its circular business models. We believe this will have important positive implications for Canon EMEA given the broader strategic challenges it faces.



## 1.5 The case study analysis process

The case study process was structured in three main steps, plus an optional workshop, and concludes with this document as the final report (see diagram below).



## 1.6 Report outline

The first chapter introduction has provided a high level overview of the case and case study process. Chapter 2 presents the big picture surrounding the business, showing the context in which it operates and the key external factors. Chapter 3 is an analysis of the business at the building block level of the business model, including the circularity of the business, the financials and the strengths and weaknesses. Chapter 4 draws conclusions about the current state of the business and its future potential.

**Glossary of terms**

<b>COGS</b>	Cost of Goods Sold
<b>DS</b>	Document Solutions, a business unit within Canon EMEA
<b>EMEA</b>	Europe, Middle East and Africa
<b>EOC</b>	End-of-Contract
<b>EOL</b>	End-of-life
<b>ESG</b>	Environment, Social, Governance
<b>MPS</b>	Managed Print Services
<b>MIF</b>	Machines in Field (i.e. installed base of machines)
<b>NSO</b>	National Sales Organisation
<b>Reman</b>	Remanufacturing
<b>Refurb</b>	Refurbishment
<b>RoHS</b>	Restriction of Hazardous Substances
<b>RSO</b>	Regional Sales organisation
<b>WEEE</b>	Waste Electrical and Electronic Equipment



## 2 Canon EMEA's business context analysis

### 2.1 Scope of the business context analysis

The objective of the context analysis is to identify the main external factors that are to be considered in order to explain the success (or failure) of Circular Economy Business Models (CEBM), as well as their potential role in accelerating the transition towards a Circular Economy.

The business context research included a combination of interviews with relevant key stakeholders of the case organisation as well as complementary desk research where required. The objective was to identify relevant factors (geographic or sector-specific) within which the business model operates today, as well as key trends that may influence how it evolves in the future.

### 2.2 Contextual factor analysis

#### 2.2.1 Demographic trends

Demographic trends are relevant to Canon EMEA's business context in the extent that they influence printing behaviour. Younger generations of office workers are observed to generally use printers less heavily than older generations. This is driven by greater utilisation of alternatives for document viewing, such as tablets, and greater comfort with using digital rather than hard-copy formats.

#### 2.2.2 Rules and regulations

Within the EU Canon EMEA has to abide by a number of rules and regulations. Relevant regulations include: Extended Producer Responsibility (EPR) requirements; Ecodesign Directive; the revised Waste Framework Directive and WEEE Directive; health & safety regulations; and data security (such as General Data Protection Regulation, GDPR). Canon EMEA has to ensure all new equipment meets regulations by designing for compliance.

#### 2.2.3 Economy and environment

The way in which businesses organise their workforce is changing, with increasing flexible working patterns and working out of office or across multiple locations. This impacts the utilisation and overall need for printers within offices, as well as requiring solutions that accommodate diverse needs.

Shared workspaces (such as WeWork) have also emerged recently and are expected to grow, providing locations from which a range of businesses can co-locate – from freelance and sole traders to small and medium businesses. Even large businesses and corporate are using shared workspaces as approaches to manage growth or to provide stimulating work environments for staff. This is creating new segments which vendors such as Canon EMEA can offer print and document solutions.



### 2.2.4 Competition

Because of declining print, competition among vendors for market share is intensifying. This is creating downward pressure on prices, with equipment of equivalent functionality costing less than in the past. Furthermore, there is increasing competition from second hand market players. This segment seems to be thriving, with dealers refurbishing and reselling machines and providing their own service contracts. System integrators which provide enterprise IT and software solutions are also selling managed print and other value-added services which directly compete with the offerings of OEMs.

### 2.2.5 Technology trends

Canon EMEA's current business model is based on laser printer machines utilising toner bottles and cartridges. New inkjet printing technologies are potentially emerging which could pose a challenge for Canon as these are based on a different hardware architecture (and therefore have different requirements in terms of servicing and consumables).

Hardware and software solutions are increasingly replacing the need for printing. This includes personal products such as tablets and applications to view, edit, and mark up documents digitally; as well as enterprise-level digital document solutions.

Printer/copier technology is mature and established. Most product innovation is now happening in areas such as user interface and software applications (for example integrating document scanning with end-user desktop software).

### 2.2.6 Customer needs

Prints by customer have been declining by approximately 5% year on year, based on Canon EMEA's understanding of the market. The trend is driven by the adoption of digital document management; office regulations aiming to influence end-user behaviour and a general shift away from printing with younger generations growing up with electronics.

With changing work patterns, there is a need for flexible and versatile print solutions. Customers are looking for print solutions that cater to flexible/multi-site working, co-working spaces and mobile workers. This also means customers increasingly look for end-to-end, 'managed,' flexible and secure solutions.

Sustainability is emerging as a requirement for corporate/business procurement, however it still has relatively small impact on buying decisions. This is expected to grow in importance and can become a differentiator in competitive bids. Nevertheless, customers tend to focus on in-use energy efficiency of equipment rather than lifecycle impacts. Remanufacturing and refurbishment have a significant positive impact on lowering upstream (manufacturing and supply chain) as well as downstream (product disposal) carbon emissions in printer's lifecycle. Therefore growing customer awareness of these benefits will be important.

### 3 Business model assessment

The business model assessment has been conducted through a combination of publicly available information, interviews with employees and stakeholders of the case organisation and internal documents provided by the organisation.

The objectives were to gain a deeper understanding of the circular business model and to map out the value chain and interactions in more detail in order to enable an analysis of the strengths and weaknesses as well as to consider the replicability and transferability of such a model to other entities and sectors.

This case study was conducted within the context of Canon EMEA having a stated ambition to profitably increase its total installed base (machines in field) by enhancing the sale of remanufactured and refurbished products.

#### 3.1 Business model overview

This section describes the building blocks of Canon EMEA's circular business model for Document Solutions office printers (also known as Multi-Functional Printers, or MFPs), typically incorporating printing, copying, and scanning as core functions).

Canon EMEA currently employs two key 'patterns' of circular business model: Remanufacturing and refurbishment, as outlined in Section 1.3 above. Remanufacturing is a centralised and specialised model (focused on specific machines), while refurbishment and re-sale of used equipment is currently a less formalised activity and is decentralised across Canon's European National Sales Organisations (NSOs).

In addition, Canon EMEA provides a range of value-added services, such as Managed Print Service (MPS), which provide additional layers to the business model. These potentially enhance the opportunity for circularity through remanufacturing and refurbishment, as will be examined below.

Canon EMEA's remanufacturing and refurbishment models themselves need to be understood in the context of the 'linear' model employed for the sale of new printers. The analysis of the building blocks of Canon EMEA's business model therefore covers key elements relating to new unit sales, remanufacturing, and refurbishment.

The three distinctive business models (new units, remanufacturing, and refurbishment) are summarised graphically below using the Business Model Canvas. Each of the nine building blocks of the canvas, and the 'labels' within, are described in detail in sections 3.2 to 3.10 below.

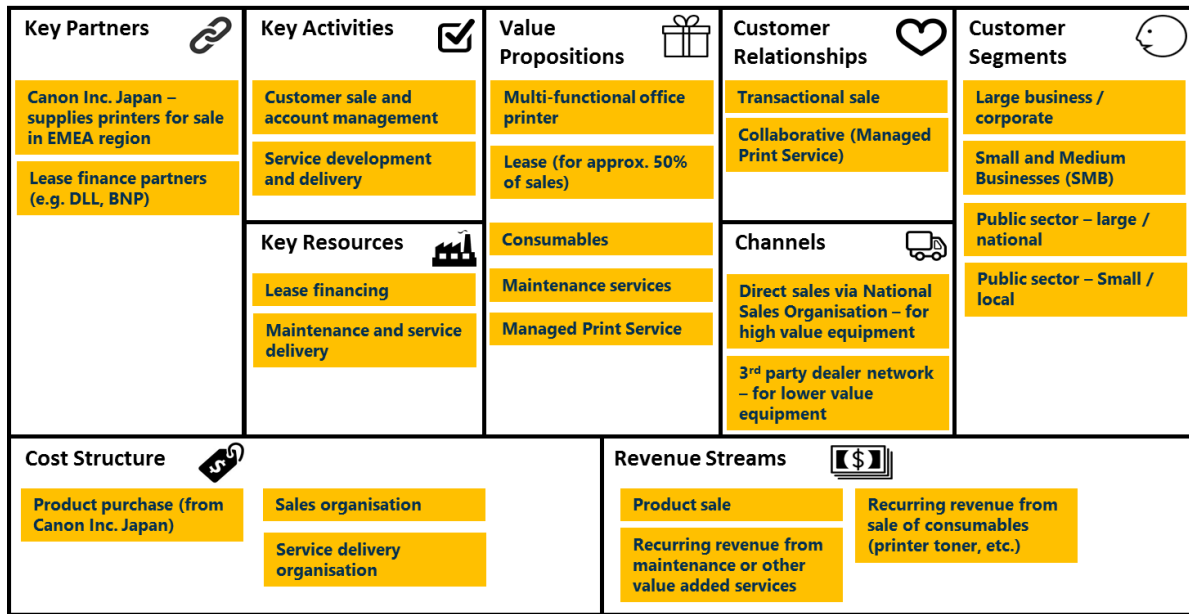
The first canvas (Figure 2) illustrates the basic elements of the business model for new printer sales. The second canvas (Figure 3) builds on this to show the elements of the remanufacturing business model (blue-coloured labels), while also showing the relevant elements of the 'base model' (new product) which are also utilised by the remanufacturing model (elements from the base model that are not directly relevant are shown faded out).

Similarly, the third canvas again builds on the base (new product) model to show the elements of the refurbishment business model (green-coloured labels).

It should be noted that the traditional nine-block canvas for circular business models has been adapted to include an additional building block – Social and Environmental. This is designed to capture key social or environmental benefits or costs which arise from the application of the circular business model. Discussion of non-financial outcomes is covered in Section 3.14.



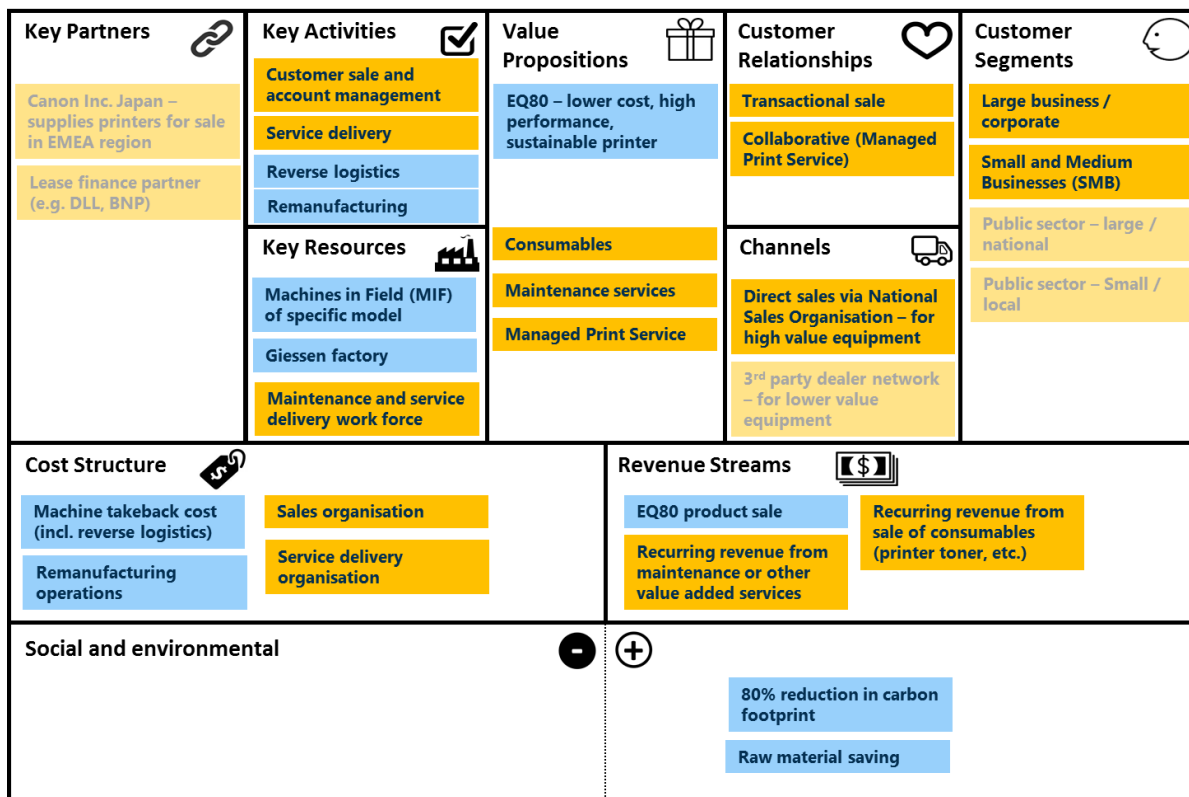
FIGURE 2 BUSINESS MODEL CANVAS – NEW UNIT SALES



© Strategyzer.com

Source: R2Pi Project analysis

FIGURE 3 BUSINESS MODEL CANVAS – REMANUFACTURING MODEL



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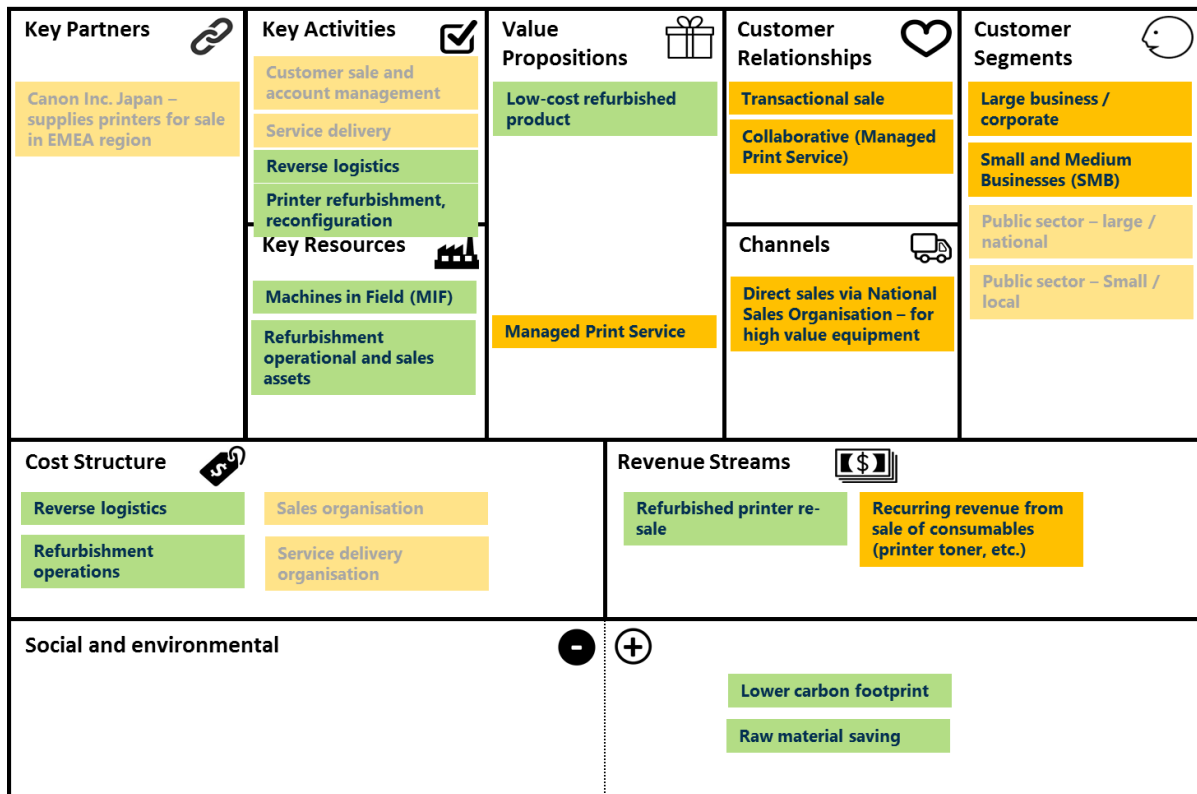
Adapted by R2Pi

Source: R2Pi Project analysis





FIGURE 4 BUSINESS MODEL CANVAS – REFURBISHMENT MODEL



Strategyzer.com

Adapted by R2Pi

Source: R2Pi Project analysis

The following sections describe each of the nine building blocks of the business model canvas diagrams above. The Social and Environmental (costs/benefits) are discussed in Section 3.14.

Where relevant, for each building block of the canvas we describe the context of the ‘base’ new unit sales model, and how the remanufacturing or refurbishment models are applied. The reason for this is that remanufacturing and refurbishment are not stand-alone businesses for Canon EMEA, but rather are integrated within its overall business model. Certain value-added services such as Managed Print Service (MPS) will also be referred to where these are relevant enablers of business model circularity.

### 3.2 Customer segments

Canon EMEA’s main target customer segments include large business/corporate customers; small and medium businesses (SMBs); large/national public sector bodies; and small/regional public sector customers (such as regional and local institutions).

Customer segments can be distinguished by certain characteristics such as:

- Print requirements – e.g. need for high volume/speed printers, and total number of printers per location (or across multiple locations).
- Complexity of feature requirements – e.g. need for secure printing, ‘follow me’ functionality (ability to print from multiple locations with a user ID).



- Service level requirement – ranging from call-off ‘break-fix’ maintenance to fully managed print service.
- Tendering process – mainly distinguished between private sector customers and public sector customers (the latter needing to follow specific EU-mandated tendering processes).

### 3.2.1 Demand characteristics for remanufactured units

Business segments tend to represent the main target for remanufactured units, sold under the “EQ80” brand. Remanufactured units are sold in an ‘as new condition’ and can be integrated into a sales deal in a manner which meets customer specifications while reducing the price given their lower cost.

As explained below, remanufactured products have a significant sustainability advantage due to a lower manufacturing carbon footprint. There are indications that some customers value this aspect, however awareness-raising and education is needed to address perceptions by some customers that remanufactured products are second-hand and lower quality.

Small and Medium Business (SMB) segments, which tend to be more price sensitive than large business/corporate customers, will value the price advantage of remanufactured printers.

Public sector customers, however, tend to prioritise the purchase of new units. Reasons for this include the fact that tendering processes and procurement departments are structured to exclude ‘second hand’ or ‘used’ machines, and there is a risk aversion to allowing the purchase of remanufactured units.

### 3.2.2 Demand characteristics for refurbished units

Refurbished machines, which undergo a much lighter-touch process than remanufacturing (described under ‘Key Activities’ below), are managed and sold by Canon EMEA’s National Sales Organisations (NSOs). The refurbishment approach will vary from a ‘dust off’ (cosmetic cleaning) to more thorough cleaning and replacement of internal parts. This is mainly decided and managed by the NSO based on the condition of units received back from the market, and customer demand at the time.

Similarly to remanufactured machines, business customers tend to be the main source of demand – particularly cost-conscious and price sensitive customers. As above, public sector customers procuring through formal tenders will tend to not consider refurbished machines.

## 3.3 Value proposition

The value propositions of Canon EMEA’s circular business model are grounded in the broader business model for new unit sales. This includes key elements that are part of the traditional offering, such as leasing contracts, supply of consumables, maintenance and support services, and managed services. The product itself (which can then be remanufactured or refurbished) is also at the core of the proposition. These various elements are discussed below.

### 3.3.1 The printer product

Canon EMEA sells a range of office machines targeted at business and public sector customers. These typically include printing, scanning, and photocopying functionalities. Equipment is sold to customers directly or via resellers; and is often supplied through leasing contracts.

### 3.3.2 Leasing

The majority of printer units are supplied to customers through leasing contracts typically running for 4 to 6 years. A proportion of lease contracts are provided by Canon EMEA's own leasing service, and others through third party leasing companies. In principle, Canon EMEA tries to stay close to its assets and maintain options on how to manage them at the end-of-contract (EOC).

When machines are leased by Canon EMEA directly, the company retains ownership of the asset, and can recover it at end-of-contract if the customer no longer wishes to use the machine. At this point, Canon EMEA aims to sell the customer a new leasing deal and the used equipment returns to the NSO.

When leasing is done via third party leasing partners Canon EMEA has agreements on what happens to the equipment and has the first right to buy it back. At the end of a lease contract, customers typically have the choice of:

- Upgrading to a new machine under a new lease contract.
- Extending the current lease (for example if the equipment continues to meet customer needs and they still prefer to not take ownership of the machine).
- Purchasing the machine and managing the assets themselves (generally not the preferred option, especially for a large fleet of units).

### 3.3.3 Consumables

Canon EMEA supplies customers (directly or via resellers) with consumables for its office machines. These include toner cartridges as well as paper, and are an important source of revenue and profit over the lifetime of a unit. As such, the installed base (or Machines In Field, MIF) of Canon printers provides the business with recurring revenues from consumables.

As described above, Canon operates a laser toner cartridge recycling programme. In Europe, customers can return their used cartridges free of charge, and these are then re-used or recycled into new cartridges, using a closed-loop process.

### 3.3.4 Maintenance and support services

Printer hardware and maintenance services are typically sold together as part of a leasing deal (maintenance contracts are optional when a customer buys a machine out right). Maintenance services are delivered by Canon EMEA when sold directly, or by third parties when sold via partner channels. Services provided by Canon EMEA under these contracts are tailored to customer requirements and can include:

- Helpdesk for trouble-shooting and logging problems
- Scheduled maintenance and servicing of machines
- Maintenance call-outs
- Software upgrades

Service contracts (including maintenance, consumables, and value-added services) are contractually separate to leasing contracts, but will typically be sold together at the start of a lease.



### 3.3.5 Managed Print Service

Managed Print Service (MPS) allows customers to outsource print management to Canon EMEA. Canon EMEA analyses printing habits and customer needs to find a cost-effective solution. Canon EMEA recommends the most appropriate equipment, configuration of features and set-up, as well as jointly establishing performance metrics with the customer. This is followed by regular performance reviews to identify the extent to which objectives are being met and to drive continuous improvement.

MPS is a customised offering that is scalable and modular, and can be flexibly adjusted according to changing customer needs. For example, features such as mobile printing can be added to the technology platform if a customer's business model changes and a larger proportion of its workforce is composed of mobile workers. MPS has grown significantly in recent years, accounting for approximately half of direct business sales in Canon EMEA's Document Solutions business.

Managed Print Service is the most relevant value added service to consider in the context of circular economy within Canon EMEA's business model, as it can incorporate the use of remanufactured and refurbished equipment. We explore the potential of MPS in driving circularity under the SWOT analysis as well as discussion of enablers and barriers.

### 3.3.6 Remanufactured EQ80 printer

Canon EMEA designates specific printer models for remanufacturing, guided by its European Remanufacturing Policy. This targets best-selling models from recent years that have the features and functionality to continue being attractive for customers.

Remanufactured printers are re-branded EQ80 ("Environmental Quotient 80") which signifies that at least 80% of the machine comes from the re-use of parts from returned equipment. An example is the EQ80 imageRUNNER ADVANCE C5000 series.

Key aspects of an EQ80 printer value proposition are outlined in Figure 5 below, taken from a Canon EMEA's publication.

FIGURE 5 EQ80 REMANUFACTURED PRINTER VALUE PROPOSITION

- |   |   |
|---|---|
| <p><b>1. Everything expected from an office printer</b></p>                                       | <ul style="list-style-type: none"> <li>• All core functionality in a multi-functional printer, tailored to the level of a comparable machine from our newest portfolio and reflecting latest user needs</li> <li>• Consistency in user experience – our product design is based on continuity in evolution</li> </ul> |
| <p><b>2. Build quality, performance and durability equivalent to the original new machine</b></p> | <ul style="list-style-type: none"> <li>• Immaculate look</li> <li>• New counter</li> <li>• Latest firmware and quality updates</li> <li>• Canon's guarantee and a useful life same as a newly manufactured device</li> </ul>  |
| <p><b>3. Supporting environmental and other business objectives</b></p>                           | <ul style="list-style-type: none"> <li>• EQ80s promote the efficient use of resources and minimise carbon emissions</li> <li>• EQ80s enable savings from printing infrastructure through cost-efficient technology and investment</li> </ul>  |

Source: Canon EMEA



The following key aspects underlie the remanufacturing proposition:

- Every EQ80 product offers the same Canon build quality and performance.
- Products are restored to ‘as new’ condition, and given a warranty of quality comparable to that of a new product.

The as new condition of remanufactured machines and the fact that they are drawn from best-selling models make these suitable for providing them in combination with maintenance service contracts. They are a ‘known quantity’ in terms of servicing needs and spare parts supply will be reliable.

### 3.3.7 Refurbished printers

Printers at end-of-contract (EOC) that are returned to Canon EMEA and which are not target models for remanufacturing, will be candidates for refurbishment and re-sale if they are in sufficiently good condition and customers can be found. Thresholds and requirements for these conditions are determined by individual NSOs who are experts and are responsible for decision-making and management of returned assets. NSOs will also consider selling EOC printers to reliable brokers if they determine that they can receive better value by doing so. Machines taken back by NSOs that are deemed to not be in resalable condition will be scrapped and transferred to a certified WEEE recycler. However Canon NSOs will prioritise reselling the machine (directly to a customer or to a broker) wherever possible.

State of refurbished machines will vary in several respects, including:

- Extent of refurbishment: Ranging from a ‘dust off’ to more extensive parts replacement. The nature and quality (level of service) of refurbishment is determined by the NSO.
- Configuration: Returned equipment will often have certain bespoke configurations from when they were sold new, based the previous customer’s requirements. Refurbished equipment will usually not be reconfigured, with NSOs ‘selling what they have’. An important element of Refurbishing is “value gaining” - in order to make products more attractive for reselling, options are added or transferred from more or less unattractive or scrap devices.

The key value proposition of refurbished printers for end-customers is, in addition to the lower price, that it offers an opportunity for fleet extensions where devices have the same user interface or technical exchanges are possible with identical devices. Given the variability of refurbishment standards and quality, offering refurbished printers with maintenance service contracts can be more challenging as maintenance requirements will be less understood and spare parts availability will be less reliable.

The lower unit price of refurbished machines make them attractive for inclusion within large printer deals as a means to provide more competitive contracts. However this requires that Canon EMEA ensure a certain refurbishment quality level to fulfil customer expectations regarding aesthetics and quality. As mentioned above, approaches to refurbishment are non-standard and determined on a case-by-case basis depending on emerging opportunities. To understand the difference between a remanufactured product described above, and a refurbished unit, Figure 6 provides a comparison across key factors.



FIGURE 6 COMPARISON OF REMANUFACTURED AND REFURBISHED MACHINES

Remanufactured machine (EQ80)	Refurbished machine
<ul style="list-style-type: none"> <li>• All key parts, regardless of their state are replaced with new ones</li> <li>• New counter</li> <li>• New serial number</li> <li>• The machine has a lifetime equivalent to the original newly manufactured machine</li> <li>• Warranty as a new machine</li> <li>• Predictable models as part of standard portfolio and standard configurations</li> <li>• Invariable quality</li> <li>• Only the original equipment manufacturer can achieve such standards and provide the guarantees of quality</li> </ul>	<ul style="list-style-type: none"> <li>• Only cleaning and servicing– replacement of service parts based on condition</li> <li>• Counter reflects volumes produced</li> <li>• Existing serial number</li> <li>• The machine only offers the remaining lifetime</li> <li>• Warranty as a used machine</li> <li>• Variable configuration as per original customer choice</li> <li>• Based on local availability and returns from customers</li> <li>• Quality varies depending on volumes and condition</li> <li>• There is no established standard for refurbishment – Canon as well as many 3<sup>rd</sup> parties perform it</li> </ul>

Source: Adapted from Canon EMEA

### 3.4 Channels

For new unit sales, Canon EMEA utilises two channels. Direct sales and customer servicing is mainly conducted via National Sales Organisations (NSOs). Canon EMEA also uses dealers and channel partners for new unit sales, where these provide the company with greater reach into markets.

For direct channels, at end-of-contract machines are either returned to Canon EMEA (if leased and owned by Canon EMEA) or bought back by Canon EMEA from the lessor based on residual value.

When machines are recovered by Canon EMEA, these will be inspected and either remanufactured or refurbished for re-sale. Machines that are no longer functioning and cannot be reused will be sent to a Canon EMEA approved WEEE recycler to be treated in line with the legal requirements set out in the EC Directive 2012/19/EU.

A large proportion of EOC and returned equipment is sold to reliable brokers, who subsequently sell these used machines into the second hand market.

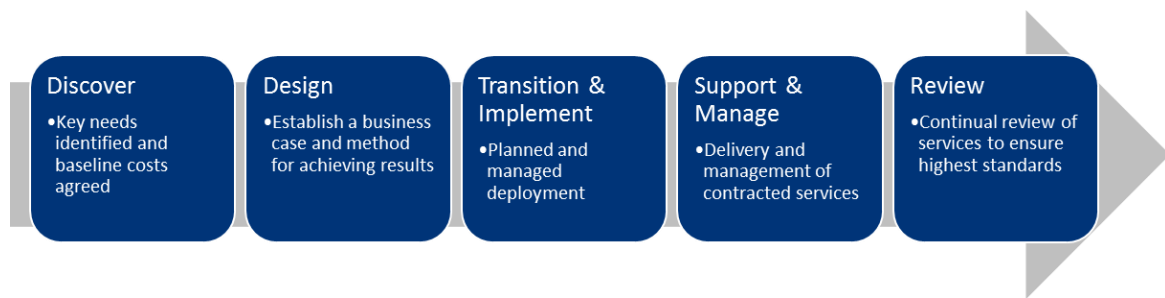
### 3.5 Customer relationships

Customer relationships for new unit sales can be either relatively transactional, or part of a collaborative, ongoing relationship. Sales and customer tenders that are mainly equipment-focused (with add-on consumables and maintenance) tend to be transactional in nature. The customer is mainly purchasing equipment technology of a given specification and features, with the basic services and add-ons needed to deliver required performance.

On the other hand, Managed Print Service is a collaborative relationship over the lifecycle of a contract. It requires a deep understanding by Canon EMEA of customer needs and context, and it undertakes to deliver a broad set of performance improvements. This is illustrated in Figure 7.



FIGURE 7 MANAGED PRINT SERVICE (MPS) LIFECYCLE



Source: R2Pi Project, company interviews

### 3.6 Revenue streams

Key revenue streams for new unit sales includes:

- Sale price of the printer (or fleet of printers) – either sold directly to the customer or to a third party lessor.
- Recurring revenue from consumables sales (in particular ink toner cartridges)
- Recurring revenue from equipment servicing and other service add-ons to the equipment.

Service contracts include the supply of consumables as part of the price. This is combined with the printer hardware only in the case of a leasing contract, otherwise the service element is optional for a customer. s.

#### 3.6.1 Revenue streams from remanufactured printers

As remanufactured printers are sold in an as new condition, they are able to drive similar revenue streams to new unit sales. Remanufactured printers are sold at a lower price point compared to new units, providing a competitive cost advantage. However as described under the Contextual Analysis above, this advantage is eroding as intense price competition is driving down the price point of new equipment.

Remanufactured EQ80 printers can also be sold with optional maintenance and other add-on services as well as consumables. These printers therefore provide a source of recurring revenues similar to that of new products.

#### 3.6.2 Revenue streams from refurbished printers

Refurbished printers may be sold to customers on an “as is” basis, for example to SMBs who are looking for low-cost machines. They can also be integrated into a mix of new and refurbished machines as part of a large equipment order. Especially in the latter case, this enables Canon EMEA to gain recurring revenues from consumables and services in a similar manner to that of remanufactured machines.

Because refurbished machines do not undergo the extensive restoration process (and hence cost) of a remanufactured model, they can be sold at significantly cheaper prices.

## 3.7 Key resources

### 3.7.1 Lease financing

Lease financing is a key resource for new unit sales, providing an important element of the value proposition which customer seek: to have access to equipment within their office with the advantage of flexibility. As discussed above, this is provided either by Canon EMEA through its own balance sheet, or by third party leasing partners.

### 3.7.2 Maintenance and service delivery

Canon EMEA has a highly experienced workforce of technicians who conduct regular servicing and maintenance of printers, and can be deployed on a call-off basis to fix problems. Service operations are planned based on forecast demand and the profile of machines in field.

This maintenance and service delivery workforce is also a key resource for remanufactured and refurbished printers. When sold as part of a large deal including new equipment, service operations will therefore need to have the capability and spare parts needed to maintain a range of equipment within the fleet – whether it is the latest models or older refurbished printer models.

### 3.7.3 Machines in Field

Machines in Field (MIF) are all the Canon printers currently in use by customers. This drives the volume of recurring revenue (services and consumables) for Canon EMEA.

MIF is a key resource for Canon EMEA's circular business model because it provides the inflow of equipment that can be either remanufactured or refurbished for re-sale. To maximise value from this resource, the following information is relevant to Canon EMEA:

- Volume and location of equipment that is approaching EOC
- Equipment configuration (how bespoke and specialised compared to the next customers' likely requirements)
- Equipment usage and maintenance status (print counters; likely level of wear and tear and remaining lifetime of critical parts and for the unit as a whole)
- Residual value of equipment at end of lease
- Fair market value of equipment (of equivalent model, usage, age, etc.)

Utilising this information, Canon EMEA and NSOs can plan strategically and tactically. For example:

- Determining what models to remanufacture
- Whether or not to take back equipment for refurbishment and resale
- Planning service operations and spare parts for remanufactured or refurbished equipment sold back into the market.
- Pricing decisions

### 3.7.4 Remanufacturing facilities

In order to deliver high-quality and profitable remanufactured printers, Canon EMEA has centralised the end-to-end remanufacturing process within its facilities in Giessen, Germany, occupying over 87,400 square meters of space. This enables Canon EMEA to achieve economies of scale as well as





pooling and concentrating the knowledge and expertise needed to continuously improve and rapidly ramp up operations for each new model or generation of printer to be remanufactured.

Giessen employs more than 280 skilled personnel dedicated to various manufacturing and pre-delivery activities. Figure 8 shows the Giessen facilities.

In addition to remanufacturing, the Giessen plant also undertakes printer refurbishment for the Germany NSO and the France NSO.

*FIGURE 8 CANON'S REMANUFACTURING FACILITIES IN GIESSEN*



Source: Canon

### 3.7.5 Refurbishment operations and sales

Refurbishment operations are conducted at NSO warehouses or workshops, through a much less formalised process compared to remanufacturing. NSOs draw on technical staff to conduct inspection of incoming equipment and, where deemed appropriate, conduct a level of refurbishment.

In order to facilitate the re-sale of used machines (except those earmarked for remanufacturing), some NSOs have developed tools to record and communicate information on assets in warehouses or nearing EOC. For example, one NSO has created an auction-style site on which machines coming back from the field are posted. Brokers have visibility of this and bid for the machines on the site. This tool has enabled the NSO to effectively clear the returned stock of machines. However the employment of these types of approaches is not uniform across NSOs.

## 3.8 Key activities

### 3.8.1 Customer sale and account management

The Document Solutions business of Canon EMEA is on the whole focused on sales and service delivery to customers. Account management is done both centrally (for large, multi-country customer accounts) and locally at NSOs for national and regional accounts.

Sales and account management are a key activity for Canon EMEA, as they are in effect Canon Inc.'s (the parent company) channel to market for new products. Consequently, sales teams in Canon EMEA have traditionally been focused on selling new equipment manufactured in Asian countries.

### 3.8.2 Service development and delivery

A further key activity for Canon EMEA's DS business is the planning and delivery of equipment servicing and maintenance (and accompanying spare parts) across Machines In Field under contract. This core activity is also applied to serving remanufactured units and, where applicable (e.g. under contract with new units), refurbished machines.

### 3.8.3 Reverse logistics

Reverse logistics is a key activity for Canon EMEA in order to channel used equipment at EOC back to either Giessen (for remanufacturing) or to NSOs. In order to do this efficiently, Canon EMEA takes back used machines as part of the same transaction when it delivers new units. Prior to delivery, technicians will have disconnected and prepared the old unit for shipping.

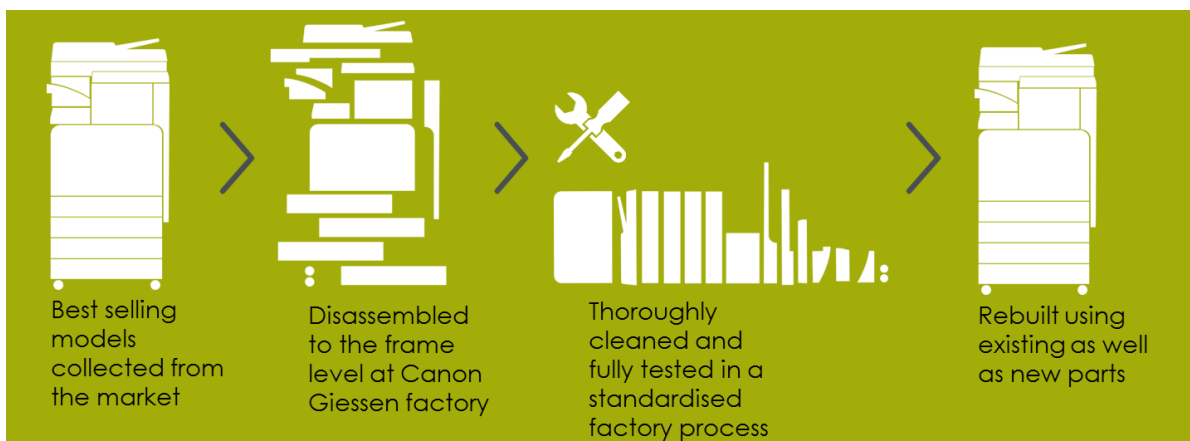
### 3.8.4 Remanufacturing operations

Remanufacturing operations at Giessen are carefully planned and managed in order to ensure operational efficiency and economies of scale. From the start of the process this includes:

- Planning which model to target for remanufacturing (the model is selected from generally best-selling models)
- Developing standardised remanufacturing protocols for every part of the product including, for example, inspection and testing procedures, quality thresholds, data security, etc.
- Each step of the remanufacturing operation is defined in order to make it as efficient as possible, including disassembly, flow of parts, cleaning, reassembly, etc. This will also be continually reviewed and optimised.
- Marketing and sales planning.

Figure 9 provides a basic illustration of the process, which is describe in more detail in Figure 10.

FIGURE 9 REMANUFACTURING OVERVIEW



Source: Canon EMEA

FIGURE 10 DETAILED REMANUFACTURING STEPS



### Incoming check

Every returned machine is thoroughly checked to ensure it is suitable for our remanufacturing program. A data sheet accompanies the machine at every stage of the process.



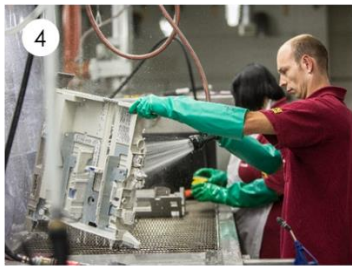
### Disassembly

Disassembly into parts and components up to the bare frame level follows.



### Sorting & selection

The parts which will be replaced are sorted and directly transferred for material recycling.



### Cleaning

Every part is carefully cleaned using dry or wet cleaning methods.



### Assembly

Existing cleaned parts, as well as new parts are re-assembled to rebuild the machine. All parts assembled within the machine are recorded and tracked.



### Hard disk programming

The hard disk of every device is erased in a special device by using methodology approved by US Ministry of Defence (DoD 5220-22.M). The software of the machine is also updated to the latest firmware releases.

CANON



### Adjustment, high voltage test, check of finishing

Final adjustments are made, electrical cables are tested, finishing is checked and user documentation such as manuals and utility CDs are added.



### Quality Inspection

A strict quality assurance process to verify that all characteristics are in line with the standards. The criteria used are exactly the same as those applied to a newly manufactured machine.



### Packing

The machines are packed in newly designed packaging systems.

Source: Canon EMEA



### 3.8.5 Refurbishment operations

Whereas remanufacturing operations require sophisticated planning, refurbishment decisions and management are much more dynamic.

Decisions on whether to take back and refurbish machines or sell to a reliable broker are often done opportunistically and reactively, based on short-term assessments of sales opportunities. The supply of incoming machines is balanced with demand in order to avoid over-stocking of returned machines at NSO warehouses and to ensure value is maximised from these assets. Policies on how much inventory of used machines to hold on site differ across NSOs. For example, some NSOs require a quick turnover while others may keep stock for longer.

Approaches to refurbishment vary significantly across NSOs – it is not easy to set the standards of protocols or distinction in levels of refurbishment. This is because these range across a spectrum from light ‘dust-off’ to more extensive parts replacement. Refurbishment activities are either conducted within NSOs’ facilities by their well-trained service technicians or centrally within Canon Giessen.

One of issues which NSOs need to contend with is the range of configurations, accessories, and add-ons which returning printers have. Product complexity and variability can create challenges if the equipment was highly bespoke to original customers’ needs, and not necessarily suitable or relevant to the next customer. In order to minimise costs, NSOs generally operate a policy of ‘selling what you have’, without making changes to equipment configuration.

## 3.9 Key Partners

Canon EMEA’s key partners for new unit sales include Canon Inc. (Japan) which designs, manufactures, and supplies the units, and third party partners providing lease financing to customers.

### 3.9.1 Canon Inc. (Japan)

Canon Inc. plays an important role in determining the success of business models incorporating remanufacturing and refurbishment. Ways in which Canon Inc. influences Canon EMEA’s downstream model include:

- **Build quality.** The robustness of Canon printers has reportedly increased, reducing the need for maintenance.
- **Design for remanufacturing.** Ensuring that printers can be effectively disassembled and processed as part of a scalable remanufacturing operation.
- **Design for extending lifecycles in field.** Maximising the lifetime and utility that customers can gain from products, for example through ease of reconfiguration, modularity, and upgradeability.
- **Design for efficiency of maintenance.** Standardising parts across generations of models to improve availability and reduce risks and impacts of stocking obsolete parts.

Canon Inc. employs best practice in these areas. Opportunities for further drive product and service design thinking to enable circularity are discussed in Section 4 (enablers and barriers).



### 3.9.2 Lease finance partners

Lease finance partners are important for new unit sales given customer demand for accessing equipment under leasing models. While Canon EMEA has its own leasing unit, partnering with third parties provides it with further reach and options, while not having to exclusively rely on its own balance sheet to fulfil customer demand.

Lease financing is generally sought by customers in order to amortise the upfront cost of printer assets, as well as to avoid the downside of owning the assets (e.g. finding a buyer at EOC).

The relevance of leasing to remanufactured and refurbished units that are lower cost is less compelling. However it continues to play a role for services such as Managed Print Service and large deals where remanufactured or refurbished printers are integrated into a fleet of assets.

## 3.10 Cost structure

Key elements of the business model influencing cost structure include the cost of new products supplied by Canon Inc. as well as the cost of the sales and service organisations (centrally and within the NSOs) will lead Canon EMEA to sell new products and to service them in the field.

### 3.10.1 Remanufacturing cost structure

The main cost drivers for remanufacturing are: fixed costs in the form of plant and equipment (the Giessen facilities); and variable costs including labour and materials (e.g. new components purchased and installed in machines replacing those that are no longer usable). Traditionally, the unit cost of remanufacturing printers enabled Canon EMEA to sell these at an attractive and profitable price point compared to new models. In recent year, the price of new equipment models has declined due to intense competition. Though the price of remanufacturing still remains competitive compared to new machines, the price gap between a remanufactured model and a new model is slowly narrowing. This seems to be one of the reasons why customers tend to prefer buying new.

### 3.10.2 Refurbishment cost structure

National Sales Organisations (NSOs) incur reverse logistics costs to return used machines back to their warehouses. The relatively high cost of Canon EMEA managing the transportation of assets means that refurbishment of machines is considered to only be economically feasible at local or regional scale. Under current operations, the ratio of asset value to logistics costs is such that it limits Canon EMEA from transporting assets across longer distances within Europe. While Canon EMEA employs practices to maximise efficiency (e.g. optimising vehicle fill rates, etc.) some interviewees acknowledged that improvements could be made, and cooperation with reliable brokers and system integrators who seem to have less problems redeploying assets is helpful.

Refurbishment operations themselves are another key cost of this model. However these are significantly lower than remanufacturing, and vary according to how refurbishment is done which, as discussed above, is hard to standardise.



### 3.11 The Value Network

This section gives an overview of Canon EMEA's value network. As with the Business Model Canvas, we begin by considering the material flow for new product sales. Figure 11 shows that for new products an important branch in material flow happens between products sold direct to customers by Canon EMEA, and those that are sold via channel partners. In the latter case, Canon EMEA loses visibility of the assets once they are sold in to the market.

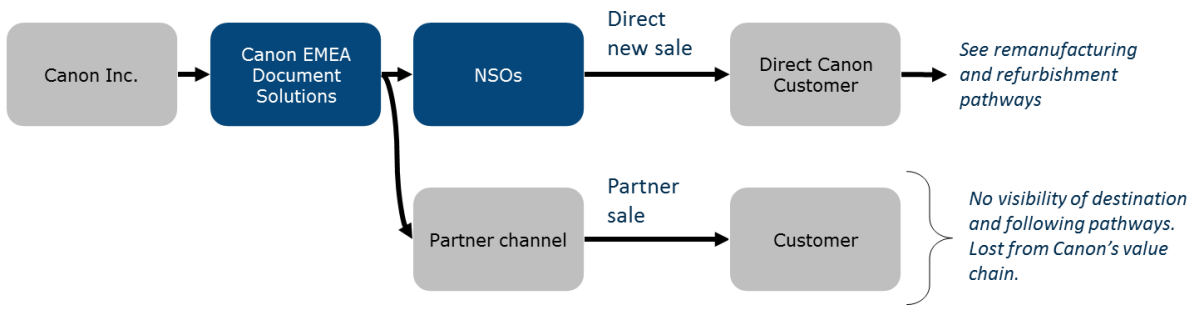
Figure 12 illustrates the material flow of the remanufacturing model. Units are initially shipped back to the NSO, and then transferred to Canon's Giessen plant. Following remanufacturing, units subsequently go through a similar sales route to new products: Initially the assets are controlled by Canon EMEA's Document Solutions business unit, and are then sold to customers via NSOs. The main value flow, illustrated in Figure 13, is the revenue generated from remanufactured equipment sales, as well as the recurring revenue of consumables and add-on services where units are sold under a service contract.

Figure 14 illustrates the material flow of refurbished equipment. Units either cycle back through the NSO, or centrally through Giessen. The local organisation subsequently decides whether to refurbish the units, sell them to reliable brokers, or scrap them. As can be seen from the value flows in Figure 15, refurbished sales provides NSOs with greater revenue opportunity compared to selling to brokers. However the NSO needs to contend with dynamically matching supply and demand as it is limited in the number of units it can warehouse pending a customer order. Brokers may provide 'liquidity' by enabling Canon EMEA to rapidly generate cash from used machines. Canon EMEA is trying to reuse and extend the usage of the product as much as possible.

Following a second lifecycle as a remanufactured or refurbished unit, machines will be return to NSOs if they are under a leasing contract (i.e. haven't been purchased outright by the customer). By this stage, machines may be used in a market for certain years and may no longer be relevant to target customers if their functionality is obsolete and they cannot be upgraded. In this case, NSOs will resell returned remanufactured or refurbished equipment to reliable brokers or scrap them. Therefore remanufacturing and refurbishment provides a new or extended lifecycle to machines, keeping them within Canon's ecosystem and creating further revenue from product and recurring sales.

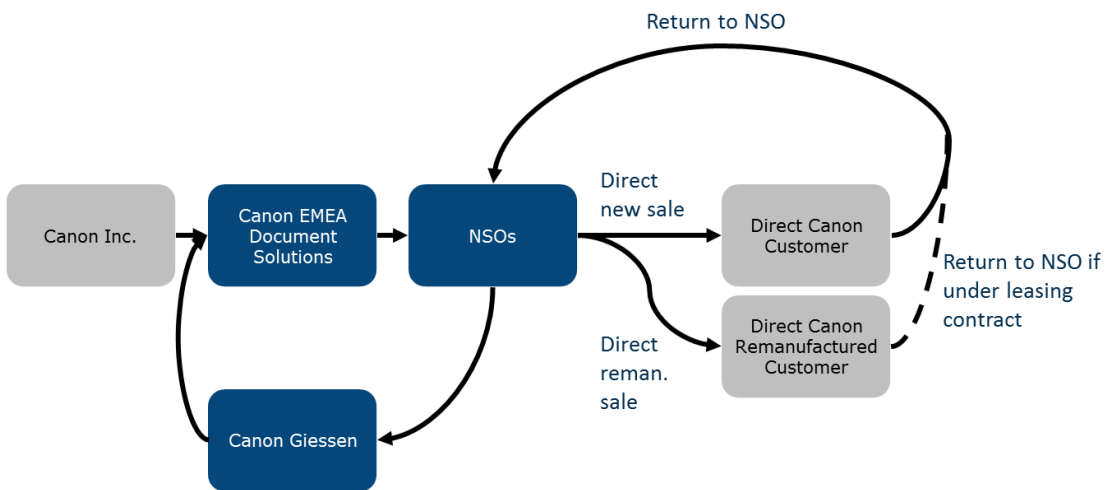


FIGURE 11 MATERIAL FLOW – NEW UNIT SALES



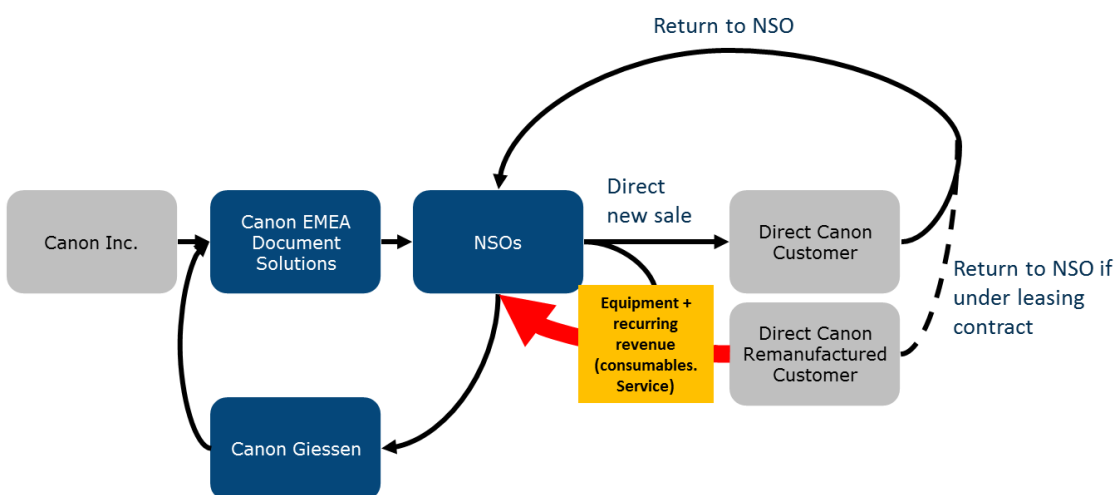
Source: R2Pi Project, company interviews

FIGURE 12 MATERIAL FLOW – REMANUFACTURED SALES



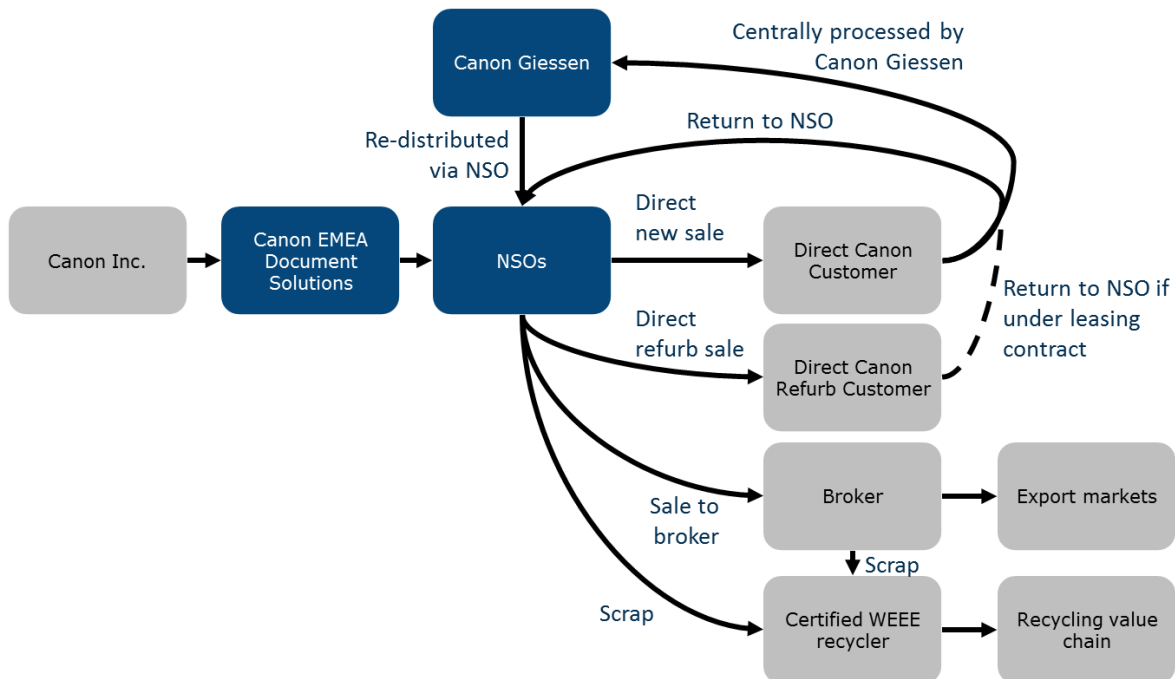
Source: R2Pi Project analysis, company interviews

FIGURE 13 VALUE FLOW – REMANUFACTURED SALES



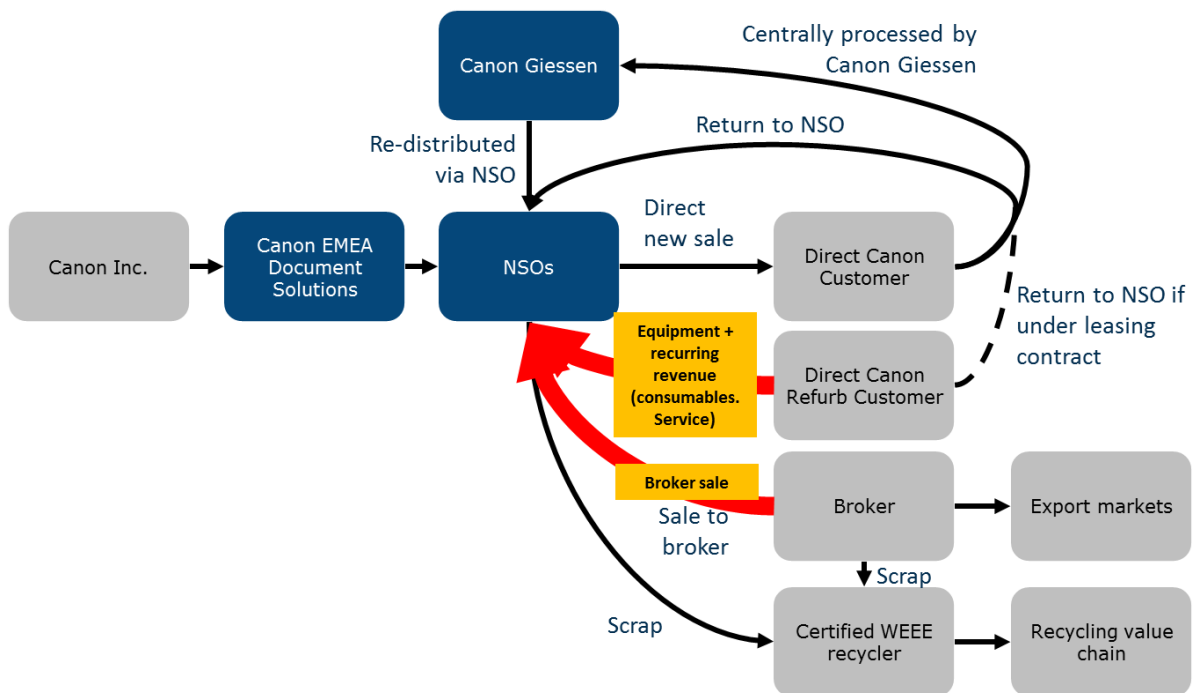
Source: R2Pi Project analysis, company interviews

FIGURE 14 MATERIAL FLOW – REFURBISHED SALES



Source: R2Pi Project analysis, company interviews

FIGURE 15 VALUE FLOW – REFURBISHED SALES



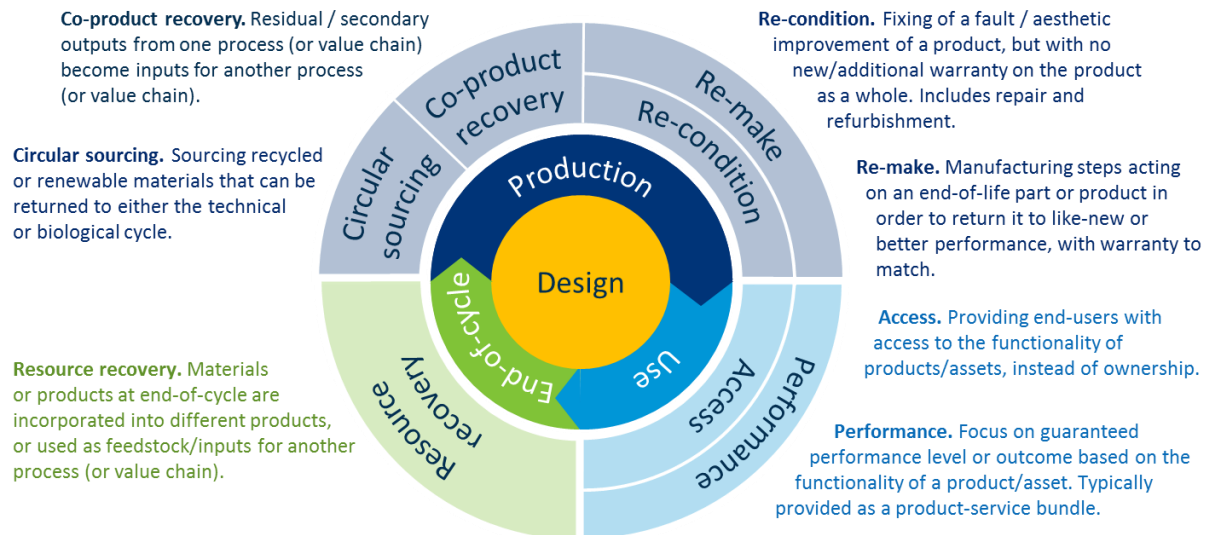
Source: R2Pi Project analysis, company interviews



### 3.12 Business model circularity assessment

The R2Pi project has established seven key patterns of circular business model, described in Figure 16 below.

FIGURE 16 THE SEVEN CIRCULAR BUSINESS MODEL PATTERNS



Source: R2Pi Project

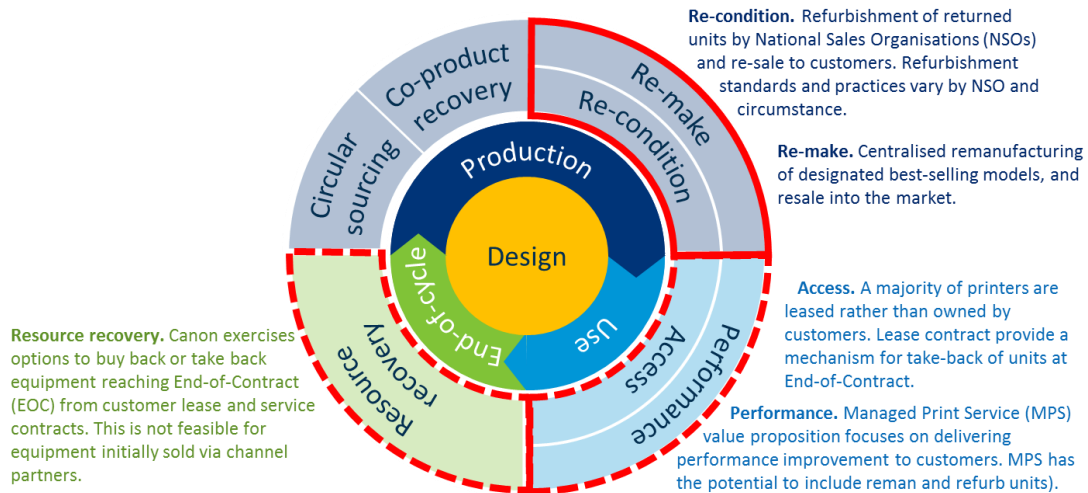
The main circular business model patterns examined within this case study are the remanufacturing model ('Re-make') and refurbishment model ('Re-condition').

These are enabled by a number of other circular patterns employed by Canon EMEA:

- **Access.** Many customers lease rather than own Canon machines. This is a traditional model for the industry. When equipment deals are made directly with customers, they are structured so that Canon has the option to buy back equipment at end-of-contract. This effectively enables Resource Recovery (below).
- **Performance.** The Managed Print Service (MPS) offering focuses on providing performance outcomes and improvement to customers, rather than being driven by equipment specifications. This allows for remanufacturing or refurbished equipment to be deployed within the mix of assets, as long as they fulfil the promise to customers of having the right type of equipment. While MPS was not the focus of the case study, it is clear that this circular pattern is a key enabler for remanufacturing and refurbishment.
- **Resource recovery.** Canon EMEA to some extent operates a resource recovery model. This is relatively mature for remanufacturing, as specific models are earmarked for take back / buy-back. With regards to refurbishment, this is less formal and structured, with NSOs dynamically deciding whether to take used machines into refurbishment, or to simply re-sell them to brokers. Resource recovery is facilitated by the contractual relationship Canon EMEA maintains with the buyer through a leasing or service contract. This is not the case when products have been sold through a channel partners.

The above patterns are illustrated in Figure 17. Remanufacturing and refurbishment are shown within a solid red line, supported by the three additional patterns described above (within dotted lines).

FIGURE 17 CIRCLAR BUSINESS MODEL PATTERNS APPLICABLE TO CANON EMEA



Source: R2Pi Project

### 3.13 Financial outcomes assessment

Canon EMEA does not externally report the financial performance of remanufacturing and refurbishment. This assessment is therefore based on the information acquired from interviews which can be shared.

To date, the remanufacturing programme and EQ80 products have been commercially successful for Canon EMEA. This rests on the structured approach taken, including:

- Selecting the most appropriate model (best-selling models which will continue to be attractive)
- Achieving scale economies and operational efficiency through centralised processing of sufficiently large volumes of units, and establishing efficient remanufacturing protocols and processes.
- Marketing and positioning of the EQ80 product with a distinctive brand, emphasising the ‘as new condition’ quality and the additional benefit of sustainability.

Canon EMEA’s refurbishment business remains relatively localised, and a proportion of units returning from the field are sold to brokers rather than being refurbished and resold to customers. However this case study highlights the strong commercial potential that can come from formalising and enhancing the refurbishment model. The commercial case for refurbishment includes the following factors:

- Increasing fair value of refurbished equipment by enhancing value to customers (for example establishing common standards and practices – discussed further below).
- Integrating refurbished equipment into service-centric offerings such as Managed Print Service (MPS), refurbished machines will deliver almost similar value at a lower price.

- Avoiding ‘value leakage’ to the secondary market and retaining control of assets, thereby avoiding competing against own products offered back into the market by competitors such as system integrators.

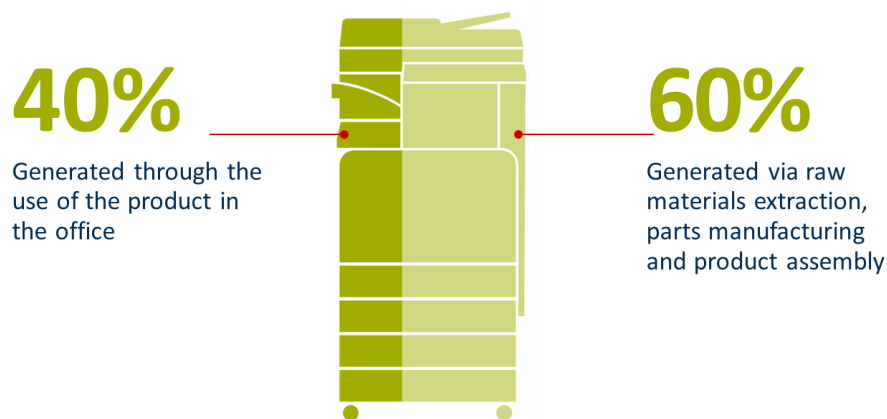
### 3.14 Non-financial outcomes assessment

Canon EMEA’s remanufacturing model enables significant material efficiency and carbon savings compared to manufacturing a new product.

As reported by Canon EMEA, the EQ80 remanufactured printer re-uses at least 80% of materials from the original printer, only replacing with new parts where necessary. This results in a manufacturing carbon footprint that is 80% lower than that of a new product. Given that 60% of a new machine’s lifecycle carbon footprint comes from manufacturing and supply chain (see Figure 18), this significantly reduces the overall lifecycle carbon footprint.

The opportunity for further carbon emissions reduction from remanufacturing will come from significantly increasing the volume (and potentially model range) of machines being remanufactured.

FIGURE 18 THE CARBON FOOTPRINT OF PRINTING



Source: Canon EMEA

With respect refurbishment, there are clear carbon and environmental benefits from extending the lifecycle of a machine that is still in working order (instead of prematurely scrapping and recycling it). The current situation is that returned ‘second hand’ machines are sold back into the market – either by NSOs or via brokers. The incremental carbon benefits attributable to Canon EMEA of incorporating refurbished equipment into a circular business model would therefore come from the following:

- By keeping visibility and control of refurbished equipment within service contracts, Canon EMEA can ensure that when these machines do reach their end of life, they are effectively taken back and sent through proper WEEE management and recycling. This is in contrast to the situation when second hand machines are sold by brokers into markets with non-existent or weak WEEE regulations and recycling infrastructure.
- Embedding a refurbished machine within a broader service package (e.g. mixed with new machines) will ensure it is properly upgraded and maintained over the contract cycle. This may potentially increase its utility and lifetime compared with selling it as a ‘cheap second hand’ outside of a service contract.
- Using refurbished machines within a service contract (e.g. MPS) substituting for what would have otherwise been a new model.

### 3.15 Role of ICT and technology in improving profitability and material efficiency

ICT and technology play an important role in driving the remanufacturing and refurbishment business models discussed above.

Multi-functional printers sold by Canon EMEA incorporate a lot of technology, both in terms of hardware as well as software. Whereas the hardware technology for core functions such as printing and scanning are relatively mature, software applications are continuously evolving. This includes the user interface, as well as the networking and integration of machines into an overall document management solution including, for example, digital sharing and storage of documents, secure printing, remote diagnostic and management of assets, etc.

Both hardware technology and software need to be considered in approaches to remanufacturing and refurbishment. Key ways in which ICT and technology can be enablers of Canon's circular business model include:

- Being able to upgrade equipment to the latest features and user experience
- Compatibility and inter-operability within a joined up solution (such as Managed Print Service)
- Integration into servicing and maintenance operations

### 3.16 SWOT analysis

This section contains an analysis of the Strengths, Weaknesses, Opportunities and Threats (SWOT) associated with the circular business model. It is important to note that this is primarily an assessment of the attributes of the business model itself and only secondarily of the specific attributes of the individual company. As is customary in SWOT analyses, the Strengths and Weaknesses are internal to the case organisation's business model. Whereas the Opportunities and Threats are external to the case organisation's business model, coming from the context in which they operate (illustrated in Figure 19).

The strengths, weaknesses, opportunities and threats covered in this section have been referred to within the business model assessment sections above. The purpose is to distil and highlight those key areas that result in enablers or barriers for the development of circular business models. Chapter 4 discusses these barriers and enablers, drawing lessons and conclusions.

FIGURE 19 SWOT ANALYSIS FRAMEWORK

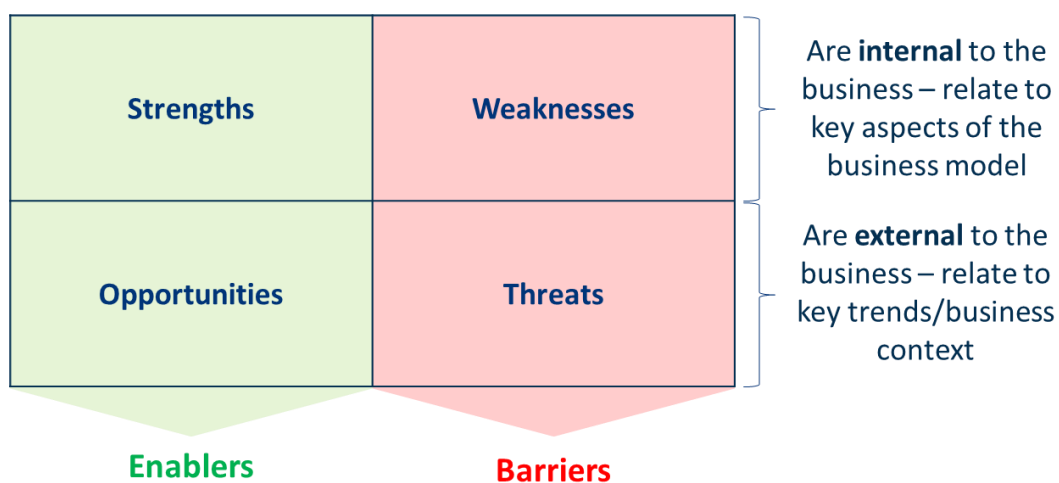


Figure 20 below summarises the key SWOT areas assessed for Canon EMEA’s remanufacturing and refurbishment models. These are indicated as either being generally applicable across both areas, or specifically to one or the other.

FIGURE 20 SWOT ANALYSIS

Strengths	Weaknesses
<p><b>General</b></p> <ul style="list-style-type: none"> <li>• Quality and volume of Machines In Field.</li> <li>• Managed Print Service offering.</li> </ul> <p><b>Remanufacturing</b></p> <ul style="list-style-type: none"> <li>• Strong technical competence and high quality of remanufacturing</li> </ul> <p><b>Refurbishment</b></p> <ul style="list-style-type: none"> <li>• NSO responsiveness to market conditions</li> </ul>	<p><b>General</b></p> <ul style="list-style-type: none"> <li>• Focus on new product – Sales incentives.</li> </ul> <p><b>Remanufacturing</b></p> <ul style="list-style-type: none"> <li>• Focus on new product – Product line-up strategy.</li> <li>• Relatively high cost of remanufacturing</li> </ul> <p><b>Refurbishment</b></p> <ul style="list-style-type: none"> <li>• Difficulty of standardization.</li> <li>• Complexity caused by bespoke configurations.</li> <li>• High cost of reverse logistics.</li> </ul>
Opportunities	Threats
<p><b>General</b></p> <ul style="list-style-type: none"> <li>• Growing customer acceptance of remanufactured and refurbished machines</li> <li>• Value-based procurement</li> <li>• Maturity of core technology</li> </ul> <p><b>Refurbishment</b></p> <ul style="list-style-type: none"> <li>• Highly competitive, declining market – price erosion of new machines</li> </ul>	<p><b>General</b></p> <ul style="list-style-type: none"> <li>• General preference for ‘buying new’.</li> <li>• Public sector procurement policies.</li> <li>• Sustainable procurement focused on energy efficiency</li> </ul> <p><b>Remanufacturing</b></p> <ul style="list-style-type: none"> <li>• Highly competitive, declining market – price erosion of new machines</li> </ul>

Source: R2Pi Project analysis

The above strengths, weaknesses, opportunities and threats are examined in detail in the sections below. Where an element relates specifically or principally to either the remanufacturing or refurbishment model, this is indicated in parentheses within the headings as ‘Reman’ or ‘Refurb’, respectively.

### 3.16.1 Strengths

#### Quality and volume of Machines In Field

Machines In Field (MIF) are a key resource for Canon EMEA as they generate recurring revenues when offered with service contracts and supply of consumables. They are also a resource at end-of-contract as they can potentially be re-sold into the market – again with service and consumables contracts, or within a broader service contract including new equipment.

Currently, Canon EMEA employs the most structured approach to targeting and restoring MIF under its centralised EQ80-branded remanufacturing programme. Refurbishment policies and processes are less structure and vary across NSOs.

In both cases, Canon EMEA benefits from MIF that is well-maintained and returns to NSOs in the best condition possible. This is influenced by Canon EMEA's servicing and maintenance operations and policies. A supporting factor is that recent generations of Canon printers are reported to have longer lifetimes of parts and components.

#### Managed Print Service offering

Managed Print Service (MPS) has been described in this case study as part of the value proposition offered to customers under new unit sales. MPS is potentially a strong driver for both remanufactured and refurbished product sales because the focus of the service is on value creation through performance improvement and outcomes, rather than on the equipment. Product features will be part of the customer discussion, however remanufactured and refurbished machines can be effectively positioned as contributing to the overall service value proposition (for example, when the latest features or configurations of new models are not needed to serve a customer's needs).

Furthermore, Canon EMEA can also benefit by using lower cost machines compared to new products while still generating recurring revenues through MPS. The greatest cost advantage is between buying a new product from Canon Inc. (Japan), and using a refurbished machine.

Nevertheless, the potential maintenance implications of servicing a variety of older equipment mixed with new models needs to be examined and addressed.

#### Strong technical competence and high quality of remanufacturing

Canon EMEA's EQ80 remanufactured product is comparable in quality to new models, backed up by a sophisticated remanufacturing operation in Canon's plant in Giessen. This includes an end-to-end, structured approach to designing, planning, and executing production of remanufactured equipment, and servicing them in the field.

#### NSO responsiveness to market conditions (Refurbishment)

National Sales Organisations (NSOs) have cultivated relationships with national-level accounts and customers, as well as brokers, and have extensive knowledge and understanding of local market conditions. Their primary focus is on pushing new product sales however they also have responsibility for managing the returns of EOC machines from the field and deciding on whether to refurbish, sell to brokers, or scrap the equipment.

The relationships and market knowledge of NSOs are an important asset that can be used to further expand remanufacturing and refurbishment business models.



### 3.16.2 Weaknesses / areas of improvement

#### Focus on new product – Sales incentives

Sales managers within NSOs are mainly incentivised on the basis of meeting revenue and gross margin targets, as well as driving the sale of value-added solutions to customers. Sales teams are therefore inclined to pursue large deals and profitable transactions.

This does not necessarily have to exclude remanufactured or refurbished equipment, however they can be more difficult to sell due to lingering customer preferences for buying new. This potentially introduces complexity and friction in the transaction, creating a ‘hassle factor’. Sales people will generally sell new equipment unless a specific opportunity arises where remanufactured or refurbished equipment creates an advantage.

Addressing this requires looking at various aspects, including adjusting incentives and targets, as well as providing processes and tools to make the sale of remanufactured or refurbished equipment easier, improving the ‘return on time invested’.

#### Focus on new product – Product line-up strategy (Remanufacturing)

Canon Inc.’s overall product development and portfolio strategy generally focuses on new products. The product portfolio is designed at the Canon group level, as well as target pricing and sales volumes for each market. Therefore, Canon EMEA needs to set the EQ80 proposition into its product strategy from the beginning.

The potential impacts of this approach are a lack of differentiation of the EQ80 proposition (especially as new product price points have been lowering), and continued prioritisation of new product sales over the utilisation of MIF resource to generate ongoing benefit to Canon EMEA and its customers. If Canon EMEA seeks to develop its refurbished equipment offering, these issues will also be relevant.

The difference in perspectives and priorities between Canon Inc. as the equipment manufacturer, and Canon EMEA as the sales channel and service provider is understandable. Canon Inc. has indicated strong support for Canon EMEA’s strategy of utilising MIF to generate further value and improve competitiveness and profitability. Collaboration and joint planning will therefore be very important to ensure a joined-up approach to the market, as discussed further in Section 4.

#### Relatively high cost of remanufacturing

As described above, Canon EMEA’s remanufacturing operations are highly sophisticated. In the past, the cost of remanufacturing compared favourably with that of manufacturing a new product and shipping it from Asian countries. The price of EQ80 machines was a compelling aspect of the value proposition, giving customers access to a high-performance printer at significantly lower cost. However the market price of equivalent new machines has been gradually declining due to intense competition, eroding this cost advantage.

Furthermore, remanufacturing is only appropriate for printer models that enable the plant to operate at optimum capacity – hence targeting best-selling models that will be returned at EOC at sufficiently high volumes and will continue to remain in demand over the planned run of remanufacturing. Investment in plant and labour is planned according to such forecasts being realised.

Low-end models (even if high volume) are more difficult to remanufacture as their market price would not be able to support the cost structure of remanufacturing. Hence while remanufacturing may continue to be relevant for certain models, refurbishment presents the main opportunity for other Canon models.



### Difficulty of standardisation (Refurbishment)

Unlike the well-established and centralised remanufacturing process, refurbishment is managed by NSOs and is subject to significant variation. Therefore, it is difficult to set a unified standard that applies to all refurbished equipment. A further challenge is that lack of standards and common protocols can reduce the ability to achieve scale in refurbishment operations and to establish best practices which can be replicated across NSOs.

### Complexity caused by bespoke configurations (Refurbishment)

Bespoke configuration of equipment created by NSOs for initial customers may not be relevant or appropriate for the next customer. NSOs generally conduct no or minimal changes to the configuration of equipment they receive back from the market, trying to sell what they have in stock as-is. It is not yet clear to what extent this is a significant barrier to driving refurbishment sales, however it will be something that needs to be addressed if Canon EMEA were to move towards a more consistent and standardised refurbishment offering.

### High cost of reverse logistics (Refurbishment)

The cost of moving equipment returned from the field across significant distances (beyond national) is considered to be currently too high to enable more centralised approaches to refurbishment, or deploying machines from one market to meet demand opportunities in another market.

Canon EMEA however notes that brokers, dealers, and third party system integrators do find ways of doing this cost-effectively. If Canon EMEA does indeed have a high cost structure in managing logistics of used equipment, this needs to be addressed in order to achieve scale and competitiveness. Otherwise Canon's refurbishment business will remain localised.

## 3.16.3 Opportunities

### Customer acceptance of remanufactured and refurbished machines

Canon EMEA has recently been successful in integrating remanufactured as well as refurbished units within printer fleet deals with large and global business customers. This may be indicative of customer preferences shifting.

While the overall tendency of large/corporate business customers in particular is still to favour new equipment, this demonstrates that companies are willing to consider other options if the overall value proposition and deal is attractive.

### Value-based procurement

Some of Canon's NSOs in Northern Europe and the Nordics have been actively engaging with and educating customers on value-based tendering. Value-based approaches consider multiple sources of value beyond price and the latest product features. This provides an opening for considering remanufactured and refurbished equipment when it can be demonstrated that they deliver the value sought by customers. There is potential for disseminating insights and replicating experience and best practice from this across other NSOs.



Similarly, Canon EMEA reports that customers are increasingly attracted by service-based propositions such as MPS. This also indicates customers are seeking value from improved performance and optimisation across their printer fleet and document management needs, opening up the potential for using alternatives to new product.

#### Maturity of core technology

From a technological perspective, multi-functional printers have reached a level of maturity, with customers' key needs being broadly fulfilled by the current generation of technology. While advances in certain features will provide additional value to specific user segments (such as secure digitisation of documents for archiving and legal functions), general office users are well catered for.

This creates an opportunity for refurbished as well as remanufactured equipment to be re-sold and re-used over two (or more) cycles.

#### Highly competitive, declining market – price erosion of new machines (refurb)

As noted in the Contextual Analysis, the market for multifunctional printers is characterised by declining print volumes and demand, and intensifying competition among existing suppliers. Not only is Canon EMEA facing competition from traditional suppliers of new equipment, but also from system integrators who are able to deploy a mix of equipment including used and refurbished units to fulfil customer requirements.

Within these market conditions, Canon EMEA has the opportunity to leverage its own resource of used equipment returning from the field. Refurbished printers will be able to more effectively compete on price with cheaper new products. If Canon EMEA can make the value proposition of refurbished models clearer and more attractive, this will also enable it to better compete with other providers of used equipment.

### 3.16.4 Threats and uncertainties

#### General preference for 'buying new'

Procurement departments in companies tend to negatively perceive remanufactured and refurbished equipment. From their perspective, this introduces risk of dissatisfaction from their internal customers if the equipment looks old and tired, and doesn't perform according to expectation.

This negative perception is something that can be addressed through customer awareness and education, and by applying measures indicated above such as standardised and consistent approaches to refurbishment, clarity of communication and value proposition, etc.

#### Public sector procurement policies

Public sector tendering policies and Procurement functions tend to exclude consideration of remanufactured or refurbished equipment. As with other sectors, this stems from a lack of understanding as well processes that are designed to focus on new product.

Canon EMEA has encountered strong challenges in selling remanufactured machines to public sector bodies (including EU institutions) despite their cost and environmental benefits. Unlocking public

sector procurement of products and solutions that incorporate remanufactured and refurbished machines will be an important driver for the market.

#### Sustainable procurement focused on energy efficiency

Sustainability is an emerging factor that certain customers consider in their procurement. This however tends to focus on the energy consumption of machines in use, rather than taking into account the overall lifecycle impact of the product. On the one hand, the energy and carbon impact of printers tends to not be sufficiently material for most customers to significantly value this aspect. However when they do, the lower carbon impact advantage of a remanufactured or refurbished products is often less understood and appreciated.

This can create challenges for Canon EMEA as remanufactured or refurbished equipment is older and may be less energy efficient than the latest models on the market. Canon EMEA therefore needs to invest in communicating their lifecycle benefits.

This challenge is exacerbated by product labelling also being focused on energy performance in use, rather than the lifecycle footprint.

#### Highly competitive, declining market – price erosion of new machines (Reman)

While the market trends of declining demand and price reduction of new products are an opportunity for refurbished models, it presents a threat to the higher cost structure of the remanufacturing model.



## 4 Discussion & Conclusions

This section considers the implications of the SWOT analysis, highlighting the key enablers and barriers to transitioning towards a circular business model. Applicability to other sectors as well as policy considerations are also discussed.

### 4.1 Key enablers

#### 4.1.1 Standardisation of refurbishment processes and offering

Developing standardised protocols and processes for refurbishment, as well as consistent ways of communicating the value proposition to customers will be an important enabler of this model.

Examples of measures that could be considered include:

- Performing inspections on receipt at the warehouse and assessing the maintenance status and remaining lifetime of key parts. Intelligence from this can also feed into tailoring of maintenance service contracts for the units at a customer level, or across Canon EMEA operations. This would be facilitated if maintenance records of individual units over their lifetime are kept easily accessible, combined with Canon's knowledge of the lifetimes and tolerance of parts.
- Defining levels of refurbishment. For example incorporating a combination of the following:
  - External/cosmetic re-conditioning
  - Full maintenance inspection and cleaning of internal parts and mechanisms
  - Replacement of parts close to end-of-life
  - Reconfiguration to suit new customer requirements (hardware and/or software)
- Defining ways of communicating different potential levels of refurbishment to customers so that they understand what they are getting and can effectively assess the value to them (compared with alternatives).

If Canon is able to confidently plan the maintenance requirements of refurbished equipment over the next customer's contract lifecycle, it could consider incorporating additional areas of value that address customers' risk perceptions. For example: maintenance warranty periods; capping maintenance costs over the contract lifetime; etc.

#### 4.1.2 Intelligence and visibility of MIF/installed base

In order to effectively plan refurbishment operations as well as sales (avoiding where possible the need to offload units on brokers), Canon EMEA and NSOs need to have a thorough understanding of their MIF. For example this could include:

- Usage and maintenance status
- Product configurations (e.g. any bespoke features)
- Units per type of model and physical locations
- Time to end-of-contract
- Estimated fair market value at end-of-contract



This level of intelligence would enable Canon EMEA and NSOs to make more effective and proactive decisions regarding how assets will be taken back, managed, and redeployed into the market. The kinds of decisions this can enable include:

- Whether or not to offer customers contract extensions for their existing equipment
- Offering equipment/solution upgrades to incentivise take-back of models for refurbishment
- Earmarking machines close to end-of-contract for new customer sales
- Planning maintenance service operations for MIF that includes a higher proportion of used, 'second cycle' machines.

#### 4.1.3 Reduce costs of reverse logistics

Reducing the overhead cost of reverse logistics will be important if Canon EMEA wishes to either concentrate certain refurbishment operations to achieve scale economies or enable more flexible deployment of units to dynamically meet demand patterns across Europe. This may require partnering with new logistics solution providers.

#### 4.1.4 Sales team incentives and support

As discussed above, sales teams are currently incentivised to achieve high revenue and margin targets, and sales managers tend to focus on new equipment sales. Measures which could enable the remanufacturing and/or refurbishment models include:

- Explicitly adding revenue targets for remanufactured or refurbished units
- Creating tools to support sales managers make decisions on pricing and other dimensions. For refurbished sales, this would be most powerful if it integrates with a live inventory and status of units held at NSOs and forecast to imminently come out of contract (see 4.1.2) as well as a clear offering (see 4.1.1).
- Replicating best practices across NSO for value-based selling and engaging customers in taking a value-based approach to procurement and contracting.

#### 4.1.5 Strategic targeting and engagement of 'leader' customers

Over the recent period Canon EMEA has developed an understanding of customers and situations where remanufactured or refurbished equipment provided significant value to a contract.

Using this knowledge, Canon EMEA should consider cultivating 'leader customers', engaging them through a value-based sales approach. As existing customers are easiest to win compared to seeking new customers, Canon EMEA could target current customers who are approaching end-of-contract with compelling offerings. By generating additional wins, Canon EMEA will be able to produce case studies and references that can help build confidence in the market for its remanufactured and refurbished offerings. Learnings and best practices should then be shared across NSOs to help replicate and scale up sales.

#### 4.1.6 Alignment of organisational incentives and decision-making

With regards to refurbishment, NSOs currently optimise strategies and behaviour to meet their own targets and performance goals, as it is mainly a localised business. However scaling up this model will require optimisation and decision-making at the European level. For example, one NSO may decide to sell a selection of units to a broker because it will most easily convert the asset into cash and liberate space in its warehouse. However at the European level, this equipment may have significant value if it could have been sold as part of a large customer tender.

The question is therefore how to align interests centrally and locally at NSOs. This may require new, internal value transfers or policies governing the management of returned assets. As an example, Canon Giessen purchases specified printer models from NSOs which it transfers to its remanufacturing plant. NSOs are therefore compensated and gain revenue from these internal transactions. Canon EMEA will need to define whether similar mechanisms need to be set up for driving equipment refurbishment.

#### 4.1.7 Moving from product-centric to service-centric models

Value propositions and business models that are service-centric, rather than product-centric, will provide the greatest opportunity for incorporating circularity and enabling the remanufacturing and refurbishment models. Managed Print Service (MPS) is one example. With a service-based model, the focus is on the value that the customer and end-users are receiving, rather than the specific product specifications. Under this model, overall goals and value is defined between Canon EMEA and the customer, and Canon EMEA takes control of the operational aspects to fulfil this (such as what, where and how to best deploy equipment and technology). This creates the opportunity to incorporate remanufactured and refurbished units. However, in particular with regards to refurbished units, there needs to be consistency and reliability and so needs to go hand-in-hand with developing refurbishment standards (see 4.1.1).

By moving to service-centric models, Canon EMEA can also explore the possibility of contract lifecycles being extended so that printer assets get utilised for longer. This will require consistency with product design (e.g. designed lifetime, upgradeability, etc.) and service/maintenance operations planning.

#### 4.1.8 Product design

For circular business models to be effective they often need to be supported by product design and technology. In Canon EMEA's case, product design will need to take into account:

- The need to improve efficiency of remanufacturing.
- The need to develop effective refurbishment options.
- Ease of re-configuration from previous customer to the next customer.
- Increasing customer contract lifecycles.
- Ability to effectively operate in a 'mixed fleet' of new and older machines, while providing a high quality and seamless customer experience.
- Traceability of machine assets
- Remote diagnostics and tracking of maintenance status



Elements of product design that can enable the above include:

- **Design for forward-compatibility.** Ensuring that products can be upgradeable to the latest functionalities and technology (both hardware and software). This includes product modularity, common interfaces, etc.
- **Design for backward-compatibility.** Ensuring new product models can integrate with older solutions. Similarly to forward-compatibility this includes the use of common interfaces, parts and platforms, as well as inter-operability and the ability to integrate into a common solution.
- **Design for remanufacturing and refurbishment.** Printer units are already designed with ease of maintenance in mind. Additional efficiencies and opportunities could potentially be explored, for example defining refurbishment standards and working back from these to identify ways of maximising process efficiency.

#### 4.1.9 Product portfolio design

When Canon Inc. develops its product line-up it tends to do this without considering the role of currently deployed assets (MIF). The EQ80 remanufactured product, for instance, is mainly driven by Canon EMEA and machine refurbishment is localised within NSOs.

If remanufactured and refurbished machines were incorporated into the official product line-up and catalogue, this would raise the importance of integrating existing deployed assets with new product development and sales. While remanufactured products are well defined, this will require the definition of refurbishment standards (see 4.1.1).

## 4.2 Key barriers

### 4.2.1 Cost structure of remanufacturing (in a declining market)

Canon EMEA's remanufacturing programme has been very successful in developing high-quality products which provide value to customers at a lower cost, while also being more sustainable.

One of the key barriers to continuing this model is the threat of decreasing new product prices and the eroding price advantage between the two. Canon EMEA will need to explore opportunities to reduce the cost of remanufacturing or increasing the value customers derive from remanufactured products compared with buying new (for example the sustainability benefits).

### 4.2.2 Product complexity for refurbishment

A potential barrier to driving the refurbishment model is addressing the variability and complexity of product configurations returning from the market. NSOs currently do not reconfigure products, selling them as-is. However if Canon EMEA aims to enhance the value proposition for refurbishment, it may need to take an end-to-end view of product configuration. This includes:

- Reducing complexity of MIF, ensuring bespoke solutions are only offered where required or creating standardised options.
- Developing approaches to efficiently reconfigure products returning from the market to address the next customer's needs.



Exploring this opportunity requires a joined up approach with defining refurbishment standards (see 4.1.1) and product design (see 4.1.8).

### 4.2.3 Balance between selling new product and cultivating MIF

Canon EMEA will need to address the strategic question of how to effectively compete and serve customers when the demand for printer/copier machines is declining. Maximising value from MIF, and avoiding 'value leakage' through broker sales will be an important aspect.

Especially in a declining market, an inherent tension exists between a business model focused on manufacturing and shipping new products, and one that is service-centric and focused on maximising the lifetime value of products in use.

When the market demands product renewal (new product generations provide significantly more value than older ones) and the market is expanding, both approaches can coexist well. However the situation for Canon's printer business is different and there is a danger that Canon EMEA's model will be seen as cannibalising new product sales.

The business models developed by Canon EMEA, and the possibility of enhancing the refurbishment offering and moving towards service-centric solutions are an important opportunity for Canon as a whole to take advantage of.

## 4.3 Replicability in other sectors

The development of remanufacturing and refurbishment business models is very relevant to the manufacturing sector, in particular companies that produce high-value capital assets.

Canon EMEA's rationale to develop a remanufactured product offering which provides high-quality and value at a significantly lower cost to new products is a model which is very relevant. As shown in this case study, it requires a sophisticated approach which can be both capital and labour intensive, requiring economies of scale to achieve a competitive cost structure. This model is very applicable where remanufactured products continue to be relevant and attractive in the market. Companies need to emphasise the 'as good as new' aspect of remanufactured products and the additional value which sustainability credentials can also create.

Canon EMEA's refurbishment business model is also a relevant example for manufacturing companies. Manufacturers often leave refurbishment and re-sale to third parties in the aftermarket, focusing instead on new product. This is however a potential missed opportunity to develop new customer relationships and to maintain visibility and control of assets so that further value can be created and captured. In the case of Canon EMEA, if products are sold on to the second hand market they may compete with their own new products.

Moving from a product to a service-focused business model is also a relevant strategy for manufacturing companies to consider. As discussed in this case study, it constructively shifts attention towards delivering performance and outcomes, while providing the manufacturer with the opportunity to redeploy and utilise older equipment.

## 4.4 Insights for business guidelines

The core focus of this case study is on remanufacturing ('Re-make') and refurbishment ('Re-condition) business model patterns for multi-functional office printers. The business model assessment and SWOT analysis in Chapter 3, and the assessment above of key enablers and barriers for the circular business model, provide a real-world example that organisations in similar sectors or in a similar context can draw insights and lessons from.

In particular, the following key insights are important to note:

- Remanufacturing requires a high level of investment and capability development to create products that can be sold in an 'as new condition'. However this can provide significant cost advantages compared to producing an equivalent new product.
- Product refurbishment is often a lower-priority area for manufacturers, often left to brokers and aftermarket players. However, if companies can retain control or enable the end-of-cycle takeback of their products, refurbishment and re-sale can provide an important new area of business. This can be particularly beneficial in a highly competitive business environment where pricing pressure makes even re-manufactured products relatively high-cost, whereas refurbished products remain attractive and profitable.
- In order to make the business case for a re-manufacturing or refurbishment model, companies need to take a lifecycle perspective: considering products in the field (installed base) as a key asset with the potential to drive new and recurring revenues, and that products at end-of-cycle have significant value and potential for re-sale or life extension. Furthermore, companies should note that losing control or visibility of products at end-of-cycle is a potential loss or opportunity cost: if products are sold on to the second hand market they may compete with their own new products. They also lose the benefit of generating further revenue (either resale and/or recurring revenues from services and consumables).
- In order to effectively implement a circular business model, remanufactured and refurbished products need to be considered part of a manufacturer's overall product portfolio. This allows the company to strategically plan new product design and production, as well as give the right level of priority to developing a remanufacturing and/or refurbishment business. This also creates the foundation for orienting sales team incentives and behaviour towards integrating remanufactured or refurbished products within their sales processes and targets.
- Transitioning from a product focus to a service/solutions focus (a form of 'servitisation') is a key enabler for circular business models. Offering products as a service creates a focus on value generation and customer satisfaction based on delivering overall performance and outcomes, rather than on the specifics of a product. This allows manufacturers the opportunity, for example, to embed remanufactured and/or refurbished products together with new products.





## 4.5 Insights for policy recommendations

One of the key issues arising from this case study which has direct policy implications is with regards to public sector procurement.

As discussed in the SWOT analysis, the exclusion of products considered 'second hand' from tenders and procurement decisions is a significant barrier. If Canon EMEA (and other suppliers) were able to access public contracts with remanufacturing and refurbishment offerings, this would create a significant boost to the business.

A further challenge encountered by many suppliers is that public sector procurement tends to be focused on product specifications and less amenable to service-focused and performance-based offerings. One of the reasons why this occurs is to ensure transparency and comparability between tenders. Public procurement processes may therefore need to find new metrics and approaches to assessing the value of vendor bids if governments wish to promote circular economy. This requires changes to rules and guidelines, as well as improving awareness and education of procurement managers.

