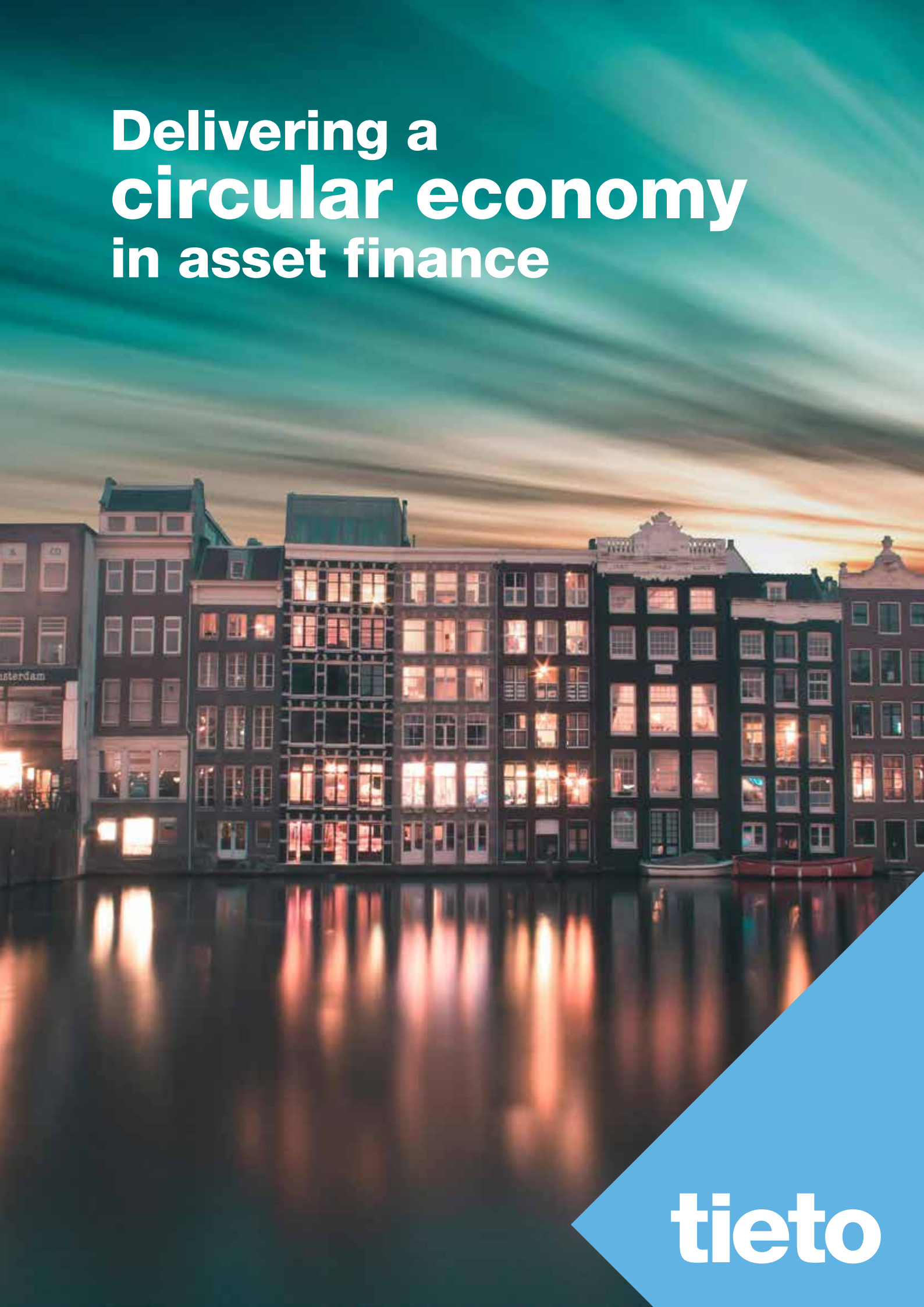
Delivering a circular economy in asset finance



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Introduction

The Intergovernmental Panel on Climate Change's stark warning that the world must act immediately to avoid an environmental crisis provides a clear reminder that business as usual is no longer an option.

Following the call to action from the United Nations body that is responsible for assessing the science related to climate change, pressure has grown for governments to take action.

Protests by environmental activists recently brought London to a standstill, while a climate emergency has been announced in the UK and Ireland.

For businesses, this means significant change in the coming years, as many countries move towards a zero-carbon economy, where there is less reliance on fossil fuels and a greater focus on sustainable ways of doing business.

The initial stages of this dramatic change are already underway, ranging from Ultra-Low Emission Zones being introduced in major urban areas to new taxes to discourage pollution and waste.

Business leaders need to adapt to this change by moving away from the traditional model of 'take-make-waste' to support a more circular economy, where the life of assets is extended through greater utilisation, reuse and recycling.

The circular economy decouples economic activity from the consumption of finite resources and also aims to design waste out of industrial processes.

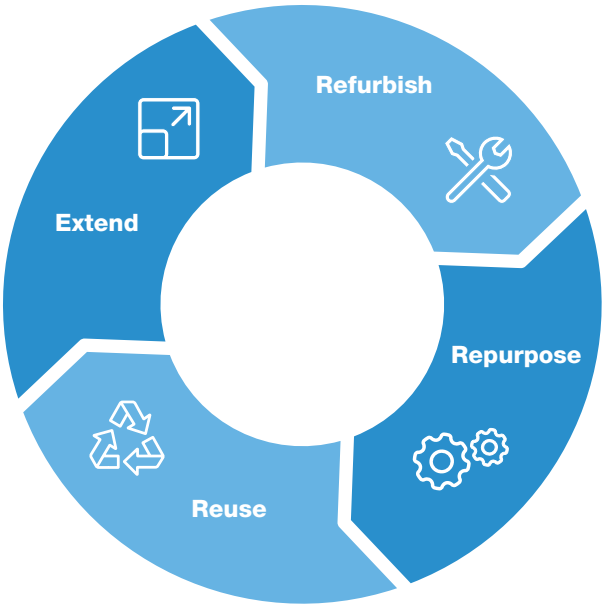
The asset finance industry can play a vital role in these new ways of doing business, through funding and by supporting the processes that enable change.

This paper will offer a concise explanation of:

- What is the circular economy?
- What role can the circular economy play in asset finance?
- What are the benefits of a business model that supports the circular economy?
- How are asset finance companies adapting to greener ways of working?
- What are the next steps to ensure your organisation can benefit from the potential of the circular economy?

Linear Economy

Circular Economy



Defining **the circular economy**

The industrial revolution, mass production and the global economy have transformed business.

Aided by the rise of digital channels, businesses have powered unprecedented growth, from consumer products to the industrial machinery needed to produce them.

However, despite this progress, the methods of consumption have barely altered in generations and the so-called linear economy still prevails, based around a 'take-make-waste' process.

The technological age has, if anything, accelerated this old way of doing business, as computers, phones and tablets rapidly become obsolete and are disposed off to make way for a new generation of devices.

This is an unsustainable way of doing business as it fails to make the most of finite resources, from oil to natural materials, and secondly the global impact is increasingly being felt, from oceans suffocated by a blanket of plastic, to toxic dumping grounds full of outdated technology.

For example, the world produced 45 million tonnes of electronic waste worth €55 billion in 2016 and less than one-fifth was collected or recycled.

Experts rightly argue that the current system is not fit for purpose, whether for businesses, people or the environment. A new way of working and consuming needs to be encouraged.

The concept of the circular economy aims to deliver the solution by closing the loop of production, use and disposal.

Longevity and reuse are designed into new products, so that when they reach the end of their first life, they can be refurbished or recycled and then repurposed, prolonging the life of assets, reducing demand for new resources and minimising waste.

In addition, this focus on efficiency can maximise the use of in-life assets by sharing underutilised equipment.

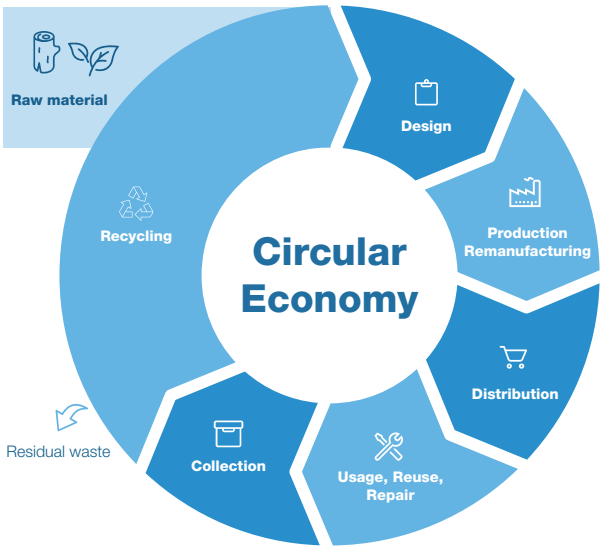
This decouples growth from consumption of finite resources, as assets can be used more efficiently during their life, while also having a much greater period of operation, either in their first-life or after recycling and repurposing.

Interest in the benefits of the circular economy is growing amid warnings that linear processes will fail under the strain of growth, with the global economy expected to double in the next two decades.

Importantly, experts believe that the circular economy could be an enormously profitable force for good, with the market in Europe alone predicted to be worth €1.8 trillion by 2030.

The circular economy ecosystem

- Design out waste and pollution
- Maximise in-life use of products and materials
- Enable reuse and recycling



Planning the circular economy – **the role of leasing companies**

Leasing companies have a vital role to play in promoting and enabling the circular economy as they sit at the heart of the business cycle.

At every stage of business, finance companies provide support, whether it is delivering the funding to enable a factory's investment in new equipment and expansion, or helping end-user customers to acquire the goods they need.

Asset finance companies are particularly suited to a circular economy environment. In a leasing environment, for resources such as vehicles, they have expertise in providing use of an asset for a specific period, managing the delivery and collection process and accurately estimating its value on return.

In addition, they can provide asset management support while it is being used, monitoring and maintaining it during its operational life, and there is typically a well-established resale network.

Adapting to a model based on the circular economy would require some process changes, but the organisational structure is broadly already in place.

In addition, asset finance companies are well placed to intervene at key stages in the cycle to ensure its smooth operation.

For example, manufacturers may introduce servitisation models that are designed around the circular economy, so that products are leased rather than sold, then taken back and reused.

By selling the 'use' of something, manufacturers remain responsible for the product and can ensure that it continues to provide value after its first usage cycle.

To make this possible, changes must be made from the start of the production process, looking at how products are designed to make sure recyclability is built in.

As the Internet of Things (IoT) increasingly enables equipment to communicate via cloud-based services, leasing companies will be able to offer vital data management support and analysis, generating insights about equipment use, longevity and utilisation.

Leasing companies will also play a key role in educating the market about the benefits of investing in pre-owned assets to promote the concept of the circular economy, through service-based financial solutions, such as pay per use.

For example, over half the vehicles on the UK's roads are owned by companies, which means that fleet managers can have a huge and growing role in the development of the automotive circular economy. They have the buying power to sway what materials the OEMs are using in their vehicles and to support mass adoption of new services.

According to research carried out by DLL in the Dutch construction, transportation and agriculture industries, factors driving organisational buyers to acquire pre-owned products are the price-quality ratio, available funds for investments, and value depreciation.

Additionally, immediate availability, flexibility of terms and detailed asset history are guiding buyers towards pre-owned products.

Experts say that although customers for new and pre-owned products are often compared as separate entities, it is important to realise that these aren't exclusive communities.

A buyer of new and pre-owned equipment may be the same person, adapting their acquisition strategy according to the needs of their business.

How technology enables change

Technological developments are driving efficiencies and providing insight that make the circular economy a reality in business.

At the heart of this change is data – its production, distribution and analysis. For example, factory or agricultural equipment can be connected to the Internet of Things to provide suppliers with insight about customer needs, equipment performance, use and maintenance requirements.

The benefits of technology cascade throughout the lifecycle of a product, from production through in-life usage to recycling.

Through the Internet of Things, suppliers can manage equipment performance, create proactive replacement and maintenance schedules, and inform future product design.

Finally, robotisation and digitalisation can automate simple, repetitive processes related to reusing assets or maximising utilisation, so that employees can focus on added-value activities, such as customer service or raising awareness.

Artificial intelligence and the circular economy

Artificial intelligence will be a vital tool to accelerate the transition to a circular economy.

According to research by the Ellen MacArthur Foundation and Google, with research and analytical support provided by McKinsey, AI can offer substantial improvements in three main areas: product design, operations, and infrastructure optimisation.

It argues that AI can magnify the competitive strength of circular economy business models, such as product-as-a-service and leasing.

The report says that by combining real-time and historical data from products and users, AI can help to increase product circulation and asset utilisation through pricing and demand prediction, predictive maintenance, and smart inventory management.

The use of AI to drive the circular economy is largely untapped, the authors say, so it is important to create a broader awareness and understanding of how the technology can be used.

The report said: “Ultimately, AI could be applied to the complex task of redesigning whole networks and systems, such as rewiring supply chains and optimising global reverse logistics infrastructure, in any sector.

“Both collaboration between relevant stakeholders and a degree of oversight will be needed to support these systemic applications of AI, ensuring that data can be shared in an open and secure manner, and that AI is developed and deployed in ways that are inclusive and fair to all.”

How finance supports the circular economy business model

The route to delivering circularity – **case studies**

Companies are making great strides in delivering services that support the circular economy.

They are introducing changes to the production process, enabling new financial models for products and overseeing the efficient recycling and reuse of products.

Initiatives cover almost every area of the economy, from agriculture to high-tech industries, with finance companies often working with suppliers and end-users to develop service models and design innovative revenue streams.

Strategic alliance between BNP Paribas Leasing Solutions and 3 Step IT boosts circularity

BNP Paribas Leasing Solutions and 3 Step IT have launched a European strategic alliance to offer technology leasing solutions and lifecycle management.

The partners will combine their expertise to provide organisations with a complete management service for technology equipment.

This will range from initial consultation to funding, in-life tracking, equipment monitoring and end-of-life management, including data destruction, refurbishment and resale of returned equipment.

Equipment will typically include computers, smartphones, printers and similar items and the service will also be available to manufacturers and distributors to meet their customers' needs and expectations.

The alliance will be effective in the 20 European countries where each of the partners operates, under the name BNP Paribas 3 Step IT.

It will be 51% owned by BNP Paribas Leasing Solutions and 49% by 3 Step IT and is expected to fund €1 billion of assets by 2025.

As part of the partnership, 3 Step IT will provide a digital platform through which clients can manage their assets.

Ikea pilots leasing for kitchens and furniture

Swedish furniture giant Ikea is piloting a leasing service for kitchens and furniture as part of its focus on championing a circular economy and eliminating waste.

The pilot project in Switzerland is looking at ways for customers to 'buy, care for and pass on products' as part of its aim to become a fully circular business by 2030.

It is too early to confirm how the leasing service will operate.

Ikea has already introduced several programmes to reduce waste, such as services to take back old beds or sofas, which it then donates to charity.

It employs recovery teams in every store, who repair and re-package products that have been damaged in transit, so that they can be sold and not go to waste.

In 2018, Ikea also handled more than 1 million orders for spare parts to help repair products for a longer life.

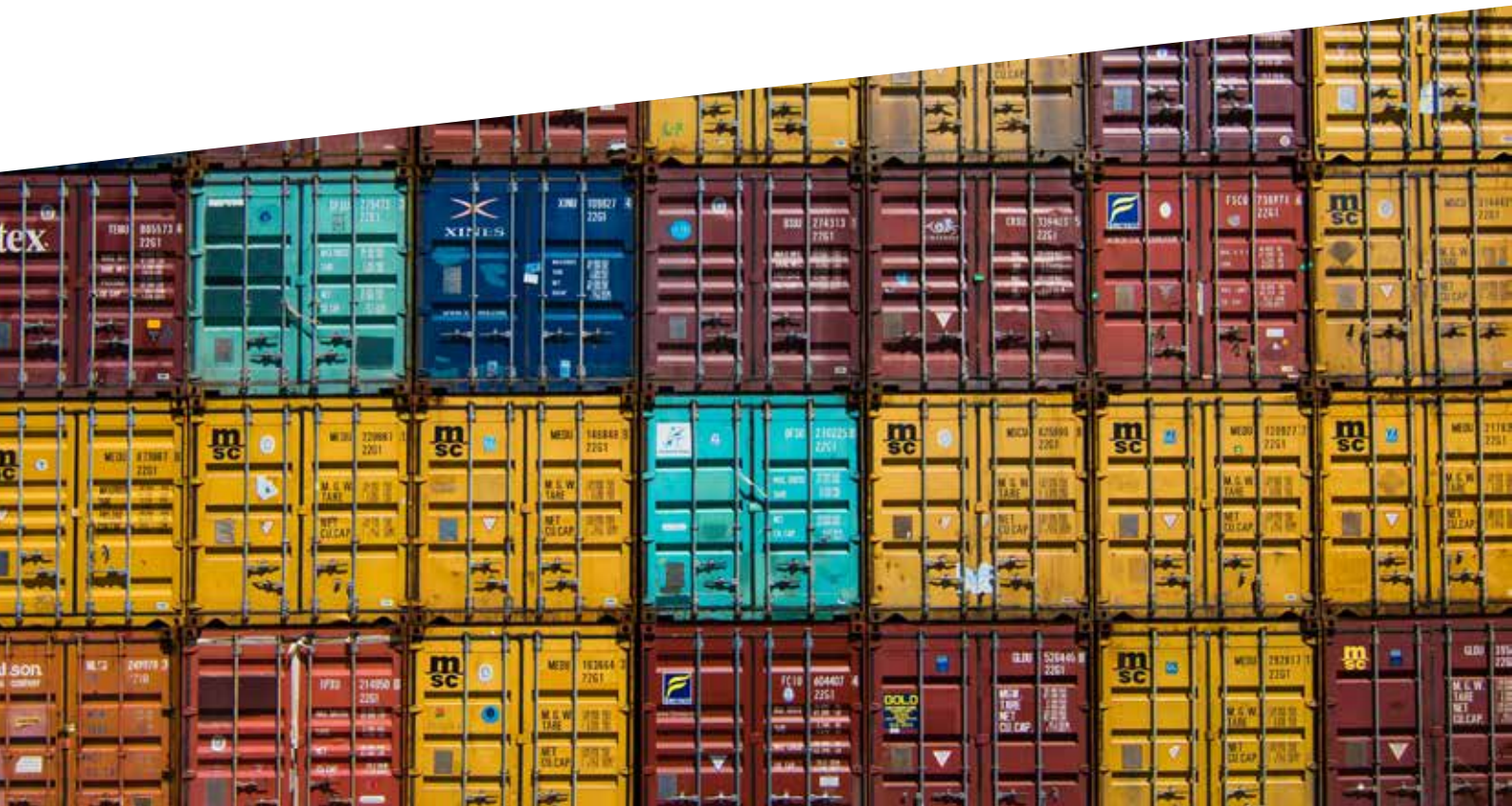
Last year, its UK operations sent zero waste to landfill for the third year in a row and it recovered 12,240 sofas, beds and appliances for reuse and recycling.

ZenRobotics uses AI and robotics to boost recycling

ZenRobotics was the first company to apply AI and robotics in waste processing. Its technology allows greater flexibility in waste sorting, enabling operators to react quickly to changes in a waste stream and increasing the rate of recovery and purity of secondary materials.

Waste is monitored by cameras and sensors. The AI software, called ZenBrain, analyses the sensor data, creating an accurate real-time analysis of the waste stream. Based on this analysis, the heavy-duty robots make autonomous decisions on which objects to pick, separating the waste quickly with high levels of accuracy.

This increases the value that can be generated from material recycling through improved recovery rates and overall quality of separated materials.



Jaguar Land Rover expands circular economy programme for electric vehicles

Jaguar Land Rover is investing in a closed loop strategy for its vehicles to maximise recycling of materials into its next generation models.

The REALITY project supports the circular economy by recovering aluminium from existing Jaguar and Land Rover vehicles and is being tested on early, pre-production prototypes of the Jaguar I-Pace electric vehicle.

Batteries from electric vehicles enter a different second-life process being developed by the manufacturer, while other materials are sorted using high-tech sensors, then separated aluminium is melted, reformed and sent back into the manufacturing process.

The pioneering project will expand the company's current closed loop aluminium programme, which has reprocessed 300,000 tonnes of the metal since 2013.

In 2014, the Jaguar XE was the first vehicle in the world to be built with aluminium that was made of up to 75% recycled material.

Jaguar Land Rover executives believe that as manufacturers develop mobility services focused on an Autonomous, Connected, Electric and Shared (ACES) business model, they will need strategies to manage the retirement of large multi-use fleets.

As manufacturers become mobility service providers, they will manage vehicles from production to end-of-life, including closed loop recycling to maximise efficiencies.

Jaguar Land Rover currently uses 180,000 tonnes of aluminium per year, a small percentage of the 80 million tonnes produced globally. It is already one of the world's most widely recycled materials, with 75% of all aluminium ever produced still in circulation.

AI-driven robot reduces recycling costs

A research group including Caterpillar, MG Motor and Meritor is developing an AI-driven robot system that autonomously or semi-autonomously inspects and disassembles returned equipment.

With increasing technological maturity of AI and robotic systems, remanufacturing solutions could also become a positive business case in consumer electronics.

The five-year project is funded by the Engineering and Physical Sciences Research Council (EPSRC) and aims to bring autonomous robots into the UK's remanufacturing industry.

Compared with manufacturing new equipment, it uses as little as 10% of the energy and raw materials required, while saving more than 80% in CO2 emissions.

Tasks will include unscrewing, removal of pins from holes with small clearances, separation of press-fit components, extracting elastic parts such as O-rings and circlips, and breaking up of 'permanently' assembled components.

Source: The Engineer

Dynamic price setting for circular business models

Stuffstr offers consumers the opportunity to buy used household items, with an initial focus on clothing and apparel, in exchange for vouchers, which can be spent at the original retailer. As part of this process, Stuffstr collects the products and re-sells them through existing secondary markets.

The service offers consumers of original items a low-hassle solution for getting rid of unused products, with a financial incentive to reduce the amount of waste going to landfill. The concept increases awareness of the value of unused clothing and encourages consumers to sell back items they no longer need so they can be recirculated.

Stuffstr uses AI algorithms for the pricing of both the products they buy from consumers and the products they sell in secondary markets. The backend of their service uses machine learning to ensure a consistent classification of all re-sale items. Finally, AI helps refine Stuffstr's sales strategy through constant experimentation and rapid feedback loops.

The company said the carbon dioxide emissions embedded in the household items it buys each year exceeds the emissions of the entire US auto fleet. Currently, almost 85% of US textiles end up in landfill, despite most being eligible for recycling.

Project STOP tackles global plastic crisis

Project STOP is a new initiative to design, implement and scale circular economy solutions to marine plastic pollution, focused on countries with high leakage of plastics into the ocean.

Globally, the quantity of plastic leaking into the environment has reached a critical level, with more than 8 million tonnes entering the oceans every year. By 2050, total ocean plastic could weigh more than ocean fish.

Researchers estimate that more than half of today's marine litter originates in China, Indonesia, the Philippines, Thailand, and Vietnam, mostly from mismanaged plastic waste on land.

Project STOP was co-created in 2017 by Systemiq and Borealis, a global plastics producer and the initial funder of the project. The first city partnership was launched in 2018, in collaboration with technical partners and supporters Veolia, Sustainable Waste Indonesia, Borouge and mtm plastics, along with financial and technical supporters.

The aim of each city partnership is to enable a transition to a 'zero leakage' circular waste management system with a sustainable operating model and higher plastic recycling rates.

Siemens prepares for change through digital transformation

A new industrial age will enable manufacturers to make the most of the shift to the circular economy.

Innovative industrial IT and software will drive change from virtual planning that improves productivity and minimises waste, to enabling innovative products that focus on servitisation and longevity of asset life.

Through its technologies Siemens aims to help industrial companies to benefit from rapidly growing data volumes that link together all the steps of industrial manufacturing in a virtual world.

It says that when automation, software, hardware and cloud platforms as well as cutting-edge technologies are integrated and combined, the data can be converted into valuable knowledge, particularly using artificial intelligence to drive analysis and insight.

Summary

The circular economy is an enormous opportunity for the asset finance industry that the market needs to embrace.

Finance provides the foundation on which its future growth and operation is built, meaning that early entrants from the funding sector have the potential to make substantial gains.

Among the champions of the circular economy is Carmen Ene, chief executive officer of 3 Step IT, who says the leasing industry can portray itself as an enabler, making innovation possible through an underlying financing contract.

This innovation could lead to the increasing use of subscription services, which maximise asset utilisation by promoting sharing.

Customers will accept they only want to pay for equipment when they use it and will let other people potentially use it when they don't need to.

Finance companies will work with manufacturers, dealers and software suppliers to compile data to provide a greater understanding of asset usage and assess new elements of risk related to circular business models, such as the pricing of second-life batteries when they are no longer suitable for automotive use.

This is a new era for finance companies, but one that offers substantial rewards for those that identify the correct strategy to follow.

Sources:

Asset Finance International, Ellen MacArthur Foundation, Google, The Intergovernmental Panel on Climate Change, Jaguar Land Rover, LeasePlan, McKinsey, Siemens, Systemiq, The Engineer, ZenRobotics.

To learn more, contact

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