

A woman with blonde hair is shown in profile, looking intently at a large digital screen. Her right hand is raised, touching the screen. The background is dark with out-of-focus, colorful bokeh lights in shades of red, orange, yellow, and green. The screen displays some faint, illegible text and graphics.

TECH FOCUS

INVESTORS IN CIRCULAR ECONOMY

DECEMBER 2022

IDEAS | PEOPLE | TRUST **BDO**

FOREWORD

BDO CIRCULAR ECONOMY SERIES



GORDON CARSTAIRS
PARTNER | M&A

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The Circular Economy financing market is taking off. Increasingly recognised as a crucial part of the solution to climate change and other ESG issues, the Circular Economy also offers significant opportunities for new and better growth. Now is the time for private investors to capitalise on this industrial transformation, and help scale the Circular Economy.

ELLEN MACARTHUR FOUNDATION

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Investment in the circular economy has skyrocketed in recent years both in the UK and globally; from entire smart cities to singular cargo bikes. As consumers become more conscious of their carbon footprints, demand pull has increased regulation and a clear upward trend in sentiment towards companies with a greener outlook.

On the face of it, with huge projects underway in the Middle East and regular start-ups appearing in North America, it looks as though Europe is lagging behind. That said, investors in the UK and across Europe are directing more and more funds towards Circular investments. In the UK the amount of disclosed capital deployed rose from £263m in 2020 to £788m in 2021.

In 2021 in excess of £100m was invested in technology driven Circular Economy entrepreneurs. 52% of these investments were into businesses whose core purpose is to make our cities smarter.

The UK is perhaps unable to compete at the same level as Neom led by the Saudi government, harnessing high levels of solar and wind energy. However, that does not mean the UK is not a global challenger in making cities 'smart' and the data reflects the UK making real strides to this effect.

Without the ability to roll out brand new Circular cities for a variety of reasons the UK's cities must become incrementally smarter. Its therefore no surprise that Venture Capital investors accounted for 53% of 2021 Tech-focussed UK Circular Economy investments with a median disclosed cheque size of £2.0m.

Mobile apps such as Waze or Citymapper harness traffic data to improve city mobility, allowing us to move around our cities quickly and more efficiently.

Ridesharing apps such as ZipCar or Uber at the most fundamental level are designed to re-use the same vehicle over and over again, similarly with Lime bikes which have seen a huge rise in popularity in major UK cities in recent months. These traffic and pollution reducing initiatives are core principles of the Circular Economy.

An app that has recently launched in the US, but yet to reach the UK is MyTown; the app allows users to report issues straight to local government, from potholes to overfull bins – this will create efficiencies and harness data straight from the public.

This report shows that the UK is finely poised to take advantage of advancements in technology, whether through the applications mentioned above or through other means. The underlying infrastructure is in place to allow the UK to capitalise on Smart City trends galvanised by increasing tech investor desire to fund these projects.

BDO CIRCULAR ECONOMY SERIES

TECHNOLOGY FOCUSED CIRCULAR ECONOMY

In this TMT edition of the BDO Circular Economy Series, we consider the role of technology focused investors in driving the transition to a Circular Economy, specifically with a focus on smart cities.

While there is a compelling environmental and economic case for organisations to transition away from traditional linear models, operational challenges such as lack of data availability, reduced supply of talent and integration can make it difficult to put theory into practice.

In order to maximise its impact, the Circular Economy must capitalise on emerging digital technologies, such as big data, artificial intelligence (AI), blockchain and the Internet of things (IoT). The Circular Economy transformation and Digital transformation must be go hand-in-hand.

Following on from the recent BDO Circular Economy Series publication 'Investment in the UK Circular Economy', we take a closer look at investments made into businesses using technology to help develop 'smart cities' across the UK and we consider what is making them such an attractive investment proposition.

INVESTMENT HEADLINES



ANNUAL INVESTMENT IN TECH-FOCUSED UK CIRCULAR ECONOMY COMPANIES HAS TRIPLED IN VOLUME FROM 2018 TO 2021, WITH DEAL VOLUME MORE THAN DOUBLING IN 2021



INVESTORS HAVE DEPLOYED £183M IN CIRCULAR ECONOMY TMT COMPANIES OVER THE PAST FOUR YEARS, WITH A CAGR (2018 – 2021) OF 64%



VENTURE CAPITAL INVESTORS ACCOUNTED FOR 53% OF 2021 TECH-FOCUSED UK CIRCULAR ECONOMY INVESTMENTS WITH A MEDIAN DISCLOSED CHEQUE SIZE OF £2.0M



PRIVATE EQUITY ACCOUNTED FOR 36% OF DEAL VALUE INVESTED IN 2021, INCREASING IN PROMINENCE AS THE MARKET MATURES



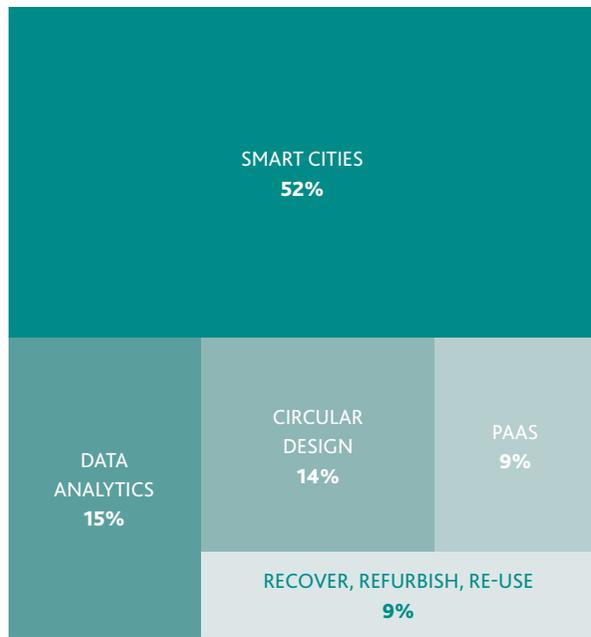
WITHIN THE TMT FOCUSED CIRCULAR ECONOMY MARKET, TECHNOLOGY INVESTED IN THE SMART CITIES SECTOR IS THE MOST PROMINENT, ACCOUNTING FOR 33% OF DEAL VOLUMES IN 2021. THE INTERSECTION OF DATA ANALYTICS, IOT TECHNOLOGY AND ARTIFICIAL INTELLIGENCE CONTINUES TO PLAY A KEY ROLE IN THE TRANSITION TOWARDS A CIRCULAR ECONOMY

UK TMT CIRCULAR ECONOMY INVESTMENT DASHBOARD

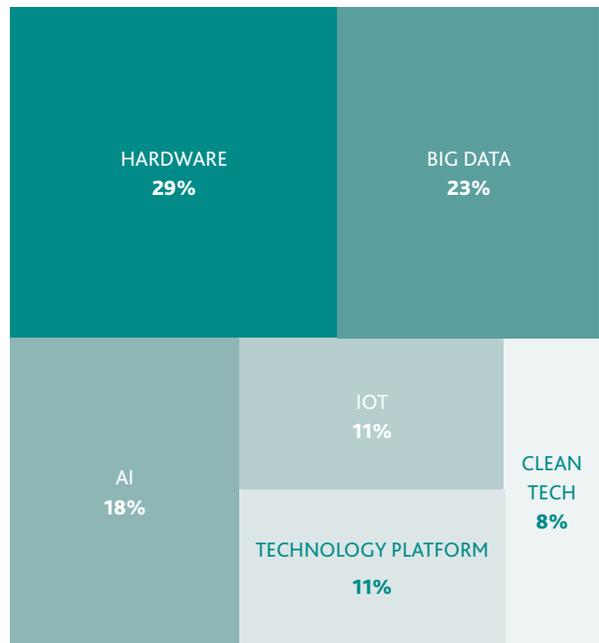
PRIVATE EQUITY AND VENTURE CAPITAL ACCOUNT FOR 77% OF 2021 UK TMT CIRCULAR ECONOMY INVESTMENTS

4X INCREASE IN INVESTMENT IN TECHNOLOGY DRIVEN CIRCULAR ECONOMY BUSINESSES IN 2021

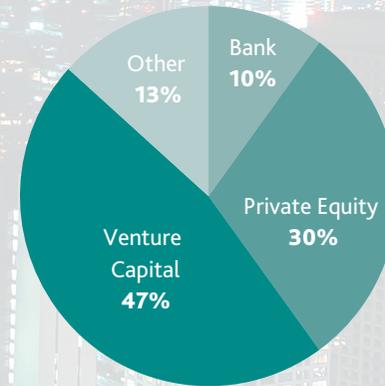
DEAL VOLUME BY CIRCULAR ECONOMY THEME
2018 TO 2021



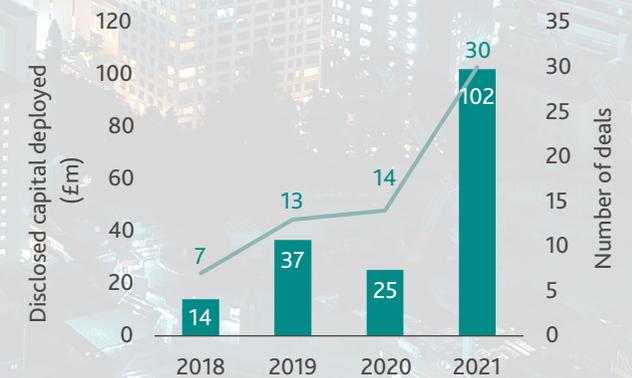
DEAL VOLUME BY TECHNOLOGY CATEGORY
2018 TO 2021



DEAL VOLUME BY INVESTOR TYPE
2021



TMT- CIRCULAR ECONOMY INVESTMENTS BY VOLUME AND VALUE
2018 TO 2021



TMT CIRCULAR ECONOMY TRENDS

52% OF ALL UK TMT CIRCULAR ECONOMY INVESTMENTS ARE TO CREATE MORE EFFICIENT CITIES, BUILDINGS, HOMES AND TRANSPORT SYSTEMS

SMART TECHNOLOGIES - MAKING OUR CITIES AND INFRASTRUCTURE MORE EFFICIENT

Technology driven Circular Economy investment is focused on Smart Cities, accounting for 52% of investments in our TMT data set.

From 2018 – 2021 there have been 34 investments made with disclosed capital deployed of £74m. Average disclosed capital deployed per investment is £2.5m with half of the investments £1m or less, evidencing the key role venture capital has to play in driving innovation.

Smart technologies are being used to address inefficiencies across a wide range of environments including city infrastructure and transport (35%), deliveries systems (27%), commercial buildings (26%), residential buildings (6%).

Despite the variety of environments being targeted by smart technology these businesses share common characteristics. Three quarters of investments into the smart environment utilise a combination of IoT (21%), Artificial Intelligence (29%) and Big Data (26%). All investments share a common objective – to create more efficient buildings and systems which reduce wasted energy.

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Digital technologies are there to help, to shift the way we manage energy, provided we rethink the way we design buildings, industries, cities.

JEAN-PASCAL TRICOIRE
CHAIRMAN AND CEO | SCHNEIDER ELECTRIC

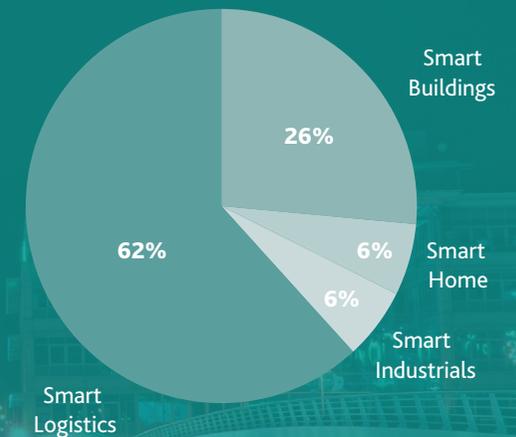
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A SELECTION OF UK SMART CITIES INVESTMENTS IN 2021



SMART CITIES

SMART CITIES INVESTMENT TRENDS BY DEAL VOLUME 2018 TO 2021



TMT CIRCULAR ECONOMY TRENDS

52% OF ALL UK TMT CIRCULAR ECONOMY INVESTMENTS ARE TO CREATE MORE EFFICIENT CITIES, BUILDINGS, HOMES AND TRANSPORT SYSTEMS

SMART LOGISTICS

Smart Logistics covers everything from collating traffic data to autonomous drone deliveries; the end result, however, is constant: achieving a more efficient, data-led and environmentally friendly logistics market way of moving people or goods from A to B.

In 2021 Vivacity Labs, which uses video analytics sensors to gather data on transport modes, traffic flow and patterns to support sustainable improvement to urban infrastructure raised £5m from private equity investor, Mobeus Equity, bringing its total capital raised to date to £8.3m.

Vivacity was also one of nine businesses in the Smart Cities subset to receive follow on investment further displaying investor commitment and confidence in the Smart technologies.

A major part of the logistic market relates to delivery services and the available solutions that can be used to increase autonomous technology adoption and decarbonise the supply chain.

In 2021, we saw investment in StreetDrone by Wilko Ltd, for £3m, to bring autonomous deliveries to the high street. Such an acquisition highlights the increasing interest of trade buyers in smart delivery technology providing comfort for investors over eventual exit.

A key part of encouraging the transition to autonomous, electric vehicles and better sustainable infrastructure is the availability of software that can provide the necessary information to key decision makers.

One example of such software is The Algorithm People who has completed 3 funding rounds since 2019, raising a total value of £3.5m in Development Capital. Using key pieces of data, powerful machine learning algorithms and AI, the company is able to help

decarbonise and optimise their clients' fleets as well as help the transition to electric vehicles and other low emission vehicles.

SMART BUILDINGS AND SMART HOMES

Across Smart Buildings and Smart Homes the focus is very much on capturing data around energy usage and efficiencies to make informed decisions to minimise waste.

Energy efficient and management technologies are providing innovative solutions to reduce emissions across the commercial building and residential housing sectors. These technologies provide access to building energy data and give the user clear steps to achieve carbon zero consumption using AI and blockchain technology.

Energy management software and Artificial Intelligence often intersect in order to achieve Circular Economy goals. An great example of this was the 2020 investment in Infogrid Limited by Northzone for a transaction value of £11m. Infogrid Limited provides technology products that automate facilities management to make any building smart, showing the increasing focus on the use of IoT to provide key data points to optimise the energy consumption of buildings and reduce wastage.

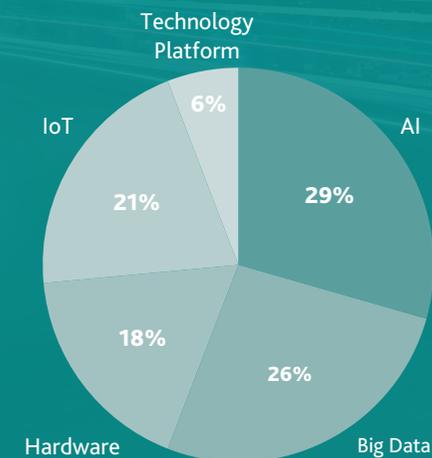
A similar investment is the 2021 transaction by BP Ventures into Grid Edge Ltd, a company that develops an artificial intelligence technology that enables customers to predict, control and optimise a building's energy profile.

On a residential level, investments are focused around software applications that allow home owners to monitor energy usage or remotely amend heating, lighting or electrical usage through mobile applications.



SMART CITIES

SMART CITIES INVESTMENT TRENDS
BY TECHNOLOGY TYPE
2018 TO 2021



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