ENERGY TRANSITION

Unlocking capital for net zero infrastructure

The challenges of aligning policy and private capital for net zero infrastructure investment are examined by *Colin Smith* and *Adrian del Maestro* of PwC.*

The UK government is leading the way on decarbonisation. It was the first major economy to set a legally binding commitment to net zero emissions by 2050 and it has seen CO_2 emissions fall by some 30% over the past decade since 2010. The government has recently unleashed a raft of policymaking to underpin its ambitions from the 10 Point Plan for a Green Industrial Revolution and the Energy White Paper to the more recent North Sea Transition Deal. Investing in infrastructure such as power systems, buildings, industry and transportation will be essential to meet net zero ambitions. However, more needs to be done and quickly.

This decade will be pivotal if the world has any hope of meeting the 1.5°C pathway. So where should capital be deployed in the UK? How much will it cost? Who has the capital to deploy to support this drive for decarbonisation? And what role should the government play in enabling this investment?

As part of a report commissioned by the Global Infrastructure Investor Association (GIIA), PwC explored these questions by interviewing a number of leading infrastructure funds. Some of the key findings that emerged from the interviews are highlighted below.

Infrastructure funding needed now

According to PwC research it is estimated around £40bn/y is required, on average, to be invested in new low carbon (power systems £15bn/y, buildings and industry £18.5bn/y, transport £1.5bn/y) and digital (£6bn/y) infrastructure over the next 10 years. With private capital contributing around £20bn of UK energy and utility infrastructure financing in 2019, this represents a doubling in capital requirements for UK infrastructure investment across energy, water and telecoms.

Each of these segments have their unique nuance. The UK power system has already transformed significantly, delivering a 56% reduction in emissions since 1990. Nevertheless, to fully integrate and manage even greater levels of renewable and flexible energy sources, the power grids (at both transmission and distribution levels) will require further innovation to deliver a smarter grid infrastructure. This will require the largest allocation of infrastructure funding, not all of which can be delivered by a public sector which is facing record levels of borrowing and pressures on the public balance sheet due to the COVID-19 pandemic.

Carbon-intensive industrial processes still present some opportunities for emissions abatement through energy efficiency measures and the use of low carbon heat alternatives, such as hydrogen. In addition, significant investment will be required to capture the CO_2 from these processes. However, the largest investment required will be in the residential sector, to decarbonise the millions of homes reliant on gas-fired heat.

In transport, the roll-out of electric vehicle (EV) charging infrastructure has begun, but is currently limited as is the opportunity for investors due to the high-risk and nascent stage of the technology in the UK. This critical infrastructure will

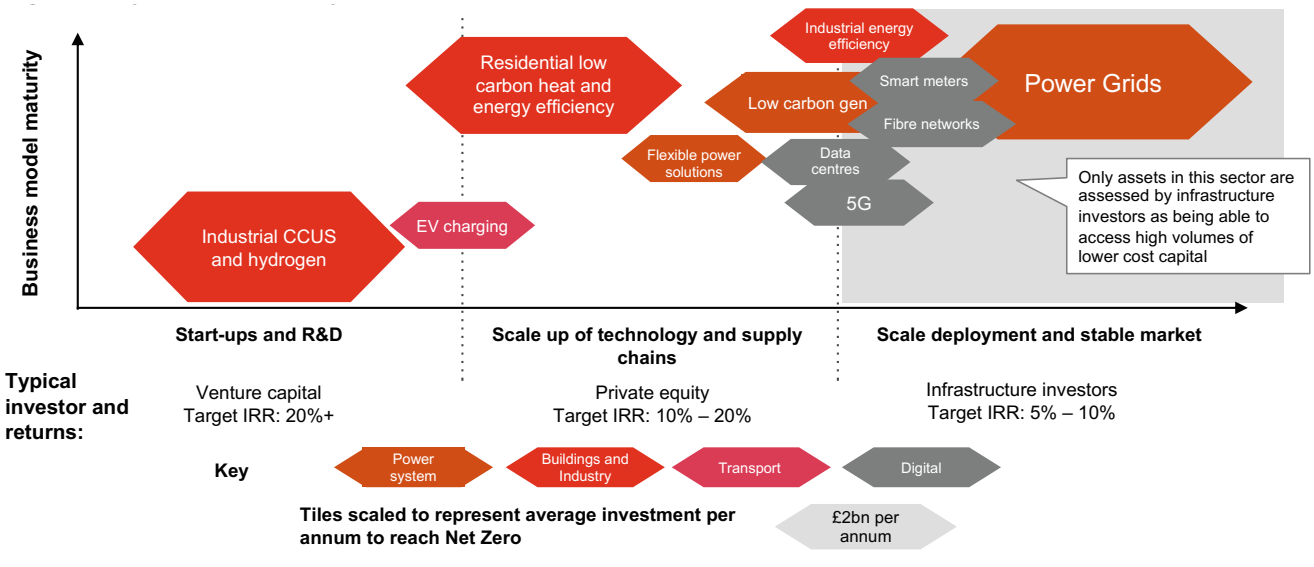

Figure 1: Typical investor by asset class

Source: PwC Strategy& research

require continued investment to ensure national coverage with the capacity for millions of EVs to be using networks by 2030. Other forms of low carbon transport, such as hydrogen for aircraft, shipping, heavy goods vehicles (HGVs) and/or rail are also vital for meeting net zero targets.

Looking at digital and the roll-out of next generation networks, namely 5G, fibre networks and smart meters, this is largely expected to be complete by 2030. Good progress is being made across all asset types, but significant additional investment will be required in the 2020s. However, the regulatory system currently overly favours the incumbent, which obstructs competition in the market for fibre broadband. 5G will require the most funding per annum, on the back of increasing network densification and industry-specific use-cases.

However, the magnitude of these investments is not the only challenge. How these investments will be funded is equally complex.

According to PwC research, only around 50% of the net zero asset investment required will be able to access low-cost capital. This is because technologies like hydrogen, carbon capture, use and storage (CCUS) and EV charging may still be immature and present a combination of high technology, business model or policy risks. As a result, these types of investments will more likely attract venture capital and private equity funding (which have a higher cost of capital). Infrastructure funds have around $200bn in dry powder globally but are accustomed to lower risk and lower returns and are thus reluctant to venture into higher risk investments, as highlighted in **Figure 1**.

Critical source of capital

While our interviews with infrastructure funds confirmed that many businesses are exploring new energy technology investments, there were major concerns around the business models being presented, with funds struggling to see the viability of revenue streams. In the case of EV charging, some respondents encouraged the government to develop a more detailed roadmap to address charging infrastructure needs in cities and rural areas.

We need to recognise that funds are important for infrastructure development. Net zero infrastructure needs to be delivered at scale, quickly and at the lowest cost to maximise the benefit of net zero and to keep the costs to consumers and taxpayers down. Harnessing capital from investment-ready private infrastructure funds and corporates will also avoid further burdens on government finances, which are stretched to record levels following the government response to the coronavirus pandemic.

Indeed, the HMG Infrastructure Finance Review is clear that over the next 10 years, around half of the £600bn infrastructure pipeline is forecast to come from the private sector in electricity, digital, airports, water and waste. In short, there is a deep pool of low cost and private capital already primed to accelerate investment. In this context, government policy can act as a catalyst to enable the deployment of this capital.

Enabling role of government

The UK government is no stranger to successfully attracting private capital and enabling new sectors to thrive. During our interviews, for example, infrastructure funds unanimously recognised the UK government's success in creating an offshore wind industry. It set a clear ambition to become a world leader, defining targets and enabling investment through Contracts for Difference (CfD), which in turn attracted private sector investment. Having started this journey in the early 2000s, the UK saw offshore wind capacity reach about 10 GW in 2020. Now the UK government is seeking to reach 40 GW by 2030. Those interviewed also noted more broadly that the UK was seen as a clear leader with mechanisms like CfD, the Regulated Asset Base (RAB) regime and capacity markets.

Importantly, government support will be required if the necessary net zero investments are to be realised. More specifically, it has a vital role to play in de-risking the roll-out of net zero infrastructure assets to make them more attractive for institutional investors. So, what are the key policy recommendations for government?

- ***Create a detailed net zero infrastructure roadmap for each of the asset classes identified***. This will mean the UK government identifying and publishing a targeted level of investment for each technology, articulating the pace of development required and, where relevant, the location of that development to achieve net zero targets. The recent internal combustion engine (ICE) ban on sales of new diesel and petrol vehicles by 2030 is a good example and a step in the right direction.
- ***Identify and further develop revenue support mechanisms to drive the efficient, timely, scaled roll-out of each net zero asset class***. The UK government should strive to avoid 'crowding out' private finance by focusing on revenue support mechanisms rather than financing support for the roll-out phase. For each technology, it will need to identify, consult and publish proposals on the revenue support mechanisms. Not all asset classes will require support and the government should be transparent about the triggers for removing support mechanisms at the point they are no longer necessary or efficient.
- ***Work with private investors to deliver increased public/private investment in emerging technologies.*** Early-stage infrastructure asset classes which require development phase support through a combination of public and private financing will need to be identified. The announcement in the March 2021 Budget to launch a new National Infrastructure Bank with £22bn of funding is welcomed, particularly given its mandate not to crowd out existing private funding. Nevertheless, the government, in collaboration with the private sector, will need to identify the quantum of funding necessary to deliver the required impact for each targeted technology.

The UK government is clearly setting the pace for decarbonisation. It continues to raise its ambitions as illustrated by the recent 10 Point Plan announcement, Energy White Paper and Industrial Decarbonisation Strategy. However, the scale of transformation required for UK infrastructure is daunting. The key to success will be public and private partnership, with government policy unlocking the deployment of low cost and scalable capital at pace.

*This article is based on a PwC Strategy& report titled *Unlocking capital for net zero infrastructure*.