Vodafone UK's response to National Infrastructure Committee Call for Evidence

Introduction

Vodafone welcomes the opportunity to respond to the National Infrastructure Committee's (NIC) call for evidence.

Vodafone provides mobile, fixed, and wireless services to consumers, households, businesses, and the public sector including Government, the NHS and other critical service providers. High quality digital connectivity brings extensive societal and economic benefits. We believe that mobile infrastructure, technology, and services supported by full fibre are crucial to the UK's success, both now and in the future as our economy and society recovers from the pandemic.

Research commissioned by Vodafone suggests 5G could add more than £150bn to the UK economy by 2030, supporting growth in all nations and regions of the UK.[1] 5G can help grow tech start-ups, public services could be delivered to people in their homes at the touch of a button and industries such as manufacturing could be transformed via 5G Mobile Private Networks (MPNs). The adoption of 5G could add as much as £6.3 billion to the value of the UK manufacturing industry by 2030 for example.[2] Additionally, polling carried out for Vodafone UK shows very strong public support for the Government to increase the use of the latest digital technology in the NHS so that we future proof the UK healthcare sector.[3] In particular, the public believes that the 40 new NHS hospitals promised by the Government by 2030 should be fully equipped with the latest digital technology, including 5G.

To achieve this, the UK needs a regulatory and policy environment which facilitates investment in digital infrastructure. This regulatory and policy environment should recognise the high costs of deploying digital infrastructure in the UK and the competitive environment which, for example, has seen prices come down 22% since 2015 while data usage has gone up by 369% according to Ofcom.[4] Despite increasing sales volumes, industry revenues and Return on Capital Employment (ROCE) have been in decline. Returns over the last 10-15 years have not enabled recovery of investments. To help us deliver our 5G future and drive growth across the UK, ROCE needs to be above 10% in the telecoms sector to support the required investment. We believe that policy and regulatory reform can help to deliver this objective.

5G requires the same focus and support from Government as is given for full fibre and it is vital that there is a policy and regulatory framework that incentivises investment by allowing infrastructure providers to realise a 10% return on investment. The Government should have the ambition to make the UK the best place to invest in 5G in Europe, if not globally. But with the EU committed to spending 20% of its post-Covid recovery funding on digital, we could get left behind. Historically the UK has under-invested, only to have to spend more later to catch up with the rest of the world. It would be better to enable the industry to invest now, using money that would otherwise have been extracted from the sector. The Government needs to implement policy change, incentivise uptake, and expand the market through procurement.

The Government also needs to show leadership through its own procurement. By digitalising its own processes and services, the public sector helps to create the demand required to encourage innovation and the availability of new solutions. In addition, Government will benefit itself from this digitalisation. For example, Government should install smart energy management systems in all

[1] https://newscentre.vodafone.co.uk/app/uploads/2020/06/Vodafone-5G-Report-final.pdf
[2] https://newscentre.vodafone.co.uk/app/uploads/2021/07/5G-Manufacturing-Report-210726-1.pdf
[3] https://newscentre.vodafone.co.uk/app/uploads/2020/11/Vodafone-5G-Health-Report.pdf
[4] Pricing trends for communications services in the UK (ofcom.org.uk)

publicly owned buildings. This would a) reduce emissions of said buildings by up to 15%, and b) expand the market for, and interest in, digital buildings and save money on energy bills.

Government should also set a series of ambitions in different sectors for 5G uptake and use. This will encourage uptake and allow a clearer view of what incentives are needed in each sector and ensure that no sectors are left behind. Government should set ambitious targets for a variety of sectors including manufacturing, health and social care, SMEs, agriculture, transport, and utilities.

We have invested billions of pounds in expanding the coverage and capacity of our network, leading to 4G coverage for over 99% of the population. Alongside this we have invested in new technologies such as 5G, and Open Radio Access Networks (OpenRAN). Digital infrastructure has proved critical during the pandemic and will be crucial as our economy and society recovers. For this reason, we believe that facilitating network investment should be a key test for any future policy and regulatory regime. The Shared Rural Network (SRN) programme is a good example of how the government, through a partnership with industry, can enact policy reform and public funding to deliver the shared goal of improved rural coverage. Vodafone has been an active part of the SRN programme and would support seeing the approach used in SRN mirrored in other areas.

The UK is a tough environment to invest in and any further measures which stretch budgets away from building the network customers want and innovating to improve the quality of the service they receive, should be approached with extreme caution.

We look forward to continuing to work with the NIC and the government on the issues raised in this call for evidence and welcome the opportunity to discuss our response in more detail.

Challenge 1: The digital transformation of infrastructure – the Commission will consider how the digital transformation of infrastructure could deliver higher quality, lower cost, infrastructure services.

Question 6: In which of the Commission's sectors (outside of digital) can digital services and technologies enabled by fixed and wireless communications networks deliver the biggest benefits and how much would this cost?

Covid 19 has accelerated the trend toward digitalisation across all levels of society. As mentioned above, Vodafone research found 5G could be worth £150bn to the UK economy by 2030.[5] This growth – which will be shared by every nation and region of the UK - will be driven by the ever-increasing reliance on wireless technology by businesses and public services of all sizes. The manufacturing sector alone stands to benefit by £6.3bn[6], and public enthusiasm for digitally enabled healthcare is rapidly increasing.[7] In agriculture, 5G has the potential to have a transformative effect on crop yields.

The connectivity solutions that are expected to be transformative going forward are IoT[8] (Internet of Things using both narrowband and 5G), MPNs[9] and MEC[10] (edge computing) supported by full 5G. These technologies enable superfast, near real time transfer of data which will support the big data demands of the new disruptive digital technologies. These new mobile connectivity types will enable

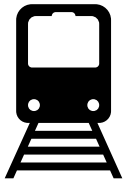
[5] https://newscentre.vodafone.co.uk/app/uploads/2020/06/Vodafone-5G-Report-final.pdf
[6] https://newscentre.vodafone.co.uk/app/uploads/2021/07/5G-Manufacturing-Report-210726-1.pdf
[7] https://newscentre.vodafone.co.uk/app/uploads/2020/11/Vodafone-5G-Health-Report.pdf
[8] What is IOT What is the Internet of Things (IoT)? | Vodafone UK
[9] What is MPN What is Mobile Private Network? (vodafone.com)
[10] What is MEC Living on the edge: What exactly is Multi-access Edge Computing? - Vodafone UK News Centre and Will Multi-access Edge Computing actually MEC a difference to me? (vodafone.com)

the sectors to use new and emerging business enhancing applications to improve all functions of business. The challenge for organisations is understanding the huge range of possibilities that are emerging. This will require investment in time and capital to work with a range of application developers, a network operator and in certain circumstances a cloud provider to combine the opportunities of connectivity networks and new digital tools. The collaboration required by the customer, applications developer, network, and cloud provider represent a new way of working but will enable bespoke solutions addressing the unique requirements and solution of each organisation.

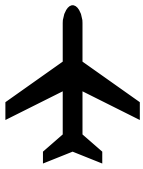
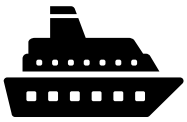
An example of this is Vodafone's partnership with Ford.[11]. As part of the UK Government's 5G Trials and Testbed Programme, Vodafone Group is bringing 5G to Ford's E:PrimeE facility in Essex. The high-speed, low latency 5G MPN enables ultra-secure data capture, real-time independent control, full data sovereignty, analysis, and remote expert support.

For transport and logistics, we have identified a range of operational activities that can be improved or transformed via technology. For example, connectivity can support a range of smart transport hub solutions which can improve utilities management; parking management; enable warehouse automation; autonomous air traffic control; provide in vehicle surveillance; weapon detection and improved safety via access control and security wearables. There are additional options to assist with predictive maintenance; via the use of autonomous vehicles / AGVs; autonomous last mile delivery, fleet management; AR inspection; remote maintenance; monitoring and inspection and connected workers. These solutions can also be adapted for use in the energy and utility sectors.

The types of transformations in the transport and logistics sector include:

Accident Prevention 	Making roads and vehicle transport safer.	Predictive platform recognises potential hazards on the roads, detects obstacles and notifies drivers and road users in real time to prevent accidents.	5G speed and latency enables real time analysis, hazard prediction and notification to drivers.
Enhanced in vehicle surveillance 	Provide real time surveillance and analytics from inside any vehicle.	IoT smart camera connected through 5G, offering real time AI analytics and video stream can provided enhanced passenger safety within any vehicle.	5G high capacity throughput provides for real time video analytics and seamless data transfer.
Smart transport hubs 	Enhancing existing infrastructure within transport hubs to meet the security and passenger needs of a global world.	Surveillance can detect threats and weapons. Enhanced identity management and border control can improve immigration security. Licence plate recognition and	5G high capacity can make disparate security systems work in cohesion and exchange data instantly and allow for real time processing of images and video to identify potential threats.

[11] https://www.vodafone.co.uk/business/5g-for-business/5g-customer-stories/ford-factory

		perimeter control over restricted areas can both enhance security and provide a better passenger experience.	
Autonomous Air traffic towers 	Enhancing air traffic towers operations and efficiency.	AI solutions supported by fully deployed 4K cameras around the air traffic control towers can provide personnel with automated tools that enhance visibility during poor weather conditions, thereby reducing aircraft landing delays and decreasing potential risks.	5G high bandwidth and low latency can ensure that the connection between the different devices and the control panel of the air traffic control tower is seamless and data is transmitted and analysed in real time.
Connected ports 	Improve coordination within the various moving parts of a port.	Connected ports mean a more agile, better functioning terminal. Moving parts speak to each other through sharing information. Connect with ships to align load and unload activity. Track goods as they leave the port and easily transfer to distributors.	5G fast, reliable, and high bandwidth capability is the backbone for real time connected systems.

Covid-19 has shown the growing importance of world-class digital technology in the NHS and social care. Research we commissioned during lockdown highlighted the public's growing demand for remote consultations and other digital solutions.[12] That is why we have partnered with Deloitte to simplify access to connected healthcare solutions for patients and healthcare professionals.[13] Vodafone is already demonstrating the benefits of 5G & IoT in health for example with our successful pilots of 5G-assisted remote surgery and medical training at two hospitals in Wales.[14] We believe similar technologies can support the NHS across the UK.

The UK has ambitious carbon reduction targets to meet. Existing and new technologies will play a vital role in meeting them. Existing IoT technology could reduce CO_2e by up to 17.4 million tonnes annually in the manufacturing, agriculture, and transport sectors alone – as much as the entire North

[12] https://newscentre.vodafone.co.uk/app/uploads/2020/11/Vodafone-5G-Health-Report.pdf
[13] https://newscentre.vodafone.co.uk/news/healthy-alliance-vodafone-deloitte-virtual-healthcare-hub/
[14] https://newscentre.vodafone.co.uk/business/proximie-and-vodafone-in-successful-5g-remotely-assisted-surgery-trials/

East.[15] As an example, IoT has the ability to reduce the emissions of non-domestic buildings by up to 10%, and as much as 15% in the public sector[16], while also reducing energy bills. In addition, Vodafone analysis shows that a fully deployed 5G network is likely to be more energy efficient than earlier generations.

Question 7: What barriers exist that are preventing the widescale adoption and application of new digital services and technologies to deliver better infrastructure services? And how might they be addressed? Your response can cover any number of the Commission's sectors outside digital (energy, water, flood resilience, waste, transport).

Fixed enterprise connectivity solutions have been available for years. Connectivity has become progressively lower cost providing great value for data connectivity as a result of a highly competitive communications markets. Initially to take up the new connectivity solutions provided from the evolution from TDM to Ethernet organisations needed to replace/adapt their own on-site equipment incurring change costs that represented a barrier to change. Historically the sectors under discussion have not been first movers in the transition to new technologies potentially due to the costs of updating legacy systems. In the main the organisations within the sectors of interest to the Commission will now have transitioned to Ethernet connectivity. In our view they are unlikely to require many if any FTTP connections for connectivity to and between sites.

The mobile industry in the UK needs help to deliver on the UK Government 5G leadership ambitions. Just as the Government and Ofcom have championed the fixed industry by introducing pro-investment reforms and promising to invest billions of public funds, we now need similar support for mobile infrastructure.

The Government should adopt the ambition to make the UK the best place to invest in 5G in Europe if not globally and ensure that policy and regulatory reform delivers this objective with ROCE above 10% set at the benchmark ambition. This can only be delivered by a fundamental review of the current regulatory and policy framework to create the right signals for investment. There is an opportunity post-Covid and post-Brexit to ensure that industry investment is a key strategic goal.

The Government needs to create a pro-investment policy framework, including:

- Continued barrier busting, such as reform of the ECC, planning policy and business rates – including providing a rates reduction for mobile, similar to that for new fibre. Government should deliver on these issues as quickly as possible.
- Incentives and investment in the uptake of 5G technology by the public sector to create investment certainty for industry.
- Government leadership through the procurement of digital products, for example a clear ambition for 5G leadership in the NHS.
- Vodafone is leading the way on OpenRAN technology, committing to 2,500 sites by 2027, and shares the Government's ambitions for the UK's telecoms ecosystem to be more diversified. OpenRAN is still a new technology with high roll-out costs. Industry needs support from Government to make OpenRAN more cost-effective and incentivise timely roll-out. This should include business rates relief and Government should focus a substantial amount of the £250 million pledged for diversification to projects that incentivise MNOs to deploy OpenRAN, including going further than their current OpenRAN plans.
- Trade deals are an opportunity to create the right environment to support industry investment in the UK and abroad. This should be a strategic goal in Government's current and upcoming trade

[15] https://newscentre.vodafone.co.uk/app/uploads/2021/09/Connecting-Net-Zero-090921-Pages-1.pdf
[16] https://newscentre.vodafone.co.uk/app/uploads/2020/11/Vodafone-Digital-Buildings-Report-201123-Pages.pdf

negotiations. This could include agrees to work together on OpenRAN development internationally.

- A Government strategy including financial support to vulnerable customers who don't have access to the digital connectivity, devices or skills they need including support for upgrading those still using 3G devices as the industry moves to sunset this older technology.
- Government should invest in incentivising the uptake of cybersecurity products by SMEs to ensure the UK's supply chains are fully secure. In addition, new separate legislation covering consumer product security and network security must focus on raising standards from the bottom-up, rather than adding regulatory requirements where controls are already in place.
- Government and Ofcom should ensure that the allocation of new mobile spectrum promotes and protects sustainable competition and investment. Ofcom should re-evaluate the role of Annual Licence Fees to avoid them displacing investment. It should recognise that the optimal use of spectrum would be better supported by removing barriers to mobile network operators trading or leasing unused or underused spectrum. If licence fees persist, Government must consider the scope to reinvest them in new 5G infrastructure. Historically the UK has under-invested, only to have to spend more later to catch up with the rest of the world. It would be better to enable the industry to invest now, using money that would otherwise have been extracted from the sector. A level playing field with mobile operations is required to ensure that industrial spectrum is not licensed at lower prices than those paid by MNOs. This undercuts operators and threatens national 5G rollout.

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