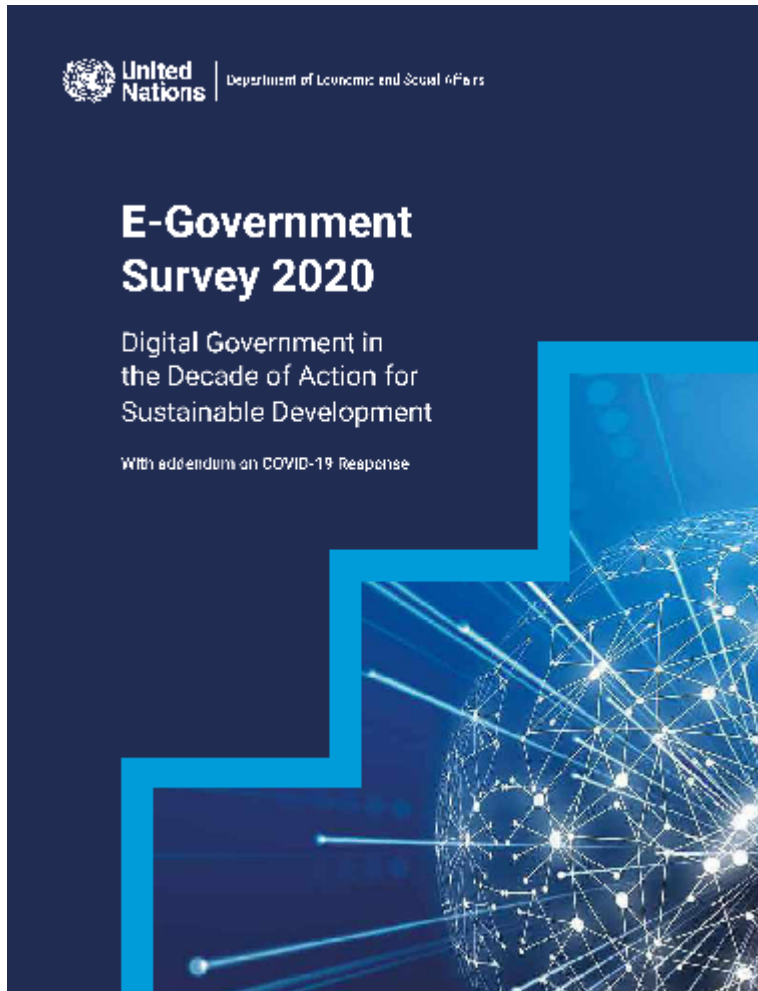


# World e-government coverage remains limited



World e-government coverage remains limited according to the 2020 edition of the [United Nations E-Government Survey](#) which was released on 10 July 2020 (1). This is in spite of most countries and municipalities currently pursuing digital government strategies, many with innovative initiatives.

The 2020 ranking of the 193 UN Member States in terms of digital government – capturing the scope and quality of online services, status of telecommunication infrastructure and existing human capacity – is led by Denmark, the Republic of

Korea, and Estonia, followed by Finland, Australia, Sweden, the United Kingdom, New Zealand, the United States of America, the Netherlands, Singapore, Iceland, Norway and Japan.

Among the least developed countries, Bhutan, Bangladesh and Cambodia have become leaders in digital government development, advancing from the middle to the high E-Government Development Index (EGDI) group in 2020. Mauritius, the Seychelles, and South Africa are leading the e-government ranking in Africa. Overall, 65 per cent of Member States are at the high or very high EGDI level.

In responding to the health emergency, governments have put in place new tools, such as dedicated COVID-19 information portals, hackathons, e-services for supply of medical goods, virtual medical appointments, self-diagnosis apps and e-permits for curfews. Many countries were quick to deploy tracking and tracing apps, and apps for working and learning from home.

Innovative digital government responses to COVID-19 include online dashboards in Canada and Australia to share information and track emergency responses. In China, chatbots are used to assess patients' risk of being infected. A community engagement app in Estonia allowed local governments to directly interact with their constituents, including through sharing COVID-19 information, posting photos and videos and even organizing virtual events. In Croatia, a "virtual doctor" is powered by artificial intelligence and developed by technology firms in cooperation with epidemiologists. In London, the use of cameras, sensors and AI algorithms, normally intended to control traffic, now measures distance between pedestrians to control social distance.

# **E-government progress still hindered by digital divide**

As a development tool, the E-Government Survey examines countries' strengths, challenges and opportunities, and informs policies and strategies. The 2020 edition found that progress has been made across all regions, even in the least developed countries. Over 22 per cent of countries were promoted to higher levels of e-government development.

Yet, despite the gains and major investments in e-government by many countries, the digital divide persists. Seven out of eight countries with low scores are in Africa and belong to the least developed countries group. The regional average index scores for countries in Africa are almost one third lower (at 0.3914) than the world average EGDI of 0.60.

Alongside these trends, the COVID-19 pandemic has now not only reinvigorated the role of digital government in its conventional delivery of public services and in ensuring business continuity, it has also brought about innovative ways in managing the crisis, such as in contact tracing, e-health, online learning, and remote working.

## **About the UN E-Government Survey**

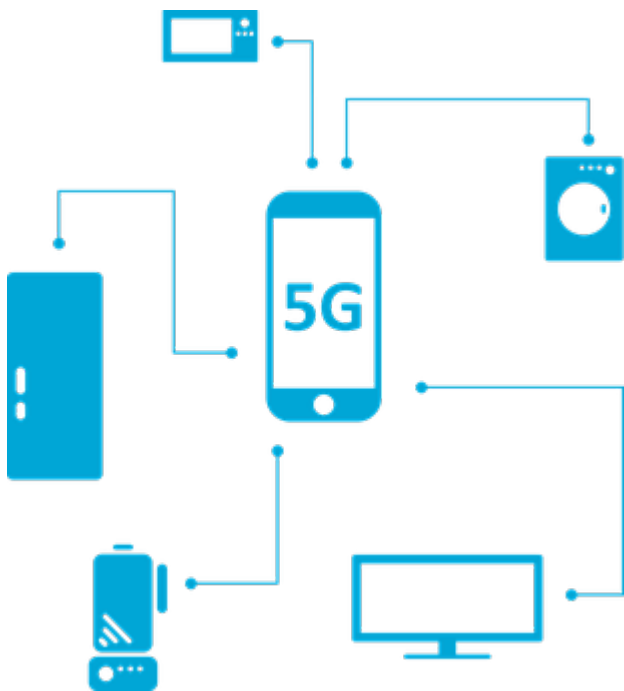
The UN E-Government Survey, published by the UN Department of Economic and Social Affairs (UN DESA), is prepared over a two-year period following an established methodology. It looks at how digital government can facilitate integrated policies and

services across 193 UN Member States. The Survey supports countries' efforts to provide effective, accountable and inclusive digital services to all and to bridge the digital divide and leave no one behind.

*(1) This blog is an amended version of the accompanying [UN press release](#)*

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# Progress with 5G Digital Coverage in the UK & Developing World Implications



Smartphone Technique

*by David Fellows [1]*

The 5G mobile communication offers the prospect of high bandwidth reception for rapid video downloads, gaming, instant replay coverage at major sporting events and simultaneous service to heavy concentrations of digital devices. It is a highly topical subject across the world including developing countries.

This article tempers expectations of widespread 5G coverage in developed countries on grounds of financial viability and suggests that developing countries are better served by centring digital infrastructure investment on broadband cable and lower frequency 4G mobile services.

## Digital Communication costs and coverage

I start by introducing a sense of realism about internet speeds and coverage by looking at actual practice in the UK which has reasonably average internet services for a developed country.

**Table 1: UK internet speeds**

User	Mobile	Fixed Line	Comments
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<b>Personal devices</b>	4G (15/30 Mbps) 5G (2/100+Mbps)	Approx 30 Mbps (usually advertised as 50)	4G reaches 75% to 90% of the population depending on provider. 5G has hardly started(see discussion below). All-fibre cabling of 120 Mbps will become common in the next decade.
<b>Small/ Medium businesses</b>	—	100Mbps/ 1000Mbps	In this group call centres tend to need the higher capacity
<b>Major businesses</b>	—	1000Mbps+	

Note: 4G speed depends on provider and time of day [2], the better the infrastructure provision the better the service. 5G is said to relieve congestion although this too is infrastructure-dependent (see Table 3). For some time to come, even in developed countries, 4G will outstrip 5G coverage by some considerable margin.

In 2016 Universities of Cambridge & Madrid undertook a study [3] into the viability of introducing 5G mobile communication in the UK. Tables 2 & 3 summarise some conclusions from the study.

**Table 2: UK Demographic Profile (total population 63 million)**

<b>Settlement Type</b>	<b>Proportion of Population (%)</b>	<b>Approximate Distribution of Total 5G Cost (%)</b>
<b>Urban</b>	8	2
<b>Suburban</b>	62	19
<b>Rural</b>	30	79

Notes: (i) total cost adds capex & opex (see Table 3 below);  
(ii) the study anticipates that the roll out of 5G will take place over the next decade.

**Table 3: 5G Options for UK (selected from UC&M study)**

<b>Aspect</b>	<b>Option S2 £bn</b>	<b>Option S5 £bn</b>	<b>Option S8 £bn</b>
<b>Features</b>	One 50Mbps network shared by 4 operators	Using competitive 50Mbps networks except for rural areas where a shared 50Mbps rural network applies	Using two 50Mbps networks shared by 4 operators except for rural areas where a shared 10Mbps network applies
<b>Capital Cost</b>	22	24	15

<b>Revenue Cost (10 yr NPV)</b>	13	17	10
<b>Study Conclusion</b>	Not viable; Scotland is dramatically more expensiveexcept for S8	Not viable; Scotland is dramatically more expensiveexcept for S8	Not viable; the lower rural bandwidth avoids the cost rising exponentially to cover the final 10% of population

Notes: (i) Most 5G signals are highly directional, require a direct line-of-sight between the antenna and the device receiving the signal and can be absorbed by humidity, rain, and physical object including trees, therefore they don't travel as far as the more robust, omnidirectional 4G signals (as a result they require very high aerial density and present problems for some applications under discussion such as driverless vehicles) [4]; (ii) 5G networks can make use of existing 4G aerial stock and cable support but the higher aerial density makes the transition from 4G very expensive; (iii) the cost of covering the most expensive 10% of population at 50Mbps is equivalent to that for the first 90%; (iv) the study assessed the total cost (capex & opex for 10years) of 5G coverage for the UK's rail and motorway networks would be £0.922bn & £0.253bn respectively.

Part way through 2019 several UK mobile service providers have commenced or announced their intention to provide 5G coverage. Some have published city roll-out programmes although details



of schedules, geographical boundaries and bandwidth are sketchy at present. None of this equates to a city-wide coverage commitment let alone national coverage. Unsurprisingly the focus appears to be areas of potential high traffic where improved service reliability will be the driving advantage. Available bandwidth could be as low as 2Mbps for entry level packages.

5G services may be offered for pop concerts, major sporting events, shopping malls, some public buildings and crowded city centres. Some of the infrastructure could be provided by venue owners or organisers as Wi-Fi is at present.

The European Union produced a policy document '5G for Europe: An Action Plan' in September 2016 that seeks to drive progress towards realising substantial financial benefits from the technology. The Action Plan, quoted in a recent review of the Commission's achievements, seeks to harmonise European preparations giving priority to infrastructure coverage of major urban areas and transport routes by 2025.

## **Implications for Developing Countries**

1. Given the financial viability challenges in developed countries such as the UK it is clear that rolling out 5G services in developing countries will be hampered to an even greater extent by the financial returns required to support infrastructure provision.
2. 4G coverage is indisputably more readily viable than 5G and is a more obvious objective for developing countries for the foreseeable future. Governments need to consider their bandwidth licencing programmes accordingly.

3. Conventional public Wi-Fi systems can offer mobile text communication to supplement overloading of 3G and 4G reception in public areas with high demand for digital services.
4. In the author's opinion 4G mobile coverage and fibre-optic cabling of CBD areas for super high bandwidth communication offer the basis for viable digital communication strategies in developing countries.

## General conclusions

1. At the present time commercial ambitions for 5G in the UK appear limited. The financial viability of the aerial installation costs on a large scale compared to 4G is a considerable constraint. For some time to come 5G may be largely confined to high income high demand locations and some venues where owners provide the necessary infrastructure as an added attraction. It is a solution waiting for a killer application or acceptance as a social status imperative. The current service and economic priority for mobile infrastructure must be the completion of 4G coverage. This reasoning would seem applicable throughout the world although it is reported [6] that Malaysia intends to adopt 5G fully by 2023. Malaysia is undoubtedly a leader in [digital technology](#) but this claim is something that requires clarification.
2. It is generally presumed that the long-term intention of 5G service providers is transmission speeds of 50+Mbps but at current revenue levels this form of coverage is deemed to be unviable in UK rural areas. The UC&M study suggests that shared rural networks operating at 10Mbps would reduce cost significantly and a broadly similar cost reduction could be achieved by omitting 10% of the population (equivalent to 33% of rural population) from 5G coverage. Even these two reduced service options

would still appear unviable assuming current service revenues.

3. The UC&M study hints that technologies under development may deliver significant cost savings for 5G provision although details of how this might happen are not well understood at present.
4. 5G viability in the UK and other developed countries would therefore seem to depend on some or all of: (i) restricted service provision targeting areas of high demand; (ii) technological advances bringing cost-savings; (iii) user willingness to pay higher fee rates for 5G than its predecessor services; and (iv) modest, possibly shared, bandwidth in rural areas.
5. Given these 5G service limitations, upgrading to 5G-enabled smartphones may be a nuanced decision for many users for some considerable time. Roll-out costs and user hesitancy will, in turn, impact commercial investment.

## **In My Opinion**

1. Countries have much more to gain from improving the reach of 4G mobile communication than encouraging service provider interest in 5G roll-out which will be a niche offering for some years to come. Developing countries should not feel that they must jump now or miss the bus.
2. 5G mobile communication is not a natural alternative to fixed cable support for business purposes. In this market fibre optic broadband cable services offer the ideal of high bandwidth, service reliability and relatively low cost.

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[1] David Fellows is a specialist in public financial management and digital government reform and is a director of PFMConnect. He is a recipient of the Swedish Prize for Democratic Digital Service Delivery.

[2] See: <https://www.ispreview.co.uk/index.php/2019/02/countries-ranked-by-4g-download-speed-at-different-times-of-day.html>

[3] See: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/577965/exploring\\_the\\_cost\\_coverage\\_and\\_rollout\\_implications\\_of\\_5G\\_in\\_britain\\_-\\_oughton\\_and\\_frias\\_report\\_for\\_the\\_nic.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/577965/exploring_the_cost_coverage_and_rollout_implications_of_5G_in_britain_-_oughton_and_frias_report_for_the_nic.pdf)

[4] See: [Lifewire https://www.lifewire.com/5g-vs-4g-4156322](https://www.lifewire.com/5g-vs-4g-4156322)

[5] See: <https://5g.co.uk/news/ee-5g-launch-plans-roadmap/4900/>

[6] See: OpenGov Asia (10<sup>th</sup> September 2019): <https://www.opengovasia.com/malaysia-will-fully-adopt-5g-by-2023/>

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# Public private partnerships Board

Explore the varied issues associated with public private partnerships and the links arising between this service delivery mechanism and public financial management on our Pinterest “Public Private Partnerships” Board.

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## Asian Development Bank's PPP Offering



## New fund to assist PPP preparation

On 25 January 2016 the ADB [launched](#) its fund to finance preparatory costs for creating partnerships with private sector counterparts for the development of essential infrastructure projects. Such arrangements are seen as

attracting private sector expertise and financial backing to unlock national economic potential and provide much needed services.

## **Past experience highlights the need for a PPP preparation funding mechanism**

Public private partnerships (PPPs) have had a chequered history in the west over the past two decades. Agreements are highly complex and extend over long periods during which public sector needs and priorities can change leaving heavy financial penalties for premature termination or variation to initial service concepts. The sharing of risk is part of the case for governments entering joint ventures of this kind but the private sector has proved highly adept at distancing itself from risk when contracts are written.

Clearly the right projects need to be selected and contracts written with foresight, fairness and flexibility if cash strapped nations are to avoid perfect solutions turning into perfect nightmares. This new investment fund is clearly designed to support sound projects that are captured in agreements that provide a fair deal for all.

See PFMConnect's new [PPP board](#) posted yesterday on Pinterest. It references numerous PPP projects and some cautionary expert comment.