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Executive summary

Broadband has been experiencing a rapid and steady growth around the globe in the past two decades. This is evidenced by the development of broadband infrastructure, improved internet penetration, expanding bandwidth and fast speed of connection, and more. With the rapid growth of broadband infrastructure, broadband has become a necessity in modern society, and to some extent, internet access is even considered as a fundamental right of every human being, given its enormous potential to promote sustainable development of human society. Among them, the key broadband infrastructure, including full-fiber and 4G/5G networks, will be the indispensable cornerstone for promoting the digital economy forward.

Huawei's Cases

With the rapid growth, broadband has become a necessity in modern society. Given the prevalence of connectivity, to some extent, internet access is even considered as a fundamental right of every human being. Broadband not only forms the backbone of today's digital economy, but also has enormous potential to promote sustainable development of human society, and improve people's lives.

However, economic integration and use of Broadband vary across countries and regions. The "Digital Divide" describes the gaps between these areas in terms of infrastructure, access, and utilization. The advantages and disadvantages created by this divide only deepen over time because of the Matthew effect, exacerbating inequality and making it even more difficult for stragglers to compete with those at the head of the pack.

During the COVID-19 crisis, the importance of broadband networks (both mobile and fixed) cannot be ignored. Although viruses force us to keep our distance from society, it is the mobile and fixed broadband networks that allow us to maintain a safe distance as far as possible.

Affordable access to the internet is one of Sustainable Development Goals. However, in areas with low population density and low ARPU, there is no convincing business case. Such is the case in the Philippines. With just over 73 percent of its 108 million people connected, the archipelago's natural geography has created a barrier to connectivity for nearly a third of its population. The Philippines is made up of 7,300 islands, so rolling out fiber on every island is going to be very difficult.

With fixed wireless access (FWA), the Philippine operator Globe Telecom is starting to make a dent in the digital divide. FWA enables home broadband access through wireless network technology. Simply, it allows for Internet access by just using wireless routers, known as customer-premises equipment (CPE) at users' homes. Globe Telecom began rolling out FWA in 2014 to support its "AtHome" wireless broadband service. With FWA, Globe Telecom provides over 1.6 million home broadband connections for both Prepaid and Postpaid plans, contributing about 35% of Philippine home broadband connections and increasing Philippine home broadband penetration ratio from 12% to 19% since the launch of this service. In 2019 June, Globe were the first operator in South East Asia to have launched 5G FWA.

Broadband also plays a pivotal role in driving the digital economy forward. In UK, Secretary of State for DCMS announced in March 2020 that the government would, parliamentary time permitting, amend the Building Regulations to guarantee that all new homes have the right infrastructure to support gigabit broadband. Housing developers would have to work with operators to install connections of at least 1Gbit/s in new-build homes, up to a cost cap of GBP2,000 per dwelling. This is a significant step in the Prime Minister's plan to level up the UK and accelerate the nationwide rollout of world-class broadband with the fastest speeds.

In China, the broadband strategy lays a solid foundation for the development of Taobao Villages. All Taobao Villages are covered by fixed broadband and mobile broadband networks. More than 50% of Taobao Village residents use the Internet, mostly through smartphones. Highly educated people are more likely to use the Internet. The average household income in a Taobao Village (4,950 USD per year in 2017) is 3 times that of non-Taobao Villages (1,900 USD per year in 2017). In a Taobao Village, e-commerce households are richer than other households. The main source of income for e-commerce households in Taobao Villages is operating income, while the main source of income for other households is salary. The per

capita income of e-commerce households in Taobao Villages is 7,760 USD, 80% higher than that of other households. 3/4 of e-commerce households own cars, while only 1/3 of the other households own cars. In 2018, Taobao Villages had created 1.8 million jobs, such as logistics and e-shop raw material suppliers, middlemen, and e-shop staff.

As COVID-19 sweeps across the globe, society will continue to separate down to its most basic units, the family or the home. People will become increasingly physically isolated, only staying connected via wireless and wireline technologies.

In Turkey, internet traffic during the day increased by approximately 50 percent and evening traffic by 35 percent amid the COVID-19 pandemic. Uninterrupted communication is extremely important in crisis management. As a state owned operator, Türk Telekom should support critical initiatives launched by the Turkish Government to help the entire country to fight the pandemic while minimizing possible damages.

It's essential to keeping the entire telecommunication system running smoothly. Türk Telekom deployed 100,000 internet connections within 10 days, when the confirmed COVID-19 cases kept increasing in March 2020. Furthermore, to support increasing demand for distance learning and work from home during the lock-down, Türk Telekom also did the best to double the upload speeds of fixed broadband connectivity, ensuring quality of online services. As a leading fixed broadband service provider, Türk Telekom keeps enlarging broadband coverage while improving the quality of copper and optical fiber networks. Nowadays, roughly 80 percent of fiber infrastructure in Turkey is deployed by Türk Telekom, and 3.2 million new households were covered with fiber access in 2019, which has increased 10 times over the last 10 years. The far-sighted and deterministic strategy of ultrafast broadband development enables ubiquitous availability and elasticity of networking and brings huge benefits to citizens amid COVID-19.

FWA is also one of key initiatives to fight COVID-19. China Telecom was responsible for deploying a 5G network for the Leishenshan field hospital in Wuhan. This was done within 24 hours and provided high speeds at 200 Mbps, as well as stable Wi-Fi coverage for 25,000 users involved in telemedicine, health records, monitoring and related fields.

Besides, based on broadband infrastructure like full-fiber network and 5G, the integrated platforms of cloud and AI also played a key role in international efforts against the COVID-19 pandemic. HUAWEI CLOUD launched the EIHealth platform with AI technology, mainly including three aspects:
- Ultra-large-scale computer-aided drug screening service: Homologous protein structure modeling, molecular dynamics simulation, and computer-

aided molecular docking and screening of hundreds of millions of small molecule compounds for all target proteins of the new coronavirus (SARS-CoV-2) to identify possible antiviral drugs;

- AI-assisted CT image diagnosis: Use techniques of computer-vision , medical image analysis, and other AI technologies to provide fully automated, fast, and accurate CTV diagnosis of COVID-19 for imaging and clinicians;

- COVID-19 knowledge map: Cover the basic attributes of COVID-19‚ combing viruses, genes, proteins, drugs and other content, provide researchers with more powerful tools for virus research and antiviral drug research and development.

Proposal to policy makers:

- Position broadband and inclusive digital services as a basic necessity like water and electricity.
- Make spectrum neutrality (mobile network) and fiber pre-deployment in new buildings (fixed network) part of key policies.
- Encourage regulators to collaborate with NGOs, tax administration departments, internet content providers to make universal digital service plan in line with national development strategies.
- Facilitate infrastructure construction: Open and leverage the existing public infrastructure, and/or binding different types of new infrastructure for mobile network and full-fiber network.
- Right of Way: Proper and simplified Right of Way rules can expedite the deployment of underground (optical fiber) and over ground (mobile towers) ICT infrastructure
- Funding: Governments or institutions provide subsidies for ubiquitous coverage.
- Terminal: Encourage more 4G low-price terminals through tax reductions, discounts or subsidies for low-income people, to provide affordable universal services.
- Innovative technology for ICT infrastructure: Become technology neutral and actively adopt innovative technologies (e.g. FWA) to expand broadband coverage or rural coverage in a more cost-effective way
- Content: Make digital skills part of basic education, build local content platforms for local communities. Compelling content can bring more people online to take part in digital economy.