5G could deliver an estimated 16% of Canada's GDP growth by 2036 and supports growth in high-paying digital economy jobs.

5G Impact on Canada's Economy

Launched in early-adopter markets in 2018, 5G technology will provide ten times or greater performance in data speed, latency, traffic capacity and other characteristics compared to 4G. 5G fixed wireless access technology, a cost-effective alternative to last-mile fibre connections, will provide benefits to both urban and remote locations. In this way, 5G substantially bridges digital divides between urban and remote communities.

5G enables technologies such as autonomous vehicles, precision agriculture, remote-operated robots, virtual and augmented reality, and artificial intelligence to be deployed safely and effectively in both urban and remote settings. Whereas 4G enhanced the consumer experience and brought benefits mostly to industries that served applications to smartphone devices, 5G promises benefits to all industries.

5G will create economic growth and high-paying jobs by increasing productivity, or the efficiency with which labour, capital and other inputs are used to generate economic output. 5G drives productivity growth by making it easier and cheaper to use technologies that run on mobile and fixed networks. For example, 5G is a necessary factor to make it economical to build self-driving vehicle systems or deploy remote-operated robots for mineral extraction.

Productivity matters because it is by far the most significant driver of Canada's standard of living as measured by growth in GDP per capita, which itself is strongly correlated with wage growth over the long run. In a 2021 forecast, the OECD placed Canada last among advanced economies in GDP per capita growth between 2020 and 2030. Finding ways to increase productivity is critical to correcting this course.

5G is a central solution to Canada's long-standing productivity challenge. Based on a review of numerous studies that estimate the potential economic benefits of 5G for Canada, as well as independent modeling undertaken for this report, **5G and related technologies could add between $100 billion and $120 billion to Canada's GDP by 2036, and account for approximately 4% of Canada's total GDP by 2036.**

5G is associated with high-paying jobs. **Average earnings in the wireless sector are almost 25% higher than in the wider business sector.** 5G also plays a fundamental role in the wider digital economy. Employment in the digital economy is forecast to grow faster than in the overall business sector between 2022 and 2025 and account for 11% of total business sector employment by 2025.

Policy Recommendations

Following the lead of the United States, South Korea and other highly innovative economies, the Government of Canada should make the deployment and adoption of 5G and 5G-enabled

technologies a core component of its economic growth, innovation and science and technology strategies.

To ensure Canadians realize the full benefits of 5G, Canada urgently needs a **national digital infrastructure strategy and a three-year roadmap** to accelerate 5G deployment and adoption. The federal government should lead the way with the support of other levels of government, mobile network operators, industry participants, and technology providers.

One focus area of the strategy and roadmap should be **timely access to 5G relevant spectrum** across all bands, including the expedited clearing/repurposing of bands that are currently in use by other services. The government should release spectrum that enables the majority of high value use cases and bring benefits to all sectors and to rural and other underserved communities. Further, government should end the use of set-asides in spectrum auctions, which have not been successful in delivering rural and Indigenous connectivity. Instead, government should prioritize rural investment, using rural deployment conditions such as strong build-out requirements for remote areas and coverage obligations for households with no internet access, and require companies to deploy spectrum within three years of purchase rather than treat it as a speculative investment.

A second focus area should be on **supporting the adoption of 5G-enabled services**. Canada has historically lagged its peers in the adoption of information and communications technologies (ICT). Multiple factors will impact the adoption of 5G and will need attention as part of the roadmap. For example, there will be a need to focus on recruitment, training and retention of workers required for the rollout of 5G. Canada also needs workers who can design, build and implement applications that run on 5G. Retraining workers who are displaced by 5G-enabled technologies such as automation or remote systems operations, or whose jobs have changed and require new “digital” skills, will also be critical. In addition, there will be a need to support collaborations between government, mobile network operators, other industry sectors and research institutions to build and test new technologies using 5G and to support the diffusion of these technologies across the economy. An example is the recent $400 million investment by the governments of Canada, Ontario and Quebec to create a 5G test bed, ENCQOR, which will enable hundreds of smaller developers of 5G technology and applications to build and test their 5G-enabled technologies.

Sources used to inform the figures in this brief are:

- Statistics Canada

Deetken Insight was commissioned by TELUS to complete a comprehensive review of published research about 5G and its potential socio-economic impacts, with a particular focus on Canada. This brief is based on that report. Access the full report including a bibliography here: https://deetken.com/socio-economic-impacts-of-5g/. We provide no opinion, attestation, or

other form of assurance with respect to the completeness, accuracy, fair presentation, and findings from research of others that are presented in the report.

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