

Broadband for Digital Transformation

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- Digital Transformation
- Importance of Broadband for Digital Transformation
- Recommendations



WHY WE CARE FOR BROADBAND?

Goal

Widespread, affordable, high-quality broadband transforms countries, individuals lives, and promotes the beneficial use of technology

Policies

- Robust content and app ecosystems
- Facilities-based competition
- Targeted, efficient subsidies in high cost areas

Interests align well with consumers



DIGITAL TRANSFORMATION (DIGITAL ECONOMY)

- High-speed and high-quality Broadband
- Digitization (both government and private sector)
- Digital Skills (ICT in Education)



POLICY CHECKLIST FOR INVESTMENT IN THE DIGITAL ECONOMY

Strategic investment policy considerations		 Review competitive advantages for the attraction of investment from digital MNEs, assess potential challenges and risks, and identify strategic opportunities (e.g. niche industries, digital content or services industries, app development). Review and prepare for changing investment determinants and investor profiles in other industries as they adopt digital technologies in global supply chains. Formulate a strategic response to ensure investment policy remains geared towards sustainable development and inclusive growth.
Embedding digital development in investment policies	National	 Assess the extent to which existing investment regulations are affected by digital operating models. Modernize investment regulations where needed, balancing investment promotion and facilitation with measures to mitigate risks associated with digital operating models. Review the coverage and treatment of new digital industries in IIAs. Take into account the digital investment dimension of evolving international rules, such as those on e-commerce and services trade.
Embedding Investment policy in digital development strategies	Invest in digital Infrastructure Invest in digital firms	 Conduct a detailed assessment of infrastructure investment needs in digital development strategies, including broadband coverage and internet infrastructure (e.g. data centres, IXPs). Build the right conditions for private investment in digital infrastructure, including to promote public service and universal connectivity objectives. Engage in regional cooperation, promoting multi-country infrastructure investments for scale. Ensure that content rules and regulations remain conducive to investment in the digital sector, while safeguarding public policy objectives. Support local enterprise development in the digital economy, through clusters and hubs, facilitation of innovative financing approaches, and conducive regulations in non-digital industries. Promote investments by firms across all sectors in ICTs and in related skills, and access to low cost digital services (e.g. cloud services). Build and improve e-government services to lead the way, to create demand for local developers, and to hubs a built of digital built of the private services to lead the way.
Policy Interactions and Institutional synergies		 Manage interactions with related policy areas to address public concerns, through up-to-date regulations (e.g. data security, privacy, competition, consumer protection, national security, safeguarding of cultural values). Manage interactions with sectoral and social policies to mitigate potential negative social and economic impacts of digital transformation (e.g. job losses in traditional sectors). Ensure an effective whole-of-government approach, establishing coordination processes and communication channels across institutions, and involving investment authorities and IPAs.



EU - DIGITAL SINGLE MARKET STRATEGY

Aims to open up digital opportunities for people and business and enhance Europe's position as a world leader in the digital economy.

- Improving connectivity and access
- Investing on network and technologies
- Boosting European digital industry
- Building a European data economy
- Advancing in digital science and infrastructures
- Supporting media and digital culture
- Creating a digital society
- Strengthening trust and security



CONNECTIVITY FOR A EUROPEAN GIGABIT SOCIETY

- Common EU broadband targets for 2025
- A new rule book for providers of internet access and communication services the European Electronic Communications Code
- A plan to foster European industrial leadership in 5th generation (5G) wireless technology
- A voucher scheme for public authorities who want to offer free Wi-Fi access to their citizens (WiFi4EU)



DIGITAL INDIA PROGRAMME

A flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy.

PROGRAMME PILLARS

- Broadband Highways
- Universal Access to Mobile Connectivity
- Public Internet Access Programme
- E-governance Reforming government through technology
- EKRANTI Electronic Delivery of Services
- Information for All
- Electronic Manufacturing
- IT for Jobs
- Early Harvest Programmes



ESTONIA: DIGITAL AGENDA 2020

Goal: to increase the economic competitiveness, the well-being of people and the efficiency of public administration.

- Next generation broadband network Targets: Improving Internet Access
 - 30 Mbit/s internet for all residents of Estonia
 - 100 Mbit/s or faster internet subscriptions for 60%.
 - Development of Common service space for the public and the private sector (e-Estonia)
- Better ICT Skills
 - -Basic ICT skills in schools, in particular in basic schools, will be enhanced.
 - -There are also other action lines.
- Smarter Governance and Public Administration
- Greater awareness of e-Estonia in the world



E-ESTONIA: NAMED 'THE MOST ADVANCED DIGITAL SOCIETY IN THE WORLD' BY WIRED

Success Stories

- e-Governance: 1997
- e-Tax: 2000
- X-Road:2001
- Digital ID: 2001
- i-Voting:2005
- Public safety: 2007
- Blockchain: 2008
- e-Health:2008
- e-residency:2014

Ambitious Future

- Digital Transformation in Education
- New Digital Nation
- Cyber security
- Data Embassy
- Intelligent Transportation
- Reporting 3.0
- Cross-border data exchange
- Healthcare 4.0



BROADBAND IMPACT ON GDP GROWTH

World Bank Study

Broadband Impact on GDP growth (1980-2002 for 66 high income countries) -10% increase in broadband penetration yielded an additional 1.21 percentage points of GDP growth

Low & Middle income economies (1980-2002 for the remaining 120 low and middle income countries)

-10 % increase in broadband penetration yielded an additional 1.38 in GDP growth



DIGITAL TRANSFORMATION IMPACT ON GROWTH

- The combined value to society and industry of digital transformation across industries could be greater than \$100 trillion over the next 10 years.
- "Combinatorial" effects of digital technologies mobile, cloud, artificial intelligence, sensors and analytics among others are accelerating progress exponentially.
- Full potential will not be achieved without collaboration between business, policymakers and NGOs



NEXT GENERATION BROADBAND NETWORKS





5G INCORPORATES COMPUTING AND CLOUD TECHNOLOGIES TO MAKE Everything smart and connected



Intel Powers 5G End-to-End



5G Plans

• European Union: 5G Action Plan: http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=17131

- Timely deployment of 5G: a strategic opportunity for Europe
- The need for a coordinated approach
- A common EU timetable for the introduction of 5G:

i) Member States to develop, by end 2017, national 5G deployment roadmaps as part of the national broadband plans
 ii) Every Member State will identify at least one major city to be "5Genabled" by the end of 2020 and that all urban areas and major terrestrial transport paths have uninterrupted 5G coverage by 2025.

Germany: 5G-Strategy

(https://www.bmvi.de/SharedDocs/DE/Publikationen/DG/098-dobrindt-5g-strategie.html?nn=12830)

- Turkey: 5GTR Forum
- UAE: National 5G Committee
- UK: 5G Strategy:

(https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/597421/07.03.17_5G_strategy_-_for_publication.pdf)

- South Korea: Creative 5G Mobile Strategy and 5GForum (https://www.5gforum.org)
- Japan: 5G Development Roadmap toward 2020 (http://5gmf.jp/en)



How 5G will contribute to the economy?

- According to IHS report In 2035, 5G will enable \$12.3 trillion of global economic output. That is nearly equivalent to US consumer spending in 2016 and more than the combined spending by consumers in China, Japan, Germany, the United Kingdom and France in 2016 <u>https://www.ihs.com/Info/0117/5g-technologyglobal-economy.html</u>
- The global 5G value chain will generate \$3.5 trillion in output and support 22 million jobs in 2035. This figure is larger than the value of today's entire mobile value chain
- CIS region should be able to get maximum benefit from this opportunity without any delay.



Spectrum Needs of 5G

Success requires sufficient spectrum in a variety of bands with economies of scale

5G applications drive technical requirements, including type and amount of spectrum

< 1 GHz – for wide area applications, e.g. sensor networks, etc. < 6 GHz – for coverage/capacity trade-off, e.g. massive MIMO, outdoor-to-indoor

Higher MM Wave – for apps needing ultra-wide channels, e.g. 4k/8k video, VR, etc.

Continuous flow of sufficient, adequate, new spectrum is key to:

Expansion of wireless market to 5G and beyond Building a strong and healthy eco-system

IMT for 2020 and Beyond



Recommendations

Develop Regional and National Digital Economy Plans (including broadband infrastructure and services)
Transform existing networks to high speed, high quality broadband networks
Develop/Update National Broadband Plan with measurable targets
Develop Regional and National 5G Plans to accelerate the 5G and vertical applications.
Launch a 5G network at least in one major city by 2020.
Develop supply/demand/skill programs (especially ICT in Education)

Assign sufficient low-band, mid-band and high-band spectrum for mobile broadband.
Consider to assign low frequency bands (700 MHz, 800 MHz etc.) with universal service coverage obligation (Germany is a good example for 800 MHz; license winner first need to cover rural areas)



