



Report of the Expert Group to the Broadband Commission

**A New Deal: Investing
in our common future**
**Policy recommendations to
close the broadband gap**

February 2018

A NEW DEAL: INVESTING IN OUR COMMON FUTURE POLICY RECOMMENDATIONS TO CLOSE THE BROADBAND GAP

Report of the Expert Group to
the Broadband Commission

February 2018

Disclaimer:

This report has been prepared by the Members of the Expert Group to the Broadband Commission for Sustainable Development coordinated by Mr Philipp Metzger- Director General, Federal Office of Communications OFCOM, Switzerland and written by Mr Rory Macmillan, from Macmillan Keck, Attorneys & Solicitors.

The Members of the Expert Group are listed below (alphabetical order):

Mr Scott Gegenheimer, Group Chief Executive Officer Operations, Zain Group

Mr Mats Granryd, Director General, GSMA

Dr Carlos M Jarque, America Movil

Mr Mark MacGann, Group Chief Corporate & Public Affairs Officer, VEON

Mr Kevin Martin, Vice President, Mobile and Global Access Policy, Facebook

Mr Paul Mitchell, Sr. Director, Technology Policy, Microsoft

Hon Jean Philbert Nsengimana, Minister (former), Ministry of Youth and ICT, Rwanda

Mr Denis O'Brien, Chairman, Digicel Group

Some Members of the Broadband Commission for Sustainable Development also provided feedback to this report.

The views contained in this report do not necessarily reflect the position of the Broadband Commission, or the views of all Members of the Broadband Commission or their organizations.

CONTENTS

- Executive Summary.....4
- Policy recommendations to close the broadband gap.....6
 - 1 Mind the gap6
 - 2 Provide a healthy investment climate.....8
 - 3 Enable lower cost supply of infrastructure and effective use of spectrum10
 - 4 Make ICT markets work for all12
 - 5 Liberate demand for the wider digital economy14

Executive Summary

Under current trends, over 2 billion people will still not be connected to the internet by 2020. The Expert Group of the Broadband Commission provides the following policy recommendations. A major concentrated effort by policy makers, regulators and international institutions is called for to address this unacceptable, persisting digital exclusion.

Provide a healthy investment climate

Governments should pursue comprehensive digital agendas, including committing to broadband plans with verifiable milestones and specific actions over specified periods. They should establish the leadership to ensure implementation and regularly evaluate qualitative and quantitative progress. Regulation and licensing should be stable, proportionate, transparent, fair and non-discriminatory, made with reasoned decisions after consultation, and set for long term investment.

Taxes should be broad-based, easily understandable and enforceable. They should not dis-incentivise investment or impact low income consumers by targeting ICT equipment, devices and services. Governments should encourage investment through import duty exemptions, tax credits and asset depreciation tax allowances, and not trap investment returns through currency conversion restrictions. Regulatory fees should generally cover only the administrative costs of regulation. Market-based spectrum pricing should be reasonable and primarily serve to allocate spectrum to the best use rather than raise revenue for the State.

Enable lower cost supply of infrastructure and effective use of spectrum

Regulators should encourage more sharing of towers and ducts, as well as power sources,

and pooling and sharing of spectrum and radio access networks where appropriate. Governments and municipal authorities should accelerate and extend access to public infrastructure and land for installation of telecommunications equipment. They should also expedite zoning, rights of way and works requests, and apply fair and transparent fees. Governments should also cause utilities to make excess capacity available on an open-access basis for commercial telecommunications.

Low frequency bands should be refarmed for broadband, and other suitable harmonised bands should be released, subject to decisions of the ITU WRC. Governments and regulators should price and regulate spectrum with a view to closing the coverage gap, linking spectrum licences and renewal to enforceable rollout and service commitments instead of exacting unrealistic fees. Operators should have the flexibility to use the technologies they consider most effective. Where appropriate, more spectrum sharing and spectrum transfers should be permitted within an appropriate regulatory framework. Regulators should use proportionate and transparent controls to prevent anticompetitive hoarding and market-distorting asymmetries in spectrum holdings.

Make ICT markets work for all

Governments should press forward in liberalising telecommunications markets. Operators' ability to invest and expand should only be constrained by legitimate and best-practice competition rules. Foreign investment restrictions should not be a short-cut to achieve policy objectives that could be achieved in a more targeted and efficient manner. Operators should be allowed to send and receive international traffic through routes of their choice, build cable landing stations, and should have open access to publicly-owned middle-mile fibre and undersea cables, under appropriate regulatory frameworks. Governments should seek investment in diverse international routes

and internet exchange points (IXPs), and lower costs of international connectivity through neighbouring countries.

Regulators should assess competition in relevant markets and evaluate the continued need for regulation in the ecosystem as a whole. Regulation should be future-proof, principles-based and tailored for market failure problems. Regulators should not regulate operators' prices, network management practices, or services except to address likely abuse of a dominant position in the relevant market, security issues, or minimum consumer protection. With this in mind, regulators should modernise their regulatory frameworks and licences in a fair and non-discriminatory manner that encourages competition and innovation, generates investment, and benefits consumers. Asymmetric regulation of dominant operators must ensure a fair return for access to their infrastructure and wholesale services provided to non-dominant operators. Dominance should be determined by economic assessment of substantive market power. Regulators should maximise the opportunity of convergence, allowing all types of services over any network.

Governments, international development banks, international organisations, telecommunications providers, internet-based companies and other technology firms should pursue cooperative partnerships to invest in core internet infrastructure. Regulatory frameworks should enable these. All market participants should be able to benefit fairly from public private partnerships (PPPs).

Contributions to and allocations of funds from universal service schemes should be set in a

way so as to minimise economic distortions. Funds should be allocated in close consultation with telecommunications providers according to objective criteria focused on network coverage and increasing usage of digital services.

Liberate demand for the wider digital economy

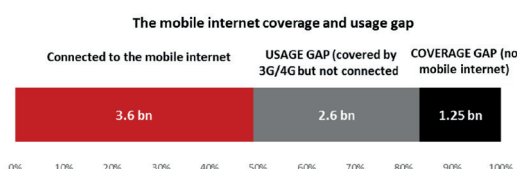
Governments should lead a major step-up in citizens' demand for internet connectivity, use of ICT services and development of digital skills. They should pursue a comprehensive digital strategy for user-friendly government information and services. Governments should seek establishment of digital identification systems, promote mobile payments and allow greater participation by technology players in digital financial services, encourage local ICT start-ups, and bring greater internet and ICT training into education. Digital education for everyone including women and girls, particularly in data science and privacy, is vital.

Controls on the collection, processing, sharing and other use of personal data should be proportionate to the risks and sensitivity of the type of data involved, and personal data-related restrictions should not be blindly extended to other areas. They should apply consistently across organisations regardless of whether they are global or locally-based. Limits that apply to geographic location and cross-border flow of data and media content should be minimised. Regulators should recognise protections where other countries have similar laws or firms undertake to apply adequate standards to data held outside geographic boundaries.

Policy recommendations to close the broadband gap

A major concentrated effort by policy makers, regulators and international institutions is called for to address the persisting exclusion of a sizeable part of the World's population from access to and usage of the internet and the wider digital economy.

Broadband is an indispensable driver of economic development and diversification, and of technological and social transformation – at individual, business and government levels. Achieving the Sustainable Development Goals (SDGs) depends on bringing excluded populations onto digital networks, services and applications that provide access to local and global markets, information, financial services, health services and education. Such services can empower people to raise their income levels, improve their standards of living, and better manage risk from disease, natural disaster and adverse political and social conditions.



An expert group of representatives was formed from the Commission's member network operators, internet companies and governments to provide a consolidated set of policy recommendations to close the ongoing

major gap in broadband coverage and usage. We set out below the background on the key issues, and the policy and regulatory actions that we recommend governments and regulators adopt as a priority. A summary is provided at the end.

1 Mind the gap

1.1 Recognise the challenge

Despite large gains in connectivity around the world in recent years, the ITU reports that nearly one third of rural populations remain unreached by mobile broadband networks (3G or above).¹ Even where there is network coverage, 2.6 billion people are not using the mobile internet.² The GSMA predicts that under current trends, more than 2 billion people (a quarter of world population) will remain unconnected to the mobile internet in 2020.

The ITU finds that fewer than 15% of households in least developed countries (LDCs) have internet access at home compared with 84.4% in developed countries.³ For many, a mobile phone or satellite terminal is the only viable option for accessing the internet because mobile and satellite network coverage is more widespread and often more affordable than fixed line networks.



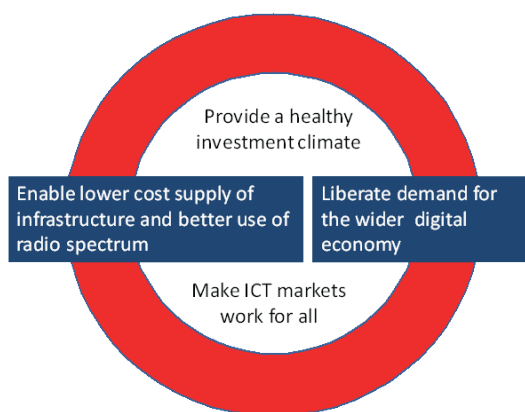
Others, especially in remote rural areas of the least developed countries, often access the internet at public facilities like schools, universities and internet kiosks, which are connected via satellite terminals, often powered by solar power.

who are the target of SDG 10.1 goal for inclusive income growth, have little prospect of digital inclusion.

Indeed, the divide is deepening and some are talking of a 'digital chasm'.⁷ Advanced economies are galloping ahead – using massive computing power connected over extremely high capacity networks. Virtualization, data centres, Big Data, cloud services, internet exchange points (IXPs) and artificial intelligence are transforming businesses and individuals' every-day lives, while a large part of the world's population lacks even basic internet.

This is not acceptable. Under current trends, a significant part of the world's population will remain observers or, at best, mere passive beneficiaries of global development, rather than active participants and contributors to the future of their communities. In short, it must be a priority to enable those who are unserved to use the internet and all that runs over it to create for themselves and live secure and satisfying lives. No one single technology can address the connectivity challenges of every country. Various technologies need to be used to address the varied challenges in a multi-technology solution, including wireless, fibre and satellite and high altitude platform systems (HAPS).

Mind the gap

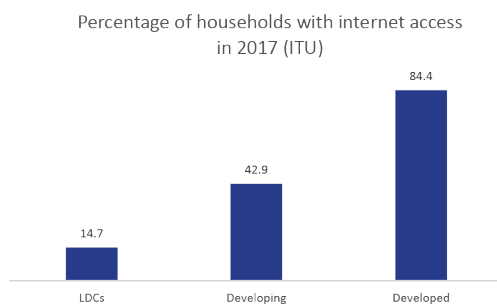


Yet accessing an internet-enabled handset is often an even greater challenge than accessing a network. Although some lower-end smartphones now sell at around US \$40-50, this price point remains too high for many.⁴ The costs of mobile broadband thus remain prohibitively expensive for the world's poorest, exceeding 5% of gross national income (GNI) per capita in 49 developing countries and LDCs⁵ – and many more countries if a lower affordability threshold is used as some advocate.⁶ The 'bottom 40%' of the population,

1.2 Address the underlying problem

Increasing broadband coverage and usage depends on employing a set of policies and establishing regulatory conditions designed for a relatively well-understood problem.

Sparsely populated areas face high costs of rolling out networks and services, and lack electricity to power base stations, microwave links and handsets. Low income levels, weak digital literacy and lack of relevant content suppress the level of usage necessary to generate revenues sufficient to earn an economic return on costly investment. Outdated legal and regulatory environments frequently inflate the problem, constraining innovation that would increase efficiency and effectiveness of investments and deliver value to users.



The challenge is exacerbated today, when investors worldwide face declining returns on capital employed in telecommunications. They face increasing competitive and regulatory pressure in many markets on their cash flows and margins, declining average revenues per user (ARPU), and slowing subscriber growth. In brief, the conditions for investment in more remote, less populated or less prosperous areas are too often absent. Investment requires minimum returns to justify investments in places that are least able to afford higher prices.

The issues can be understood in terms of:

- the overall investment climate,
- supply-side issues of infrastructure cost and use of radio spectrum,

- the effective functioning of ICT markets, and
- demand-side issues in building the wider digital economy.

We set out here concrete policy recommendations for domestic governments, regulators and international agencies that, if followed, would turn the situation around.

The relative significance of each policy recommendation will vary depending on the conditions of each market, but together they provide a framework for understanding the key challenges and how to address them. The goal is to make it viable to invest in and reach everyone with infrastructure that enables digital development. The measures recommended in this report will enable very substantial reductions in unnecessary costs, and generate higher value usage of services to enable investment.

Now is the time to commit to a concerted effort to close the coverage and usage gap.

2 Provide a healthy investment climate

2.1 Plan specific steps, implement and measure progress in broadband and digital services

Issue: Although 156 countries have adopted national broadband strategies,⁸ their impact is limited. Many fail to establish necessary governance systems, plan out specific steps, obtain necessary data for informed regulation, or consider the full range of technologies. Many remain unimplemented.

Action: Governments should develop and regularly update digital agendas, including national broadband plans, covering not only supply side measures but all aspects relevant to digital development. These should commit to verifiable milestones and specific actions (such as discussed in this report) over specified periods. These plans should be tied into

overall national sustainable development strategies, which they should support. National broadband plans need to be open to all technologies, as no one technology will solve all of the connectivity needs. Governments and international organisations should focus on qualitative evaluation of progress in the execution of such policies alongside quantitative measures of coverage, penetration and usage, and should publish an annual global league table of broadband penetration. Recognising the importance of this agenda to overall social and economic development, they should establish effective governance with leadership and impetus for implementation (e.g., national multisector digital commissions). Governments could coordinate all operators' efforts to deploy infrastructure in unconnected areas through public online platforms.

2.2 Provide stable regulatory conditions to give confidence to invest

Issue: Investors have a choice where to put their money. Their expected returns and the cost of capital – and so infrastructure investment – are highly dependent on the level of risk. Some countries still impose restrictive regulatory procedures and unfavourable treatment on foreign operators, including domestic preference, burdensome licensing conditions, requirements for unnecessary and duplicative national infrastructure, changes in spectrum allocation decisions, disparate fiscal treatment, high equipment import duties, and requirements of national commercial presence. Increasing certainty of regulatory and fiscal conditions would significantly reduce investment costs, make investment more attractive, and ultimately extend coverage at reduced costs to consumers.

Action: Governments should enact laws providing clear guidance for non-discriminatory, transparent regulation. Licence terms, particularly for radio spectrum, should be set to promote long term investment (e.g., 15-20 years) taking into account the challenge of turning a profit in remote, low-income areas. Licensees should have a clear pathway to renewal pursuant to transparent

and objective processes. Regulators should undertake not to surprise investors with unduly burdensome price, coverage, access and other regulations that undermine the business case. Coverage and quality of service obligations should be proportionate, particularly in areas previously uncovered by broadband services. Spectrum licences should be priced with a view to encouraging investment, and should not be revoked except if the spectrum is not being used or under similar justified circumstances pursuant to a transparent, fair process, and with compensation where appropriate. Licensing and regulatory requirements should provide a fair and non-discriminatory environment, and not impede any player's opportunity to invest, innovate and compete. Regulators should also be required to consult transparently with market participants on the impact of regulatory change on investment and competition, and to provide reasoned decisions that take into account submissions.

2.3 Pursue a smart strategy for public-sector revenue instead of targeted ICT taxes and fees

Issue: A thriving digital ecosystem would bring innovation and jobs, formalise the informal economy through traceable digital transactions, and enable mechanisms for taxing a wider range of growing economic activity – all of which would generate revenue for the public sector. However, a multiplicity of airtime and device taxes, royalties, radio spectrum and other ICT licence and administrative fees divert investment away from ICT infrastructure, increase prices for consumers, and dampen demand. In some countries, over a third of taxes and fees paid by telecommunications operators are sector-specific.⁹ In addition, import duties on equipment and devices increase the upfront costs of both operators and consumers when they are already at their highest and before revenues can pay off the costs.

Action (taxes): Governments and international organisations should take a longer-term view of public finances, concentrating on broadband-driven growth and taxation of business profits and transactions. Governments should avoid

taxes specifically applying to ICT equipment, devices and services, particularly where they weigh disproportionately on those with physical assets and activities within the jurisdiction. Taxes should apply fairly and proportionately across economic activities in a jurisdiction, and be easily understandable and enforceable. They should not dis-incentivise industry investment or impact low income consumers. Governments should also consider tax incentives, such as applying import duty exemptions to devices and equipment in the early period of network rollout, e.g., the first two years of a licence. Another example could be to provide tax credits and accelerated (or double) asset depreciation tax allowances for first-time rural network investments, local data centres, IXPs and customer support centres, and research and development (R&D) in innovative infrastructure and energy schemes. Governments should not trap investment returns through currency conversion restrictions.

Action (fees): Regulators should generally charge reasonable fees to cover the administrative costs of regulation. Where demand for spectrum or other scarce resources exceeds supply, market-based pricing should be reasonable and primarily serve to allocate spectrum to the best use and to incentivise increased network coverage – rather than raise revenue for the State. Regulators should consider spreading licence fees over the life of the licence rather than upfront.

3 Enable lower cost supply of infrastructure and effective use of spectrum

3.1 Allow more sharing of infrastructure and spectrum

Issue: The GSMA estimates that infrastructure sharing can reduce capital investment and on-going operating costs by between 50% and 80%, depending on market structure and the sharing model.¹⁰ Such cost reductions facilitate investment as well as lower prices

for consumers, stimulating usage that further justifies the investment.

Action: Regulators should encourage sharing of passive network infrastructure such as towers and ducts as well as power sources in a pro-competitive manner. Pooling and sharing of spectrum and sharing of the radio access network (RAN) should also be encouraged, where appropriate and when investing in separate equipment would be uneconomic and impractical.

3.2 Enable multi-technology connectivity approaches and solutions

Issue: Geographies and existing infrastructure (electricity, roads, etc.) vary widely. No one single technology or one-size-fits-all approach will solve all the connectivity challenges. Each technology has its advantages and disadvantages. Wireless and mobile technologies will be key to connectivity along with fibre for the backbone, especially in more densely populated areas. Satellite and HAPS support network extensions to remote communities that, thanks to solar-powered terminals, can be installed in areas which otherwise lack power. Yet some policies and broadband plans don't account for the multitude of technologies that can provide a heterogeneous network to address the varying challenges.

Action: Governments should be open to multi-technology architectures when developing national broadband plans, writing policies or issuing requests for proposals. This will enable the best technology to be used for specific user requirements considering the geography, topology, existing infrastructure and requirements of a specific country or region.

3.3 Make public infrastructure and rights of way easily available for broadband

Issue: Most countries have extensive publicly-owned offices, schools, hospitals and other buildings, towers, poles, ducts, conduits, pipes, roads, railways and public rights of way across

the country. Installing antennae and fibre optic cables on, in or under such existing public infrastructure and land can greatly reduce the cost of rolling out and protecting network equipment. In many countries, a new site build in a rural area can take up to six months, within which over 70% of the time is spent securing rights of way to public infrastructure.

Action: Governments and municipal authorities should permit telecommunications operators to install network equipment on or under public infrastructure and land without delay or discrimination. Local authorities should expedite zoning, rights of way and works requests, and apply ‘dig once, build once’ policies to encourage operators to coordinate and share in the costs of civil works. Fees for such access to public infrastructure and approvals should be fairly applied to providers, publicly disclosed and limited to the cost of maintaining the facilities and providing access.

3.4 Make available the excess capacity on public utilities’ fibre optic cables

Issue: Publicly-owned utilities often operate their own fibre optic communications networks, for example to manage electricity transmission and control railway systems. These typically have large unused (and particularly secure) capacity that could be used for high speed backbone and urban telecommunications networks, saving the cost of duplicating such infrastructure.

Action: Governments should coordinate and where necessary legislate to ensure that utilities make excess capacity available on an open-access basis for commercial telecommunications. The utilities should be regulated in a manner that gives them an incentive to do so rapidly at reasonable cost.

3.5 Release more radio spectrum for broadband

Issue: Low frequency signals travel over greater distances, permitting a smaller number of base stations to provide wider

geographic network coverage. In some cases, this can halve the costs of capital investment. However, such frequencies are often reserved for broadcasting, military and other public-sector purposes that could just as effectively use other frequencies. For example, some governments continue to use the 700 MHz band for broadcasting, making it unavailable for mobile broadband. Sometimes governments retain unassigned spectrum rather than enabling operators to put it into use and better serve the population.

Action: Governments and regulators should release low frequency bands (i.e., below 3 GHz) identified for IMT services for wireless broadband (including terrestrial mobile and satellite systems) as well as prioritising refarming. Timely release of other suitable harmonised bands, subject to decisions of the ITU World Radiocommunications Conferences (WRC), is also crucial. They should also encourage WiFi and other broadband networking technologies (including those used for internet-of-things applications), exempting frequencies from licensing where interference risks are low, consistent with ITU allocations and recommendations.

3.6 Reap the value of spectrum through network coverage and quality rather than fees

Issue: Substantial value is often extracted from the ICT sector through high spectrum licence fees. Setting unrealistically high prices for spectrum (whether administratively or through auctions) risks bad investment decisions, increases operators’ costs and means this scarce public resource is not put to work for the country’s poorest citizens.

Action: Rather than aiming to raise short-term revenue, Governments and regulators should price and regulate spectrum with a view to reaching unserved geographic areas and ensuring sufficient network capacity in densely populated ones. Long-term spectrum licences can be linked to operators’ commitments (e.g., in licence tenders) to roll out networks and services in rural areas and ensure quality of service. ‘Use it or lose it’ policies and penalties for failing to meet commitments can ensure

that spectrum does not sit idle. Early licence renewal can be provided in exchange for coverage commitments.

3.7 Adopt more flexible radio spectrum licensing

Issue: In many countries, radio spectrum management lacks flexibility, resulting in extensive inefficiencies. In addition, licensing all individual stations one-by-one creates an inefficient and costly approvals system for regulators and operators.

Action: Radio spectrum licences should be technology neutral, i.e., allowing broadband providers to use the technologies they consider most effective to provide their services, and to change technologies without additional permission or fees – subject to WRC decisions and other ITU norms. Technologies allowing spectrum sharing without interference should be permitted as appropriate (including subject to any applicable ITU Radio Regulations and standards), and ‘use or share’ rules should allow secondary licensees to deploy networks in under-served markets, all within a regulatory framework. Licensees should have greater flexibility to transfer spectrum subject to ITU frequency allocations and recommendations. Regulators should use proportionate and transparent controls (e.g., spectrum caps) to prevent anticompetitive hoarding and market-distorting asymmetries in spectrum holdings. Where possible, they should also apply blanket licensing (or waiver) regimes for user terminals (satellite and terrestrial) having similar technical characteristics when deployed in large quantities. In addition, they should move away from base station by base station approvals to notification mechanisms for base stations deployed within geographically licensed spectrum bands.

4 Make ICT markets work for all

4.1 Complete telecommunications market liberalisation

Issue: Some countries continue to require international terrestrial and satellite telecommunications traffic to pass through one or more prescribed international gateways, in some cases held by a State-owned operator. Others maintain a fixed line monopoly or fragment their licensing frameworks, thereby restricting business models. Landlocked countries, which do not have direct access to international submarine cables, often face constrained supply of, and high prices for, international connectivity through neighbouring countries. Satellite signals and global networks connect large geographic areas crossing national borders. Mandated multiple regional hubs restrict the free flow of data and greatly increase costs. Overall, these factors impose higher costs that are passed through to consumers, distort competition, and weaken operators’ ability to generate margins sufficient to invest in rural areas. Liberalisation of international gateways in particular would significantly bring down the cost of broadband services.

Action: Operators’ ability to invest and expand should only be constrained by legitimate and best-practice competition rules. Foreign investment restrictions should not be a short-cut to achieve policy objectives that could be achieved in a more targeted and efficient manner. Regulators should remove restrictions on operators sending and receiving international traffic using the technologies and networks of their choice. Service providers should be allowed to build cable landing stations and have open access to publicly-owned infrastructure such as middle-mile fibre and undersea cables. Governments and regulators should encourage investment in diverse international routes to allow competition to reduce prices. They should also encourage investment in IXPs to reduce costs. Efforts should be pursued to prevent excessive pricing of international access by operators that neighbour landlocked countries.

4.2 Regulate competition effectively, unboxed by legacy rules

Issue: Telecommunications service providers need flexibility to compete with one another and with internet-based services if they are to generate the returns needed to invest in rural coverage. Yet many regulators still impede the market through price caps and notification and approvals even where competition will discipline pricing. Furthermore, network operators are often subject to burdensome legacy obligations relating to coverage, quality of service, emergency service, universal service and use of customer data, as well as high licence fees and royalties. Network operators increasingly seek to innovate, for example by offering internet-based voice and messaging services, location-based services, as well as media, financial and other services, and optimising customer data management and network operations. Yet stringent regulation may be a barrier to entering and growing new markets and innovation. Similarly, although investment, innovation and competition depend on ensuring convergence in the telecommunications sector, many countries still have regulatory limitations on convergence, for example limiting Pay-TV service.

Action: Regulators should put aside formalistic categories of services based on technology and avoid and remove legacy rules that restrict providers from innovating or that impose costs without a good regulatory policy rationale. They should maximise the opportunity of convergence, allowing the provision of all types of services over any network technologies. They should assess competition in relevant markets and evaluate the continued need for regulation in the ecosystem as a whole. Regulation should be future-proof, principles-based and tailored for market failure problems. Regulators should not regulate operators' prices, network management practices, or services except to address likely abuse of a dominant position in the relevant market, security issues, or minimum consumer protection. With this in mind, regulators should modernise their regulatory frameworks and licences in a fair and non-discriminatory manner that encourages competition and

innovation, generates investment, and benefits consumers. Dominance should be determined by economic assessment of substantive market power, and not just size and market share thresholds. Asymmetric regulation of dominant operators must ensure a fair return for access to their infrastructure and wholesale services provided to non-dominant operators.

4.3 Pave the way for new forms of partnership and innovative technologies

Issue: Expanding broadband coverage to unserved populations will depend on cooperation of stakeholders throughout the value chain. Technologies are rapidly changing and combinations of them will be required to extend coverage to rural areas, including terrestrial radio access networks, satellite, microwave and fibre backbones. Even drones and balloons are being introduced.

Action: Governments, international development banks, international organisations, telecommunications providers, internet-based companies and other technology firms should pursue cooperative partnerships to invest in core internet infrastructure, such as fibre backbones, undersea cables, satellite networks and IXPs, as well as access networks. Regulatory frameworks should be designed to enable such partnerships and investments. Data privacy and data protection frameworks should aim to encourage and not hinder data related collaborations and partnerships. Public private partnerships (PPPs) should be encouraged and allow all market participants to benefit fairly. Governments can act as anchor tenants with upfront purchase commitments and commitments to divest to private sector players.

4.4 Make universal service schemes transparent, efficient and effective

Issue: Some countries have established schemes intended to address market failure in rural areas by creating a cross-subsidy within the telecommunications sector in the form of a

universal service fund. Such funds typically levy sector revenues with the intention of funding network rollout in uncovered areas. However, funds are often inefficiently allocated, delayed or even diverted.

Action: Governments and regulators should adopt laws and procedures that minimise economic distortions from contributions to and allocation of universal service funds, and ensure their transparent governance. Funds should be allocated according to objective criteria in close consultation with the telecommunications providers who operate on the ground and contribute the funding. Funding criteria should focus on network coverage and increasing usage of digital services.

5 Liberate demand for the wider digital economy

5.1 Pursue and implement an overall digital strategy

Issue: It is not enough merely to focus on deploying infrastructure. Growth in broadband and ICT services is held back by poor digital skills, such as the ability to navigate mobile apps, search for information online or even use a computer or mobile phone. Demand is suppressed by insufficient content and services with relevance to peoples' lives in many developing economies, as well as a lack of skills (e.g., business management and entrepreneurship) for development of such content and services. At present, some governments are offering services or information that are not accessible to or understandable by large portions of their citizenry. There is comparatively very little content in local languages. The ability of many people to transact in the digital economy is constrained by a lack of access to digital payment instruments. People need compelling reasons to come online.

Action: Governments should lead a major step-up in demand for internet connectivity and use of ICT services. Supplying government information and services online in internet

kiosks, schools, libraries and over mobile networks would incentivise citizens to develop digital skills and literacy, increase ICT usage and improve government efficiency. Services should be designed for the needs of the end user, taking account of citizens' access to technology, language skills and digital literacy. Governments can also stimulate demand by distributing social payments and receiving public utility bill payments online or over mobile payment platforms and using local content hosting platforms. They can provide an enabling environment, infrastructure, financing assistance and fiscal benefits to local ICT start-ups. Governments should introduce digital identification systems for trusted access to public and commercial services, including by using private sector-led digital identification systems where they are available.¹¹ Technology players as well should be encouraged to offer innovative digital financial services under flexible risk-based financial sector regulation.¹² Schools, universities, internet kiosks and libraries should use the internet and offer ICT training. Digital education for everyone including women and girls, in particular in data science and privacy, is vital.

5.2 Take an enabling and risk-based approach to use and protection of data

Issue: The digital ecosystem must enable consumers efficiently to find and use products and services that meet their needs given their interests, circumstances and locations while protecting them from malicious use of their data and intrusion into their privacy. All market players, whether global or nationally-based, should be permitted to benefit from cross-border innovation and access to global expertise and infrastructure. Some countries' existing laws, regulations and licences are ill-suited to achieve these complementary goals, applying excessively restrictive or vague obligations to some market participants, or failing to address others entirely. Socially beneficial PPPs are impeded by lack of effective regulatory frameworks. Building trust and communication among operators, regulators and the development/humanitarian community would spur innovation for the social good.

Action: Governments should ensure that controls on the collection, processing, sharing and other use of personal data are proportionate to the risks and sensitivity of the type of data involved. These should be applied consistently across internet companies, telecommunications service providers, IT companies, financial service providers, public bodies and other organisations, regardless of whether they are global or locally-based. Subject to such protections, it should be possible to utilize the data in a way that maximises the value to customers and increases efficiency and effectiveness of business models. Laws should be modernised so that they only apply existing data protection concepts to legal persons such as companies, or to new areas such as the Internet of Things and Big Data, where necessary, doing so in a manner that is proportionate and targeted to the problem intended to be addressed. They should allow businesses to innovate in providing the appropriate privacy protections for the people whose data they process, including for example anonymization.

5.3 Minimise restrictions on data and content crossing borders

Issue: Cloud services and data centres offer huge computing efficiency gains and vast opportunities for innovative services in health, education, financial, IT and media. These typically depend on regional and international

strategies for locating computing and network monitoring and management facilities. They need to be located where they can benefit from efficiencies of scale, and have access to power, high speed international telecommunications networks and costs. Digital innovation also requires the ability to pool expertise and skills (which in areas such as Big Data are still very scarce), and to access information for developing solutions to specific local problems. Media content hosting similarly needs to be located and cached efficiently. Such strategies are frustrated by excessive 'data nationalism,' which require customers' data to be located and processed within national borders. This multiplies the number and cost of data centres, and severely restricts the speed and spread of innovation. UNCTAD estimates that such restrictions have a negative impact on GDP of 0.1 – 0.7% and increase computation costs for small and medium enterprises (SMEs) by 30 – 60%.¹³ The result is ultimately a lost opportunity to put mass computing power and human brains to work for those who would benefit from it most.

Action: Governments and data protection authorities should minimise limits on geographic location and cross-border flow of data and media content. Protections can be assured if other jurisdictions have similar laws ('safe harbours') or if firms undertake to submit to local law or apply adequate standards to data held outside geographic boundaries.

Endnotes

- ¹ ITU *Facts and Figures 2016*.
- ² GSMA: *Q1 2017*; relates to mobile broadband network coverage.
- ³ ITU *Facts and Figures 2017*.
- ⁴ For example, at a 5% affordability level, more than 134 million people in India would be unable to afford one of the cheapest available internet-enabled handsets. *Accelerating affordable smartphone ownership in emerging markets 2017*, GSMA.
- ⁵ ITU *Facts and Figures 2017*.
- ⁶ Some recommend 2%, e.g., *2017 Affordability Report*, Alliance for Affordable Internet (A4AI).
- ⁷ Viewpoint 3, *State of Broadband Report 2017*.
- ⁸ *State of Broadband Report 2017*.
- ⁹ *Mobile Economy 2017*, GSMA.
- ¹⁰ *Unlocking Rural Coverage: Enablers for commercially sustainable mobile network expansion*, GSMA, 2016.
- ¹¹ *Regulatory and policy trends impacting Digital Identity and the role of mobile*, GSMA 2016.
- ¹² The Financial Action Task Force (FATF) encourages risk-based regulation of financial services.
- ¹³ *Data protection regulations and international data flows*, 2016, UNCTAD.

