

Department of Business *Nova Scotia Rural Internet*

Jurisdictional review of plans in select emerging
and developed markets



Building a better
working world

Table of contents

Section	Page
Jurisdictional scan – overview	3
National broadband plan – Canadian provinces	5
National broadband plan – emerging markets	21
National broadband plan – developed markets	51
Characteristics of a good national broadband plan	56
References	58

Jurisdictional scan – overview

Making broadband policy universal

Over the years, governments, policy-makers and regulators have made broadband a policy imperative

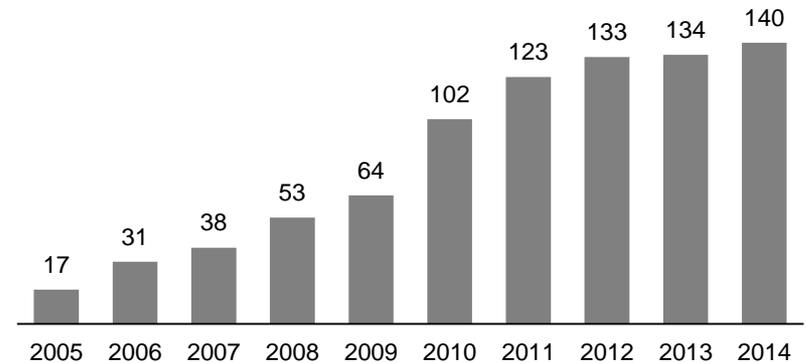
Broadband policy gains prominence

- ▶ Importance of national policy leadership is now clearly understood by policy-makers and governments around the world.
- ▶ A clear statement of policy objectives and/or targets can boost understanding and facilitate the national roll-out of broadband.
- ▶ Today, some 140 countries have developed a national plan, strategy, project or policy to promote broadband, while a further 13 countries are planning to introduce such measures in the near future.

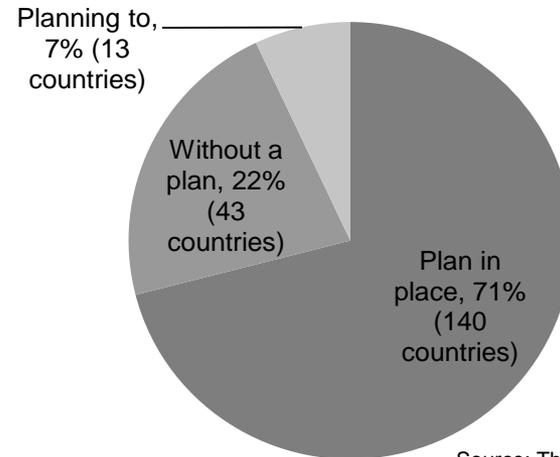
Regulatory and policy institutions work in a 'silo'

- ▶ Many regulatory and policy institutions often still work in a 'silo' approach, making decisions in isolation from other sectors.
- ▶ Policy-makers need to come together to formulate common strategies on information and communication technologies (ICT) policy aligned with other major policy areas to maximize the impact of ICT.
- ▶ Used wisely, national strategies can be a vehicle for cross-sector collaboration and cross-ministry coordination in support of a common vision for the development of broadband.

Number of countries with National Broadband Plans



Policy leadership in National Broadband Plans, 2014



Source: The Broadband Commission. (2014).

National broadband plan – Canadian provinces

Broadband across Canada

Overview

- ▶ Funding projects range from straight capital investments to multi-party partnerships that help offset costs.
- ▶ Focused on last-mile connectivity or improving backbone connectivity. Funding of middle mile infrastructure has not been the focus of provincial Governments in Canada or state Governments within the United States.
- ▶ Infrastructure projects have also been deployed to help increase broadband and have been lead by both Government and agencies. Funding has come from government or broadband providers.
- ▶ In some cases municipalities have taken to improve their communities connectivity independently.
 - ▶ Example: In July 2013 the Town of Olds, Alberta, population of 8,200, announced plans to build a fibre-optic network and start its own Internet Service Provider to deliver 1 Gbps Internet access to its residents for as little as \$57/month. Unable to get existing telecom companies to tap the network they registered a community-owned and –operated internet provider called O-Net which cost the town approximately \$21 million, coming from a provincial grant, a loan backed by the town, and a line of credit. With high speed and low cost the program hoped to attract new business and residents to the town.
- ▶ Overall most provinces provide funding to enable broadband and encourage investment but do not fund or manage the total project.

Source: Federation of Canadian Municipalities (2014).

New Brunswick

Rural broadband speed

- ▶ Minimum speed of 5 Mbps download

Technologies used

- ▶ Fixed wireless and satellite

Role of Provincial Government

- ▶ Main role of provincial government is providing funding and standards.
- ▶ Provided Barrett Xplore Inc. with a loan agreement to enable their ability to fulfill contract agreements.

Programs

- ▶ **La Collectivité ingénieuse de la Péninsule acadienne (CIPA) Inc.** has worked closely with the Province to develop a sustainable plan for the deployment of broadband infrastructure to New Brunswick communities through **The Acadian Peninsula's Project** (funded through the Federal Government). Funding was rewarded in 2006 from the Acadian Peninsula Economic Development Fund, with \$500,000 to cover operating costs over two years.

Sources: Communications New Brunswick. Government of Canada.

New Brunswick (con't)

Programs

- ▶ **Broadband Access Project:** Partnership between Federal (\$16.5 M) and Provincial (\$12.5 M) Governments and **Bell Aliant** (\$15.6 M) was made in 2003 to connect 90% of residents, by 2006, for a total cost of \$44.6 million. Ninety five percent of business lines and 100% of regional health care centres, business parks and First Nations' communities gained access (100% of schools were connected prior to this program). It involved installation of broadband equipment and upgrades in 336 existing wire centres at strategic locations to extend coverage to 327 communities in rural New Brunswick. The project was conducted in three phases and was completed six months prior to schedule.
- ▶ To reach the additional 10% of the population, in 2009 Provincial Government committed \$13 million to a project with **Barrett Xplore Inc.** to provide access to fixed wireless and satellite Internet. The Government investment resulted in new customers paying \$99 for installation, regardless of where they lived or the type of technology offered. Monthly cost to customer was \$44.99 for fixed wireless service or \$49.99 for satellite access (basic package). To support Barrett in delivering this service the province invested in the company with a \$10 million loan guarantee, primarily as working capital for construction of NB's rural high-speed Internet network.
- ▶ Additional \$5.99 million was invested by Federal Government to improve speed of internet connectivity to at least 5 Mbps for over 19,000 homes by July 2017. Funding was provided to **Bell Aliant** (\$3.7 million) to connect more than 3,300 homes and Xplornet (\$2.92 million) to connect more than 16,000.

Sources: Communications New Brunswick. Government of Canada.

Ontario

Rural broadband speed

- ▶ 5 Mbps download and 1 Mbps upload

Technologies used

- ▶ High Speed Packet Access (HSPA)/ LTE
- ▶ Fibre optic cable

Role of Provincial Government

- ▶ Facilitated funding to initiate programs and supported federal programs.

Programs

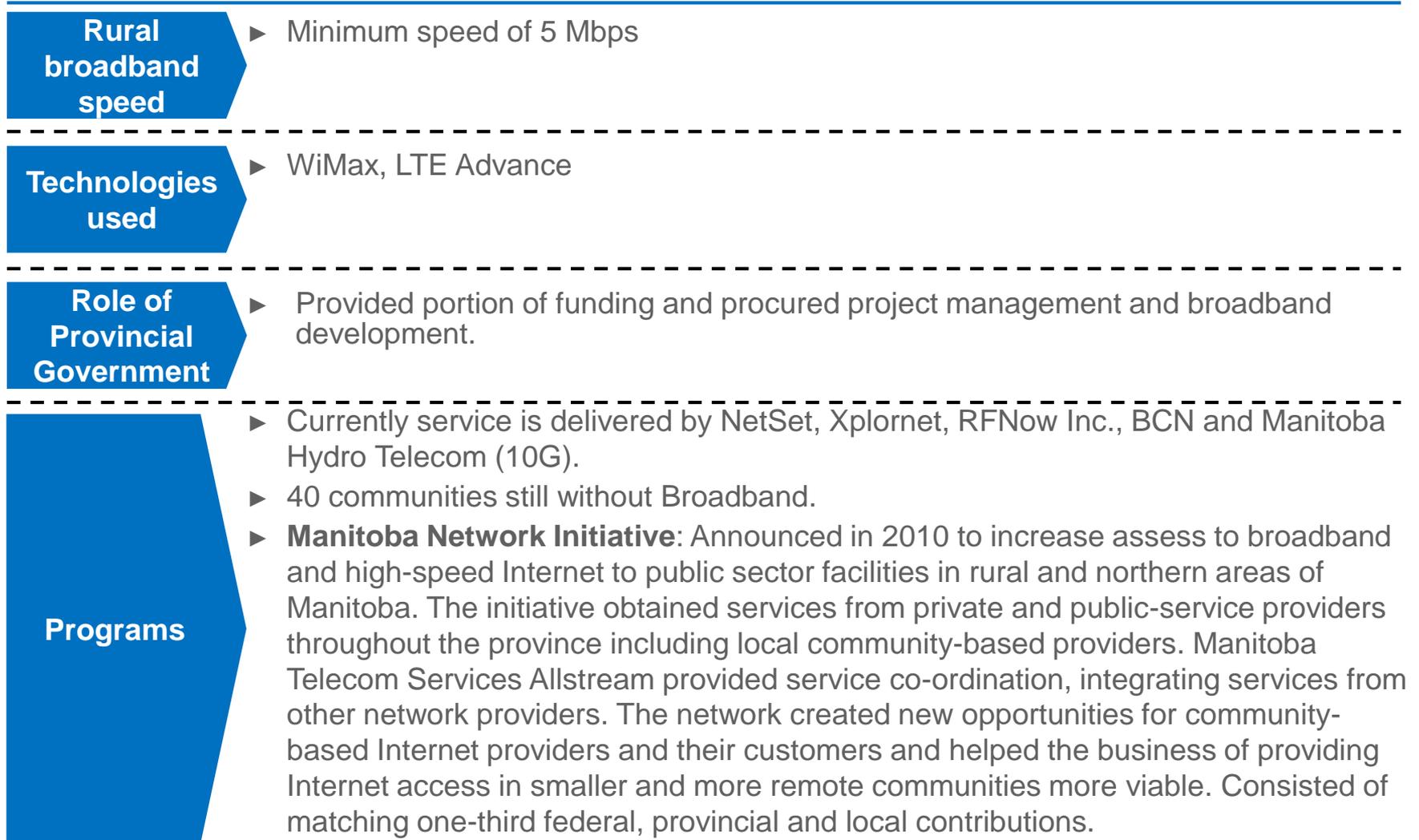
- ▶ **Southern Ontario:** Between 2007 and 2012, the **Rural Connections Broadband Program** invested over \$29 million in 52 rural broadband networks, attracting \$2 in investment from the telecommunications sector for every \$1 of public money. Rural municipalities in southern Ontario that met the eligibility requirements could apply for provincial funding individually, or jointly with other municipalities, through one lead applicant - for up to one third of eligible approved project costs to a maximum of \$1 million per application. Municipalities were responsible for securing the remaining share of the eligible costs from their own resources and/or from partner contributions. Partners could include business and technology associations, telecommunications service providers and a variety of other stakeholders.

Source: Ontario Ministry of Rural Affairs, Government of Ontario, Federation of Canadian Municipalities, Eastern Ontario Regional Network, TVO

Programs

- ▶ **Eastern Ontario:** The Eastern Ontario Wardens' Caucus created **The Eastern Ontario Regional Network (EORN)** in 2011 to provide broadband access to 95% of homes and businesses in Eastern Ontario. Partnership between federal, provincial and municipal Governments, as well as private sector, made it possible, with the Federal Government contributing \$55 million through the Building Canada Fund. The network currently features a 5,500 km of fibre optic cable, with 160 new access points for ISPs. It delivers internet access through wired, wireless or satellite technology, depending on best fit and continuously negotiates with service providers to increase coverage areas, bandwidth and speed.
- ▶ **Northern Ontario: Building Broadband in Rural and Northern Ontario** initiative- completed Spring 2014- invested in seven networks to provide high speed internet access. Total investment was \$32.75 million, with the province contributing \$749,679 through its Northern Ontario Heritage Fund Corporation and the federal BRAND program co-investing up to one-third of the cost. It extended fibre optic services to more than 2,000 homes and businesses. The project included deploying fibre for high-speed broadband Internet directly to underserved customers.

Manitoba



Source: Government of Canada, Province of Manitoba, Rural Development Institute

Saskatchewan

Rural broadband speed

- ▶ 5 Mbps

Technologies used

- ▶ DSL
- ▶ Xplornet Satellite

Role of Provincial Government

- ▶ Funding to SaskTel, a crown corporation, to drive rural broadband infrastructure and development.

Programs

- ▶ In 2008 the province provided \$90 million to SaskTel, a crown corporation, to move towards 100% broadband availability.
- ▶ The long-term strategy to increase access to high speed internet in rural Saskatchewan was introduced at the Saskatchewan Association of Rural Municipalities 2013 annual conference with SaskTel leading the initiative.

Source: Government of Canada, SaskTel, Saskatchewan Association of Rural Municipalities

Saskatchewan (con't)

Programs

- ▶ SaskTel:
 - ▶ Rural Strategy included upgrading speeds to 10 Mbps download in over 220 existing DSL communities, in addition to expanding DSL of up to 5 Mbps to 50 additional communities, by the end of 2014.
 - ▶ Biggest barrier to infrastructure- the smallest customers per square kilometer of any Canadian province.
 - ▶ Network extends to 98% of the population through their Digital Subscriber Line Internet Service, which provides high speed internet, SaskTel Satellite Internet and SaskTel High Throughput Satellite Internet Service powered by Xplornet, when DSL is not available.
 - ▶ SaskTel made the decision to focus on satellite connections due to the overall cost per customer and the ability to reach most parts of the Saskatchewan population.
 - ▶ Partnered with communities to make the expansion of high speed Internet feasible through the use of a Community Participation Model. This allowed communities to raise funds to cover the shortfall when it was not economically feasible for SaskTel to finance new infrastructure for a community alone.

Source: Government of Canada, SaskTel, Saskatchewan Association of Rural Municipalities

Rural broadband speed

- ▶ Approved applications for SuperNet need to demonstrate infrastructure scalability to offer services at 3.0 and 5.0 Mbps speeds with a current minimum download speed of 1.5 Mbps.

Technologies used

- ▶ Fibre optic cable
- ▶ 4G LTE technology

Role of Provincial Government

- ▶ Invested in developing network and subsidizing the connectivity of rural communities.

Programs

- ▶ **Rural Connections: Community Broadband Infrastructure Pilot Program** was announced in 2009 and provided \$10.4 million in grant funding to 34 projects. Overall funding was made available through the National Community Development Trust.

Source: Government of Alberta, Bell Media, CCI Wireless, Federation of Canadian Municipalities

Programs

- ▶ **Alberta SuperNet:** performance network consisting of 13,000 km's of fibre optic cables and 2,000 km's of high-speed wireless links.
 - ▶ Two main networks: one owned by Bell Canada, which covers 27 cities in Alberta, the other owned by the Government of Alberta, covering 402 rural communities and operated by Axia SuperNet Ltd.
 - ▶ Internet Service Providers are depended upon to connect rural communities to SuperNet (Final Mile Rural Community Program helps subsidize this).
 - ▶ Before the creation of SuperNet there were only seven service providers operating outside of major urban centers. According to recent estimates there are now over 81 service providers making use of the infrastructure.
- ▶ Government provided a total of \$6,612,170 in funding to support 27 broadband projects through the **Final Mile Rural Community Program** launched in 2012.
 - ▶ Rural communities, First Nations and Metis Settlements were eligible to apply for grants covering up to 75% of eligible Internet infrastructure expenses. Twenty five percent of the approved project costs had to be funded by the applicant, in kind contributions or other available grant programs.
 - ▶ Not-for-profit organizations and for-profit businesses/ventures were not eligible for funding but were encouraged to partner with an eligible applicant on a project.
 - ▶ All applicants had to demonstrate the ability to lead the high-speed internet initiative and contribute resources to the project.

Source: Government of Alberta, Bell Media, CCI Wireless, Federation of Canadian Municipalities

British Columbia

Rural broadband speed

- ▶ Connecting British Columbia: at least 5 Mbps down and 1 Mbps up.
- ▶ TELUS to upgrade every wireless site in BC to 4G LTE and 700 MHz spectrum for use in rural and urban areas.
- ▶ Xplornet offers 1.5 Mbps download speed and monthly usage of 5 GB with home plan (\$54.99) and 5 Mbps and 20 GB with business plan (\$74.99).

Technologies used

- ▶ Xplornet satellite
- ▶ TELUS: Fibre optic cables

Role of Provincial Government

- ▶ Subsidized the cost of broadband infrastructure through grants and working with interested parties created specific funding programs based on communities needs.

Programs

- ▶ **Connecting British Columbia:** a multi-year grant program administered on behalf of the Province by the Northern Development Initiative Trust, an independent, non-profit corporation, which helps to pay for infrastructure required to deliver high-speed Internet connectivity to homes and businesses in rural BC locations. Goal is to provide 100% high-speed connectivity before 2021 with a Government investment of \$10 million. Strong preference given to projects requiring 50% (or less) funding.
 - ▶ First wave: \$5.8 million was awarded to eight projects benefiting 70 communities in 2015.
 - ▶ Second wave: more than \$1.1 million will be granted to nine projects, benefiting more than 80 communities in 2016.
 - ▶ Additional waves have not been defined yet.

Source: Province of British Columbia, Northern Development Initiative Trust, TELUS

British Columbia (con't)

Programs

- ▶ The Province also works closely with other levels of government and the private sector, including large and small Internet service providers, to offer a number of connectivity programs and services including:
 - ▶ A \$2-million **BC Broadband Satellite Initiative**, designed to expand access to high-speed Internet service in remote and geographically challenging locations where no other connectivity options exist. The program contributes toward the one time installation fee of Xplornet Inc. satellite Internet with the provincial contribution recently increasing from \$250 to a maximum of \$350 per installation. Eligible applicants cannot have access to any other type of internet.
 - ▶ The provincially and federally supported, **First Nations-Led Pathways to Technology Project**, which has connected 190 of 203 First Nations communities, up from 85 in 2008.
 - ▶ A **non-monetary 10-year strategic telecommunications agreement** with Telus to expand access to Internet services in rural and remote areas, in addition to expanding access to cellular services along segments of provincial highways. This agreement built upon the previous Connecting Communities Agreement under which Telus upgraded, or provided internet access, to many communities for the first time, at no cost to government.
 - ▶ Upgrades to high-speed fibre optic cables in 400 public schools to enable faster access to information for young learners. As of December 2015, 346 schools have been upgraded by Telus.

Source: Province of British Columbia, Northern Development Initiative Trust, TELUS

Yukon, Northwest Territories and Nunavut

Technical and Financial Solutions

- ▶ **“Northern Connectivity: Ensuring Quality Communications”**: Nordicity Consulting was recruited in 2014 to investigate the best technical and financial solutions to delivering quality communication services.
- ▶ The Canadian Northern Economic Development Agency (CanNor), part of the federal government, contributed \$368,000 to the production of the report, with additional contributions of \$10,000 from each of the provinces.
- ▶ The recommendations made are as follows. Implementation has not currently taken place:
 - ▶ Minimum average broadband target of 9 Mbps down and 1.5 Mbps up to be achieved by 2019 in order to meet needs while recognizing the constraints posed by backbone infrastructure. Current average in Yukon and NWT is 1.5 Mbps (microwave and satellite) and Nunavut is 1.5 Mbps (satellite only).
 - ▶ Technology proposed: Microwave, Fibre and Satellite.
 - ▶ Cost is estimated based on four options for all three provinces and ranges from \$623 million to \$2.178 billion with a roll out period of three years.
 - ▶ Factored into the above estimates are:
 - ▶ A capital expenditure financial incentive payment for a third party service provider to take on the risk of building and deploying services to Arctic customers.
 - ▶ An annual recurring subsidy to offset the monthly cost of services for low income households. Potential sources of funding are recommended as Federal Government, service providers, operators, end users, territorial Governments and P3 (Public-Private-Partnership) project financing models.
- ▶ Finland, Norway and Alaska were used as benchmarks for these recommendations.

Source: Northern Communications & Information Systems Working Group

Yukon and Northwest Territories

Yukon

▶ Yukon Diverse Fibre Link Project:

- ▶ Presently served by single fibre-optic line from British Columbia, with no diverse or alternative route for telecommunications infrastructure. This results in internet outages due to climatic conditions, construction and other activities, while paying some of the highest communications fees in Canada.
- ▶ Currently investigating feasibility of building a second fibre-optic link, taking a different route to the south. Consultants found that either a Design Build or a Design-Build-Finance model would provide most value for money.
- ▶ Project is not focused on last mile connectivity.

Northwest Territories

▶ NWT Broadband Project:

- ▶ Designed to provide mobile data services (4G) in every NWT community by 2017. The government of NWT has provided over \$700,000 in funding toward the initiative in partnership with Falcon Communications and northern service providers.
- ▶ Falcon is currently working with Northwestel on a \$29.6 M project to improve broadband within the North.

Source: EY, Government of Northwest Territories, Northwestel,

Nunavut Broadband Development Corporation

- ▶ Created in 2002 to ensure reliable and affordable access to broadband in all communities. Funded by The Department of Economic Development and Transportation.
- ▶ Notable dates:
 - ▶ 2012: NorthwesTel launched satellite service to six communities with speeds of up to 2 Mbps, which is the fastest internet in Nunavut. They provided/installed the dish needed for a one time free of \$110 and packages run from \$59.95/month.
 - ▶ 2015: NorthwesTel reduced the price of its premium business Internet service by 20% and expanded its availability. For \$399.95 per month with download speeds of 5 Mbps, upload speeds of 768 Kbps and a monthly usage allowance of 100 GB. DSL Internet 5 was introduced to all Iqaluit customers in 2012. At the same time, Northwestel added satellite capacity during peak hours, which resulted in a 20 per cent increase in available bandwidth.

National broadband plan – emerging markets

Emerging markets

Overview

- ▶ Nova Scotia competes globally to attract business to the province. For this reason it is important to consider other nations broadband plans, and compare Canada's and Nova Scotia's capabilities with other regions.
- ▶ Tele-communications is generally regulated at the federal level, therefore it is important to consider national broadband plans and how sub-federal jurisdictions can influence those plans to achieve local goals.
- ▶ The jurisdictional scan revealed that nations are taking various approaches to extend broadband network availability and speed.

Broadband targets

The National Broadband Policy 2009 envisaged targets related to broadband rollout, accessibility to information, communication and technologies (ICT) facilities, different ICT services and development of local content. The broadband penetration targets are as follows:

- ▶ Expand coverage of broadband network to 30% by 2015 and 40% by 2021.
- ▶ **Mid-term – end of 2012:**
 - ▶ All the higher secondary educational institutes situated at the upazila headquarters will be connected to the broadband network.
 - ▶ 50% of the secondary educational institutes in the district headquarters and 50% of the secondary educational institutes at the upazila headquarters will be connected to the broadband internet.
 - ▶ 10% villages will be brought under the coverage of the broadband network.
 - ▶ All the local government institutions up to the upazila level will be brought under the broadband network.
- ▶ **Long-term – end of 2015:**
 - ▶ All the villages will be connected with broadband through community access points.
 - ▶ All the post secondary, secondary and government listed primary educational institutes will be connected with broadband.
 - ▶ All the cultural centers, museums, post offices and archives will be connected to the broadband network.
 - ▶ All union parishad offices will be brought under the broadband network.
 - ▶ All the farmers market will be brought under the broadband network.

Source: Board of Investment Bangladesh; Government of the People's Republic of Bangladesh

Bangladesh (con't)

Broadband technology profiles

- ▶ Encourage the introduction of new technologies such as FTTx, WiMAX, Wi Fi to ensure maximum utilization of existing networks and facilitate broadband services.
- ▶ Broadband is offered through cable in the metropolitan cities and is available through wireless as part of the government license project which offers wireless broadband access services. The government is facilitating submarine cable (through private sector investment), which is likely to result in faster broadband services with a considerable reduction in cost.

Broadband funding estimates

- ▶ The National Broadband Policy plans to ensure the optimum development of broadband services through cooperation and partnership between public and private sector.

Source: Board of Investment Bangladesh; Government of the People's Republic of Bangladesh

Broadband targets

- ▶ **“Broadband China” strategy:** As part of the government’s 12th Five-Year (2011-15) Plan, a draft plan of the project was unveiled in early May to stipulate that by the end of 2015, China will complete preliminary construction of an integrated secure next-generation national information infrastructure with wide broadband bandwidth. The objective is to accelerate the development of 3G and fibre broadband network, launch IPv6 commercial trial and drive TD-LTE maturity.
- ▶ The MIIT aims to ensure that 250 million households enjoying access to broadband Internet by December 2015. By the end of 2012, another 35 million families will be offered fiber broadband, raising the household broadband coverage from 29% in 2011 to 34%. **“Three network convergence”:** In Jan 2010, the Chinese government officially approved the convergence of telecom, broadcasting and Internet network in the service level (e.g. broadband, IPTV, etc.). At the end of 2011 the government announced that the trial would expand to 56 cities. Network convergence is one of the key focuses in ICT during the 12th FYP. The three-network convergence took place in two stage:
 - ▶ 2010-12: Focus on the two-way access trial between broadcasting and telecom networks
 - ▶ 2013-15: Full-scale roll-out of network convergence, introduce converged applications
- ▶ By 2020, the broadband network will have universal coverage in urban and rural areas, household penetration rate of fixed broadband will reach 70%, user penetration rate of 3G/LTE will reach 85%, and 98% administrative villages will have broadband access.

Source: Datamonitor; Reuters; China Academy of Telecommunications

China (con't)

Broadband technology profiles

- ▶ **FTTx:** The specific targets of “Broadband China” project include accessing optical fiber networks to commercial buildings and newly built communities. Fiber rollout will be accelerated to achieve a bandwidth of above 20M for urban households, 4M for rural families and 100M for families in capital cities of the eastern developed regions by the end of 2015.
- ▶ **Wireless broadband (3G, 4G):** Scale of new 2G networks will be downsized while accelerating 3G network coverage in cities, and extending to counties and potential villages. For next-generation mobile broadband, China prioritized the promotion of TD-LTE trials and commercialization. Construction of LTE commercial trial networks were expanded after 2012, and commenced commercial operation around 2014.
- ▶ **Cable:** SARFT is likely to set up a national cable network company by the middle of this year, in cooperation with China Mobile. Cable only accounts for 8% of the internet access market in China.

Broadband funding estimates

- ▶ With national broadband being a government initiative, broadband infrastructure will receive government policy support and funding support. Increased tax and finance support will be given, while the country will establish national broadband dedicated fund and universal service fund to support Western China and rural areas, as well as community broadband infrastructure and application development. However no specific amount of funding has been released.

Source: Datamonitor; Reuters; China Academy of Telecommunications

Broadband targets

- ▶ **The National Broadband Plan 2010:** aimed to provide affordable and reliable broadband on demand by the year 2015 and to achieve 75 million and 160 million broadband connections by the end of year 2012 and 2014, respectively.
- ▶ **New National Telecom Policy 2012:** 175 million broadband connections by the year 2017, and 600 million by the year 2020 at minimum 2 Mbps download speed and making available higher speeds of at least 100 Mbps on demand.
- ▶ Provided high speed and high quality broadband access to all village Panchayats through a combination of technologies by the year 2014 and progressively to all villages and habitations by 2020.

Broadband funding estimates

- ▶ In December 2010, the Telecom Regulatory Authority of India (TRAI), announced plans to invest approximately INR657 billion (US\$13.1 billion) to set up a broadband network under its National Broadband Plan 2010, which totals more 2.5 million kilometers.
 - ▶ TRAI plans to set up a National Optical Fiber Authority (NOFA), a central agency, and a State Optical Fiber Authority (SOFA) to rollout fiber across the country.
- ▶ In January 2012, the DoT announced its plan to form a special purpose vehicle (SPV) with an authorized capital of INR10 billion (US\$0.2 billion) and INR1 billion (US\$20 million) as paid-up capital for implementing various schemes of the USOF, including the National Optical Fibre Network (NOFN). The Cabinet also approved the investment of INR200 billion (US\$4 billion) in the NOFN scheme and the target to complete it by 2014.

Source: Telecom Regulatory Authority of India; Draft National Policy; Reuters; Economic Times;

Digital India plan

Vision

- Digital infrastructure as a utility to every citizen
- Governance and services on demand
- Digital empowerment of citizens

Umbrella program based on 9 pillars

1. Broadband Highways
2. Universal Access to Mobile
3. Public Internet Access
4. E-Governance
5. E-Kranti: E- Delivery of Services
6. Information for All
7. Electronics Manufacturing
8. IT for Jobs
9. Early Harvest Programs

Source: Telecom Regulatory Authority of India; Draft National Policy; Reuters; Economic Times;

Broadband targets

In 2011, the “Jakarta Declaration for Meaningful Broadband” agreed on the goal to bring “meaningful broadband” access — affordable, usable, and empowering — from under 3% to a ten-fold increase of 30% within three years. The declaration envisaged the following broadband targets:

- ▶ By 2014, 8% of all households to be connected to broadband and provide 30% of the population with broadband access.
- ▶ By 2015, the installed broadband capacity to reach as follows:
 - ▶ 2% at up to 1Mbps
 - ▶ 8% at 1–4 Mbps
 - ▶ 75% at up to 20 Mbps
 - ▶ 15% at up to 100 Mbps

Broadband technology profiles

- ▶ **Backbone infrastructure:** the broadband plan aims at laying fiber optic infrastructure in the country, which has the capacity to support increased broadband demand. Also, the development of submerged cable at the Ambon – Jayapura, Sorong – Merauke, and Fak-Fak – Saumlaki links.
- ▶ Use wireless technologies for access network in dense urban, suburban and rural areas.
- ▶ Provide last mile connectivity in extremely rural areas through satellites.
- ▶ Broadband evolution by technology in Indonesia includes – HSPA, CDMA2000/EVDO, DSL and HSPA.

Source: Jakarta declaration for meaningful broadband; Country Report: Indonesia – BSA; MP3EI; Meaningful Broadband Working Group; Press releases

Indonesia (con't)

Broadband funding estimates

- ▶ The broadband plan had an outlay of US\$9.2 billion, including US\$4.3 billion public private partnership (PPP) funding allocation, linking PT Telecom's fiber optic cable to 'last mile' initiatives to connect rural and isolated areas.
- ▶ **Meaningful supply:** US\$4.3 billion large-scale national network which made broadband products and services accessible to an additional 65 million Indonesian citizens. The plan combined Indonesia's 41,000 kilometer fiber backbone, with a "last mile" solution. Interlinking fiber and wireless and making use of 700 MHz spectrum, it tapped affordable next generation (4G) wireless technologies.
- ▶ **Meaningful demand:** US\$4.9 billion was designed to stimulate "meaningful demand". The initiative had two parts:
 - ▶ Deployment of a government-sanctioned, subsidized smart device, implemented through a strategic alliance which took full advantage of the capacity of domestic manufacturers, and was tapped to facilitate e-government strategies at all national-to-local levels.
 - ▶ "Meaningful content" plan formulated in partnership with leading international universities and regional Indonesian universities.

Source: Jakarta declaration for meaningful broadband; Country Report: Indonesia – BSA; MP3EI; Meaningful Broadband Working Group; Press releases

Nigeria

Broadband targets	Target Type	Medium	Current (2013)	Short Term Targets (2015)	Medium Term Targets (2018)	Long Term Targets (2020)	
	Broadband Targets for Cities						
	Availability (Coverage)	Wired	1.50%	10%	16%	25%	
	Penetration (Usage)	Wired	0.50%	3.30%	5.30%	8.30%	
	Broadband National Targets						
	Availability (Coverage)	Wireless	35%	60%	80%	95%	
	Penetration (Usage)	Wireless	6%	21%	42%	76%	
	Broadband Target for Communities						
	Community Public Access Venues	Wired or Wireless Hotspots	15%	25%	65%	100%	

Source: The Nigerian National Broadband Plan 2013 - 2018

Nigeria (con't)

	Unserved Areas	Underserved Areas	Served Areas
	Less than 10% of households and individual users have internet access	Less than 50% of households and individual users have Broadband Access	50% and above of households and individual users have Broadband access
Strategy	Strategy is low cost wireless solutions, Satellite Mobile Broadband and public access within 2km	Strategy is hybrid of wireless, Satellite and Fibre to the x Mobile Broadband, Fixed Wireless and Fibre to the building	Strategy is Fibre to the Base Station, and Fibre to the home Increased Fibre Penetration
Tactic	3G Wireless Coverage provided as a minimum to 80% of the population	4G/LTE Wireless Coverage and Fibre to the base transceiver station for increased capacity	Full Migration to Fibre in cities for High Speed Networks Fibre to the x

Broadband funding estimates	(US\$ million)		<ul style="list-style-type: none"> ▶ The cost of building fibre within cities is estimated at US\$60,000 per km while the cost of building fibre around states is estimated at US\$20,000 per km ▶ An average State Capital shall require 250 kilometres of fibre for a metro ringed design and there are 33 state capitals.
	Total for all state rings	34	
	Total for metro in 33 capital	0	
		49	
		5	
	Overall total	79	
		5	

Source: The Nigerian National Broadband Plan 2013 - 2018

South Africa

Broadband Targets					
Target	Penetration measure	Baseline (2013)	By 2016	By 2020	By 2030
Broadband access in Mbps user experience	% of population	33.7% Internet access	50% at 5 Mbps	90% at 5Mbps 50% at 100Mbps	100% at 10 Mbps 80% at 100 Mbps
Schools	% of schools	25% connected	50% at 10 Mbps	100% at 10Mbps 80% at 100Mbps	100% at 1 Gbps
Health facilities	% of health facilities	13% connected	50% at 10 Mbps	100% at 10Mbps 80% at 100Mbps	100% at 1 Gbps
Public sector facilities	% of government offices		50% at 5 Mbps	100% at 10Mbps	100% at 100 Mbps

Source: National Broadband Policy - South Africa Connect

South Africa (con't)

Four-pronged strategy

Digital readiness

- ▶ Coordinated and integrated action on network builds
- ▶ Rights of way
- ▶ Enforcement of wholesale access regulation
- ▶ Rationalisation of state-owned companies
- ▶ Appointment of Broadband Council

Digital development

- ▶ Aggregation of public sector demand
- ▶ Infrastructure extensions
- ▶ Health and education connectivity prioritised

Digital future

- ▶ Affordable, high speed broadband
- ▶ Fibre and terrestrial wireless and satellite
- ▶ Universal coverage through multiple delivery modes
- ▶ Open access wholesale network

Digital opportunity

- ▶ ICT curriculum/e-literacy
- ▶ Skills to secure and create jobs to ensure equity and inclusion
- ▶ Quality of life
- ▶ National competitiveness
- ▶ Vibrant creative and software industry

Broadband funding estimates

- ▶ Digital readiness will be funded by government through reprioritization and rationalization of existing budget allocations
- ▶ Digital readiness will be funded by government through reprioritization of existing national and provincial budget allocations supplemented by new allocations
- ▶ Digital future will be funded through public and private funding sources based on the business plan developed during the road-mapping process
- ▶ Digital opportunity will be funded by government through reprioritization and rationalization of existing budget allocations supplemented by new allocations where appropriate

Source: National Broadband Policy - South Africa Connect

Broadband targets

The National Broadband Policy and Smart Thailand plan outlined the following targets for broadband development:

- ▶ Create a broadband network that covers at least 80% of the population by 2015, and 95% by 2020 with quality service and at a reasonable price.
- ▶ Deploy a fiber-optic broadband network with a connection speed of at least 100 Mbps in major economic cities by 2020.
- ▶ **Action plans:**
 - ▶ **e-Government:** Connecting all 7,800 District centers (76 e-Government provinces) and all local communities.
 - ▶ **e-Healthcare:** Connecting 15,000 hospitals and healthcare centers.
 - ▶ **e-Education:** Connecting 30,000 schools and local libraries and community education centers.
 - ▶ **e-Agriculture:** Connecting 95% Thai citizen especially remote poor farmers.

Thailand (con't)

Broadband technology profiles

- ▶ Fiber optics is the main option for broadband backbone due to its reliability and sustainability. With significant size of fiber optic network in place, it provided an opportunity to share infrastructure.
- ▶ Although, fiber optics remains the main option, satellite is also likely to provide connectivity in remote areas.
- ▶ High-speed wireless networks such as LTE/4G, along with broadband or ultra broadband services, were also used.
- ▶ **Wi-Fi scheme:** The ICT Ministry also plans to initiate free Wi-Fi projects in collaboration with service providers to offer the service in remote areas, where fiber optic network is not available, and in cities throughout the country.
 - ▶ In the initial phase, this project aims to have 20,000 Wi-Fi hot spots at public areas such as airports, public transportation venues, government offices, and universities.
 - ▶ In the next phase, it aims to welcome private sectors to join the project and have 250,000 free Wi-Fi hot spots throughout the country within the next five years.

Source: Broadband Development in Thailand; Smart Thailand; MICT Thailand; Country Report: Thailand - BSA; Press Releases

Thailand (con't)

Broadband funding estimates

- ▶ The Information and Communications Technology Ministry (MICT) planned a budget of US\$2.6 billion to expand a fiber-optic broadband network nationwide.
- ▶ Under Smart Thailand, a company called National Broadband Network Company (NBNC Co) is expected to operate the ICT network nationwide. It is likely to be a joint venture involving existing network operators from both government - TOT and CAT Telecom - and the private sector.
- ▶ **MOU on Infrastructure and network sharing:** In November 2010, six telecom operators entered into a Memorandum of Understanding (MOU) on infrastructure and network sharing with the purpose of supporting the National Broadband Policy. The six telecom operators include – CAT Telecom, TOT, AIS, DTAC, True Move, and Digital Phone.

Source: Broadband Development in Thailand; Smart Thailand; MICT Thailand; Country Report: Thailand - BSA; Press Releases

Broadband targets

In September 2010, the Vietnam Government announced the following broadband targets:

- ▶ **Broadband telecommunications infrastructure:**
 - ▶ **By 2015:** Complete the broadband network in communes and wards nationwide, connecting internet to all schools; and cover 85% of the population with mobile broadband. Vietnam will be ranked among 65 countries on the ranking list of the International Telecommunications Union (ITU).
 - ▶ **By 2020:** Complete the broadband network in almost all villages and hamlets; to cover 95% of the population with mobile broadband. Vietnam will be ranked among 55 countries on the ranking list of the ITU (in the one-third group of leading countries).
- ▶ **Information universalization:**
 - ▶ **By 2015:** 20-30% of households nationwide will have computers and access to broadband internet.
 - ▶ **By 2020:** 50-60% of households nationwide will have computers and access broadband internet, of which 20-30% access optical cable broadband.

Vietnam (con't)

Broadband technology profiles

- ▶ The broadband backbone network in Vietnam is built on fiber optic technology. The backbone system is basically divided into three levels:
 - ▶ International level, including satellite earth stations, submarine landing stations and overseas switching.
 - ▶ National level (inter-province), including backbone route and national transit exchange.
 - ▶ Provincial level, including inner-provincial transmission lines, host exchanges, branch exchanges and inner-provincial exchanges.
- ▶ Presently, most Internet users are using ADSL. Fiber to the Premise (FTTx) is the new technology being deployed by service providers.
- ▶ In April 2010, the Ministry of Information and Communication (MIC) announced its intention to invite proposals for a 4G plan in the country. The MIC sought to ensure that either WiMAX or LTE technology could be used for deploying 4G wireless broadband.

Broadband funding estimates

- ▶ The Vietnam Government has plans to invest US\$8.5 billion over the next the 10 years in the ICT sector.
- ▶ According to the MIC, eleven enterprises have been granted licenses to build the broadband network infrastructure. However, only three major companies have built telecommunications network infrastructure on a national scale (Viettel, VTN (VNPT), EVN Telecom).

Source: Ministry of Justice; Broadband in Vietnam – inforDev, World Bank, IFC; Viet Nam News

Sub-national initiatives - Scotland

- ▶ In August of 2015 a new rural broadband funding program was announced by the Scottish government. This program is intended to help communities across rural Scotland to co-ordinate demand for broadband access by joining together with other community groups to deliver a broadband solution for their area. This government program is administered by Community Broadband Scotland, a project led by local enterprise groups.
- ▶ The goals of the program are to:
 - ▶ Support communities to establish and grow the demand for superfast broadband services in areas that are unlikely to be served by the **Digital Scotland Superfast Broadband Programme**.
 - ▶ Support community projects that create, improve and extend superfast broadband infrastructure in remote and rural Scotland.
- ▶ The program is open to groups of communities in areas that are unlikely to obtain superfast broadband through commercial roll out. The government has identified areas that are not likely to be served by next generation networks (30 Mbps or more) for the next three years, or where there is not basic infrastructure (24 Mbps or less) planned for the next three years.

Sub-national initiatives – Scotland (con't)

- ▶ Communities can apply for assistance. To be eligible, community organisations must be community-led and community-controlled, with any profits reinvested back into project delivery.
- ▶ Financial assistance provide between 70 per cent and 89 per cent of total eligible costs for capital works associated with eligible projects.
- ▶ There is no upper or lower limit to the size of the project.

Eligible costs:

- ▶ The broadband program can provide grant assistance towards the capital infrastructure your project/community needs to deliver superfast broadband.

The eligible costs shall include the following costs:

- ▶ investment costs for the deployment of a passive broadband infrastructure
- ▶ investment costs of broadband-related civil engineering works
- ▶ investment costs for the deployment of basic broadband networks, and
- ▶ investment costs for the deployment of next generation access (NGA) networks

Sub-national initiatives – Scotland (con't)

- ▶ In addition the Scottish Government established a start-up fund to assist communities with the costs involved in establishing a community-led project. This start up fund is focused on providing seed funding to cover the following costs:
 - ▶ Stage 1 Community Engagement Phase
 - ▶ Stage 2 Project Planning
 - ▶ Stage 3 Capital Assistance
- ▶ Three technology options are highlighted Radio, Fiber Optic, and Digital Subscriber Line (DSL)

Sub-national initiatives – Scotland (con't)

Progress - It seems that six pilot projects are underway:

- 1) Ewes Valley (Dumfries and Galloway) - A small rural community not currently able to receive a standard broadband service due to distance from the serving BT exchange.
- 2) Tomintoul and Glenlivet (Moray) - Remote inland mountain communities located within the Moray area of the Cairngorm National Park. Includes the highest village (Tomintoul) in the Highlands. Area remote from many services.
- 3) Elvanfoot (South Lanarkshire) - A community at an advanced stage in their broadband plans (Elvanfoot) and with scope to provide a service to a neighbouring community. Community has combined with nine other area villages and formed B4GAL - broadband for Glencaple and Lowther. Potential access to funding from area renewable energy projects.
- 4) Colonsay (Argyll and Bute) - An island off an island with a low population. Active local group has identified improved broadband provision as a key component for supporting development and retaining population.
- 5) Corgarff and Glenbuchat (Aberdeenshire) - Small dispersed settlements within glens at the edge of the Cairngorms. Area remote from serving BT exchanges with many residents having to rely on a satellite broadband provision.
- 6) Applecross (Highland) - A remote coastal community with a low population and heavily dependent on tourism. No users are currently able to receive a standard broadband service in excess of 0.5Mbps. No standard broadband service possible along the north coast.

Sub-national initiatives – Ireland

- ▶ On July 15, 2015 Ireland published an updated National Broadband Plan Intervention strategy. This initiative aims to deliver high speed internet services to every citizen and business in Ireland. Their strategy is to achieve this goal by accelerating commercial investment by telecom providers, and through public sector intervention to provide high speed broadband where the commercial sector will not invest.
- ▶ They followed a process which performed a detailed mapping exercise of the underserved areas. Surveys were carried out to define who had broadband services, which areas had planned commercial rollouts, and areas which would require state intervention.
- ▶ They are proposing to set the following technical standards to be met by the winning bidder(s) in the procurement process:
 - ▶ A minimum of 30Mbps download
 - ▶ A minimum of 6Mbps upload
 - ▶ Latency – no more than 25 milliseconds
 - ▶ Jitter – no more than 25 milliseconds
 - ▶ Packet loss – not more than 0.1%
 - ▶ Service availability – at least 99.95% of the time

Sub-national initiatives – Ireland (con't)

- ▶ The state is considering two ownership models of the network once built.
 - 1) A commercial stimulus model where public funds are made available to make private investment commercially viable.
 - 2) A concession type arrangement where a commercial company designs, builds and owns the network for the duration of the contract but the asset reverts to the State at the end of contract.

Sub-national initiatives – Maine

- ▶ State Government created ConnectME whose mission is to facilitate the universal ability of broadband to all Mainers by:
 - ▶ Establishing criteria defining unserved and underserved areas;
 - ▶ Enhancing communications technology infrastructure;
 - ▶ Monitoring wireless coverage in areas where the authority determines the quality of the coverage is inadequate;
 - ▶ Expanding the availability of broadband to residential and small business customers in unserved or underserved areas;
 - ▶ Expanding the availability of broadband with bandwidth, synchronicity, reliability and security adequate to serve business, education and enterprise consumers in unserved or underserved areas;
 - ▶ Otherwise enhancing the State's communications technology infrastructure in unserved and underserved areas;
 - ▶ Collecting, aggregating, coordinating and disseminating information and data concerning communications services and advanced communications technology infrastructure in the State;
 - ▶ Tracking investment in advanced communications technology infrastructure;
 - ▶ Continually assessing the availability of and need for advanced communications technology infrastructure in unserved or underserved areas within the State;
 - ▶ Identifying and securing federal and other funding sources for broadband or wireless deployment or education;
 - ▶ Identifying opportunities for coordination among providers, consumers and state and local governmental entities, including coordination with the statewide emergency radio network; and
 - ▶ Creating and facilitating public awareness and educational programs to encourage
- ▶ ConnectME is primarily education and grant mediation program

Sub-national initiatives– Maine Middle-Mile Fiber

Run underneath the ConnectME program

- ▶ As part of the American Recovery and Reinvestment act of 2009, the federal government set aside money to be used to improve access to broadband Internet service in areas where such service has been hard to come by.
- ▶ A coalition of Maine state officials, representatives of the University of Maine System and Maine telecommunications companies got together in early 2009 to determine how Maine might leverage some of the stimulus funds to enhance broadband access.
- ▶ After some discussion, it became clear that the lack of a middle-mile network of high-capacity fiber optic cable - the equivalent of an Interstate highway in a road system - was a major obstacle to improving data transmission in many areas of the state. A middle-mile network design was developed for the grant proposal.
- ▶ The proposal was dubbed the Three Ring Binder because it featured three "rings" of fiber strung through Western, Northern and Down East Maine.
- ▶ Maine Fiber Company was formed during the grant application process to take charge of the project should it win funding. On Dec. 17, 2009, U.S. Secretary of Commerce Gary Locke came to Bangor to announce that the Three Ring Binder would receive a \$25.4 million federal grant. Maine Fiber Co's private investors provided approximately \$7.4 million more in financing to complete the project, without which the grant would not have been approved

Sub-national initiatives – Kentucky

- ▶ Created an organization called KentuckyWired
 - ▶ To accelerate the expansion of sustainable broadband access and adoption in the Commonwealth by determining the characteristics of broadband availability and use in Kentucky, and promoting the value of broadband to improve the lives of citizens.
- ▶ Office of Broadband Outreach and Development (OBOD) mapping efforts identify which providers and technologies are available across the state.
- ▶ OBOD reviews and supports grant requests from entities to expand broadband access and has aided in the deployment of new and less costly infrastructure in many areas of the Commonwealth.
- ▶ Through strategic partnerships and outreach, OBOD helps communities inform and educate citizens, businesses and service providers on the economic potential enhanced through the integration of broadband.
- ▶ OBOD promotes the understanding of broadband technology, its personal benefits, and the new business methods and expectations which it enables.

Sub-national initiatives – Kentucky (con't)

Strategy of leveraging Federal and Private Money to build the “Middle-Mile Architecture”

- ▶ P3 \$324 Million deal announced on August 31, 2015
- ▶ Approximately 3,400 miles of high-speed Internet connectivity throughout Kentucky’s 120 counties.
- ▶ Public-private partnership (PPP) with Macquarie Capital to develop this robust, reliable fiber “backbone” infrastructure; critical first components scheduled to be operational in less than two years.
- ▶ KentuckyWired is unique in that it will be an “open access” network. This means cities, partnerships, private companies or other groups may tap into those “middle-mile” lines to complete the “last mile” – the lines that run to individual homes or businesses.
- ▶ Macquarie Capital’s team of market-leading specialists will design, develop and operate the network for 30 years.
- ▶ The project is estimated to cost \$324 million. It is supported by \$30 million in state bonds and \$23.5 million in federal grants. The remainder comes from private investment.

Sub-national initiatives – Wisconsin

- ▶ Operates a grant program to facilitate the extension of broadband throughout the state.
- ▶ The recent state budget authorized the Broadband Expansion Grant Program for an additional two years.
- ▶ This program provides reimbursement for equipment and construction expenses incurred to extend or improve broadband telecommunications service in underserved areas of the state.
- ▶ Grant funds are provided to reimburse the construction of broadband facilities. Grant funds cannot be used to reimburse the operating expenses of a telecommunications provider or the monthly bill of a telecommunications service customer.
- ▶ An application for a grant may be submitted by any of the following entities:
 - ▶ An organization operated for profit or not for profit, including a cooperative.
 - ▶ A telecommunications utility.
 - ▶ A city, village, town, or county that has established a legal partnership or joint venture arrangement with an otherwise qualified organization or telecommunications utility.

National broadband plan – developed markets

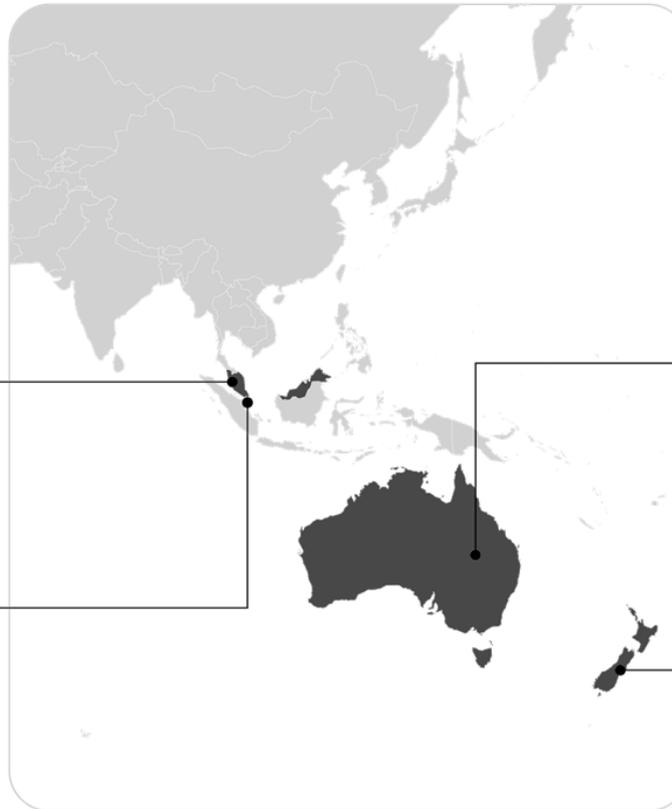
National broadband plan: Australia, Malaysia, New Zealand and Singapore

Malaysia

- In 2007 the Malaysian government launched a national broadband project, the “National Broadband Initiative” (NBI), in partnership with Telekom Malaysia. The NBI achieved its first target of 50% household broadband penetration by the end of 2010.
- The estimated cost of the project is \$3.55bn (MYR11.3bn) with the government investing \$754m on an incurred claims basis.
- The NBI coverage strategy for national broadband rollout was divided into three zones and two projects: the High-Speed Broadband (HSBB) project (zone 1) and the Broadband for General Population project (zones 2 and 3). In March 2010 the Malaysian prime minister officially launched the HSBB project in zone 1.
- At the end of 2012 the network had passed 1.377 million premises. HSBB subscriptions exceeded 600,000 as of mid-2013.

Singapore

- “Intelligent Nation 2015” (iN2015) is a 10-year national Infocomm master plan launched in 2006 and led by the IDA.
- The IDA has taken an active position in promoting NGA development by conducting tenders for the next-generation national broadband network.
- In 2007 the government offered \$805m (SGD1bn) to build and operate an FTTH network, with structural and operational separation in passive and active network infrastructure.



Australia

- In April 2009 the Australian government decided to invest in a national broadband network (NBN), creating a company to build, own, and operate it.
- The NBN Co is wholesale-only and must provide access on equivalent terms.
- The original plan was to build a national FTTH network; however, in April 2014 the new coalition government opted to take a new direction.
- The NBN will now consist of a multi-technology of FTTP, FTTN, and HFC, and will aim to provide 25Mbps for all by 2020.
- A public equity capital limit of \$27.7bn (A\$29.5bn) has been set, although the project could cost up to \$38.5bn (A\$41bn).
- The rollout of the NBN has been delayed due to commercial and political factors but 385,876 brownfield premises had been passed as of the first week of July 2014.

New Zealand

- In March 2009 the Ministry of Economic Development announced that the government would provide funding to accelerate the provision of ultra-fast fiber broadband (UFB) to 75% of the country's population by 2019. The level of funding was set at \$1.19bn (NZ\$1.35bn).
- As of 2Q13, 229,600 homes and businesses could connect to the UFB network.
- The Rural Broadband Initiative (RBI) is designed to address the 25% of the market outside the footprint of the UFB program. Chorus and Vodafone won an RBI competitive tender in February 2011 to provide rural broadband services. Chorus's role in the project is to provide fixed infrastructure, while Vodafone is responsible for towers and cell equipment.
- Grant funding of \$265m (NZ\$300m) has been provided to support the RBI. The government provided \$42m (NZ\$48m) initially, but the remainder will be funded by the industry through the Telecommunications Development Levy.

National broadband plan: China, Hong Kong, Japan, South Korea and Taiwan

China

- China's State Council has implemented a national broadband strategy – Broadband China – that aims to boost average broadband speed in the cities to 20Mbps by 2015.
- It also aims to boost the number of 3G and LTE users to 1.2 billion by 2020, equating to penetration of 85%, and the number of fixed broadband subscribers to 400 million, or 70% penetration.
- Fixed broadband subscriptions reached 181.5 million as of 3Q13.

Hong Kong

- Since 1998 the "Digital 21 Strategy" has set out the government's vision of developing Hong Kong into a leading digital city. It was reviewed and updated in 2001, 2004, and 2008.
- The 2008 edition has five key action areas: facilitating a digital economy, promoting advanced technology and innovation, developing Hong Kong as a hub for technological cooperation and trade, enabling the next generation of public services, and building an inclusive, knowledge-based society.
- The government has consulted on a new edition of the strategy, which it will formally publish during 2014.
- "Smarter Hong Kong, Smarter Living" is the theme of the new strategy. It sets out the framework for Hong Kong to leverage new technologies to propel continuous economic and social development on various fronts.

Taiwan

- Taiwan's national broadband plan forms part of the "Digital Convergence Policy Initiative (2010–15)".
- The program aims to have 85% coverage of 100Mbps fixed broadband by the end of 2013 and 100% by 2015. As of mid-2013, coverage had exceeded 80%.
- Since 2012 the NCC has been promoting the increase of broadband speeds to villages, boroughs, and tribes in rural areas.
- The NCC is aiming to provide download speeds of 12Mbps to 85% of rural broadband subscribers by the end of 2014, and to 95% by 2015.

Japan

- The "i-Japan strategy 2015" has four major aims: easy-to-use digital technologies, breaking down the barriers that hinder the use of digital technologies, ensuring security when using digital technologies, and creating a new Japan by diffusing digital technologies and IT throughout the country.
- The strategy also includes a national coverage target of 100+Mbps for mobile broadband and 1Gbps for fixed broadband by 2015.
- Investments are to be financed by the industry.

South Korea

- The Giga Korea project is an IT innovation industry plan; its purpose is to move toward the goal of realizing a smart Korea by 2020. It has targets 1Gbps fixed broadband and 10Mbps mobile broadband. It will require investments from the government and the private sector of over \$542m (KRW550bn) during this period.



National broadband plans: Europe (1/2)

UK

- In December 2010 the government presented its national broadband strategy, which aims to provide the UK with “the best superfast broadband network in Europe” by 2015. Its aim was nationwide 2Mbps coverage and 90% 24Mbps+ coverage by 2015. Broadband Development UK (BDUK) is responsible for the \$907m (£530m) rural broadband program, which gives grant funding to local bodies to procure superfast broadband services for their areas.
- However, in June 2013 the government announced that it would miss the 2015 90% coverage target. The target has been revised to 95% coverage by 2017. As of 2013, 2Mbps broadband was available to 97% of the population, while superfast broadband reached 82%.

France

- France’s national broadband strategy was adopted in 2011 and will remain valid until 2022. It is aligned with the EC’s DEA targets and aims to ensure 30Mbps broadband coverage by 2020.
- The plan also aims to provide superfast broadband access (100Mbps) to 100% of the population by favoring FTTH connections. Other technologies will be deployed in order to ensure nationwide coverage. Current FTTH coverage stands at 9%.
- \$4.23bn (€3.12bn) is available from Le Fonds National pour la Societe Numerique, of which \$2.27bn (€1.67bn) will be dedicated to the development of superfast broadband networks.



Germany

- Germany adopted a national broadband plan in 2009, which was then revised in 2013.
- The initial objectives of the plan were to achieve a “capable” (i.e., 1Mbps) broadband speed for all by 2010 and to provide 75% of all regions with access to 50Mbps by 2014. The latter target was extended to 100% with 50Mbps availability by 2018.
- The government-owned development bank and the Landwirtschaftliche Rentenbank provide annual loans capped at \$203.0m (€150m) and \$13.5m (€10m), respectively. Further funding is available for several sources.

Italy

- In February 2009 the government launched a broadband plan aiming at full 2Mbps coverage by 2012 (at least 94% with 4Mbps speeds). As of December 31, 2012 the coverage of 2Mbps connections was 98.4%.
- The Italian Digital Agenda, launched by the government in March 2012, also had a Strategic Project for Ultra Broadband, in line with the EC’s Digital Agenda targets. The plan aims to foster NGA deployment in “white areas” that are unattractive for the market. Direct intervention, public–private partnerships, and incentives will be used.

Spain

- The Digital Agenda for Spain was adopted in February 2013.
- It is structured around six major objectives, including fostering the deployment of networks and services to guarantee digital connectivity, and developing the country’s digital economy.
- The goals of Spain’s national broadband plan are in line with the EC’s Digital Agenda, although targets for 2015 have also been set: 50% coverage of 100Mbps speeds and 75% 4G coverage.
- At present, broadband at a minimum speed of 1Mbps is available to 100% of the population thanks to a universal service obligation.

National broadband plans: Europe (2/2)



Norway

- In October 2013 the two coalition parties of the new government published a policy statement, including the plan to provide access to a 100Mbps connection to all of its citizens.
- The new government proposes to establish a new state-owned fund for infrastructure investments and intends to put \$16.2bn (NOK100bn) into the fund over the next five years. The fund will cover IT infrastructure, roads, railway, and community transport projects.

Netherlands

- The Netherlands' national broadband strategy is in compliance with the targets of the EC's Digital Agenda on broadband coverage. The target of 100Mbps broadband coverage by 2020 has already been achieved; coverage stood at 95% of Dutch households in 2013.
- The Dutch government now plans to meet the high demand of high-speed Internet access by 2020.

Sweden

- The Swedish government's broadband plan target consists of two stages: at least 40% coverage of 100Mbps connections by 2015, and 90% coverage by 2020.
- In accordance with the plan, municipalities are being provided with government grants for funding the deployment of broadband networks in rural areas, and the PTS is supervising the progress of the broadband rollout.
- \$114m (SEK775m) will be made available for rural areas.
- According to the PTS, over 53% of households are now covered by 100Mbps connections, which means that the first target has been achieved ahead of schedule.

Latvia

- Latvia's national broadband strategy was adopted in 2013 and remains valid until 2020.
- Targets are in line with Digital Agenda (i.e., 30Mbps to all citizens by 2020).
- Besides providing high-speed Internet to residents, businesses, and public administrations, the broadband network is used to develop e-services for government, schools, commerce, health, and business.

Lithuania

- Lithuania's latest broadband strategy is included in the government's Information Society Development Programme 2011–2019.
- In line with the EC's digital agenda target, it aims to achieve 100% coverage of 30Mbps connections by 2020. An intermediate target is set for 2015 (70%).

Characteristics of a good National broadband plan

Characteristics of a good National plan

Characteristics of a good plan

Best practice cases for national broadband plans are by now broadly well-established. According to research by ITU, the United Nations specialized agency for information and communication technologies, a good Plan should broadly:

- ▶ Make the case for broadband, specific to the needs and economic structure of that country, based on thorough contextual market analysis and benchmarking;
- ▶ Escape 'silo thinking' and apply across a range of different sectors;
- ▶ Be developed in consultation with a broad range of stakeholders. To ensure effective implementation, there should be a coordinating agency responsible for implementing the plan overall, in conjunction with other involved bodies;
- ▶ Consider the vital issue of enforceability/execution. Who is responsible for enacting the Plan? Who will monitor progress? How will implementation be funded?
- ▶ Consider both demand and supply side considerations. This may mean supporting the development of human skills, literacy, and demand among, for example, schools and SMEs, as well as taking into account the role of Government in driving demand in many developing countries.
- ▶ Have a timescale of around 3-5 years, as longer time horizons are difficult to predict in a fast-changing industry.
- ▶ Be broadly technology-neutral. Plans should have no major implications in terms of favouring specific technologies.
- ▶ Contain detailed, measurable goals and strategies to allow evaluation of progress. Plans may often also contain consideration of 'special interest groups', such as schools, hospitals, universities, diverse languages and access by minorities or people with specific needs.
- ▶ Address related legislation – e.g. privacy and data protection, security and digital signatures, rights of way, interoperability.
- ▶ Strike a balance between high-level strategic direction and detail. Plans should allow implementing agencies some flexibility in how they should go about implementation.

Source: ITU - The state of Broadband 2014: Broadband for All

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