

Convergent Objectives, Divergent Strategies: A Taxonomy of National Broadband and ICT Plans

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High-speed broadband Internet Protocol (IP) networks have become integral to daily life. As one of the few general-purpose technologies, broadband is becoming increasingly pervasive, continually improving and catalyzing new inventions and innovations.¹

At the national level, governments have recognized broadband's significant contribution to economic performance as well as social development. The UN Broadband Commission estimates that 119 countries have implemented broadband policies; during the global economic crisis of 2008 and 2009, at least a dozen countries included broadband network investment in their countercyclical fiscal stimulus measures.²

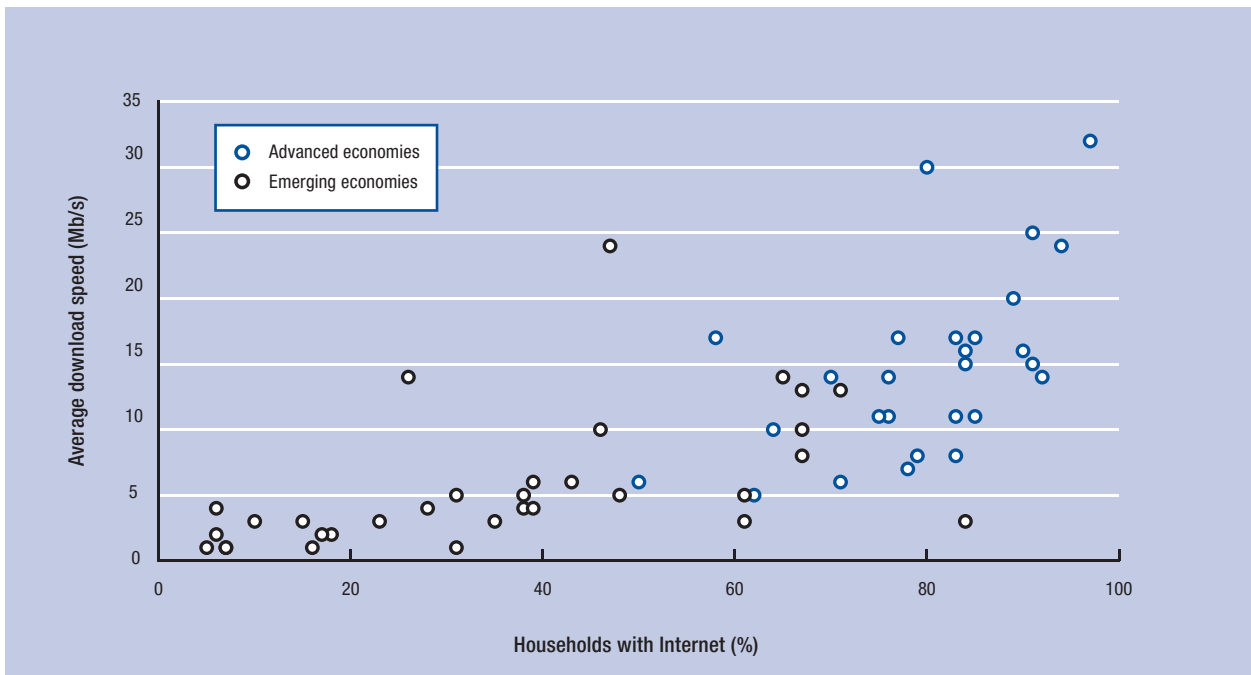
However, the surge in formal broadband policies highlights the variation in action across countries. A critical question now is whether the divergence in policy packages will result in significant differences in the efficacy of plans. To begin this research and establish a foundation for understanding the global landscape of national broadband and information and communication technology (ICT) plans, this chapter reviews plans around the world and presents a taxonomy for classification. First, we detail the existing relationship among broadband, economic growth, and employment. Second, we analyze a cross-section of national plans, considering their objectives and policy components. We then propose a taxonomy examining the degree of broadband supply- and demand-side emphasis. This taxonomy establishes a common language that can guide governments through the development of national broadband plans; it also can serve as a baseline for evaluating the factors of success for implemented plans.

BROADBAND ADOPTION AND ECONOMIC IMPACTS

Broadband adoption encompasses the expansion of broadband availability as well as the use of devices, applications, content, and services that leverage high-speed IP communications. Government policies can impact all facets of adoption. Countries that do not consider the need to make progress on broadband risk significant loss of competitiveness.

The rationale for increasing broadband adoption, through both expanding infrastructure and increasing broadband usage, is based on both short- and long-term impacts. In the short term, the construction of high-speed networks stimulates local economies by immediately employing labor and purchasing materials. Several studies have identified short-term employment effects stemming from (1) direct labor employed to build broadband infrastructure and (2) indirect and induced jobs that are created by suppliers and services supporting the construction activity. One review of six studies that estimate various employment impacts suggests that, on average, 1.56 direct and indirect jobs result per employment opportunity focused on

Figure 1: Coverage and download speeds, 2011



Source: ITU World Telecommunications/ICT Indicators Database 2012; Ookla Net Index 2012.

broadband network construction; this figure rises to 2.78 for direct, indirect, and induced jobs created.³

In the long term, business utilization of broadband can result in network effects and gains in productivity. In the United States, the employment impacts caused by network effects are estimated to be 1.17 jobs per direct and indirect job.⁴ Recent research by Qiang and Xu at the World Bank examined cross-country time-series and firm-level data; they determine that broadband has “long-term effects on growth, and contributes to the growth of a number of non-telecom industries, especially high-tech industries.”⁵

THE ROLE OF GOVERNMENT IN BROADBAND ADOPTION

Public policies in broadband development vary in the extent of intervention and the degree to which policy levers focus on broadband availability (supply) or usage (demand). Although the fiscal stimulus packages of many countries, for example, responded to the global crisis by direct public-sector investment in broadband infrastructure, public policy also facilitates expansion by establishing rules and regulations under which the private sector is encouraged to expand connectivity.

Increasing broadband adoption requires demand-driving policy measures as well. In order to fully utilize broadband infrastructure, individuals, enterprises (small, medium, and large), and government entities require the skills, devices, applications, and content that motivate the interest and ability of stakeholders to incorporate IP technology. Both sets of policy actions—supply expanding and demand driving—are integral, particularly

in countries where broadband penetration levels are significantly below the thresholds of critical mass where increasing returns to investment occur (estimated to be at 20 percent subscription penetration).⁶

ANALYSIS OF PLANS

In late 2012, we conducted a review of national broadband and ICT plans across the world and categorized each policy. We first identified the 60 largest countries in the world (a group constituting over 90 percent of global gross domestic product and 95 percent of current Internet users), and reviewed all national broadband policy environments to determine whether a current national broadband and ICT plan exists. Of the 60, we identified 43 countries with plans; of those 43 we were able to closely review 28 plans with official English versions. These 28 plans represent a cross-section of countries across geographic regions as well as income levels. Appendix A lists each plan, its economy of origin, and the year of its publication.

Our review also compared the national plans against a scorecard of broadband policies based on a review of telecommunications policy literature. This comparison against the scorecard allows for the categorization and descriptive analysis of each plan. As far as we know, this taxonomy is the first attempt to characterize an international sample of national broadband and ICT plans.

CONVERGENT OBJECTIVES

Although the plans reviewed range widely in their policy recommendations, they converge on the overarching

objective of increasing broadband and ICTs in order to advance their respective economies. To a lesser degree, the specific targets and indicators of the plans vary. We identified three main categories of goals presented across the plans: coverage (subscriptions or availability), speed (primarily download), and economic impacts (including employment). We group the remaining targets, predominantly sector-specific, into a fourth category of “other” goals.

Coverage targets focus on connecting people and territories to IP networks. Commonly measured as a percentage of individuals or households, some countries also include targets for connecting businesses as well as public institutions, such as schools and hospitals. The indicators utilized vary from actual subscriptions to simply geographic coverage of broadband infrastructure that provides access. Speed targets are closely associated with coverage, and broadband definitions vary widely, from nascent levels below 1 megabit per second (Mb/s) to ultra-fast broadband speed targets at the 100 Mb/s level.

Economic impact goals identified in the plans range from specific employment targets as a result of broadband and ICTs to aggregate value-added measured by expenditure. The remaining targets range from sector-specific ones such as increasing electronic government services to increasing country rankings in international indexes. Appendix B presents specific examples from national plans. The economies are divided into “Advanced” and “Emerging,” demonstrating that historic income differences do not dictate the aggressiveness of broadband targets.

MORE ON COVERAGE AND SPEED

Coverage and speed targets comprise the main goals listed across the plans reviewed here, reflecting an international emphasis on these objectives. For example, Target 3 of the UN Broadband Commission is to connect at least 40 percent of households in developing countries to broadband Internet by 2015.⁷ The European Commission’s *Digital Agenda for Europe 2010–2020* emphasizes broadband coverage for all by 2013, including fast broadband coverage of at least 30 Mb/s for all by 2020, with 50 percent of households subscribed to ultra-fast broadband of 100 Mb/s.⁸

Comparing the current levels of coverage and speed of the 60 largest countries illustrates the relationship between household adoption of the Internet and average download speeds (Figure 1). Coverage and speed are highly correlated (with a correlation coefficient of 0.7), suggesting a concurrent policy approach to coverage and speed targets. Categorizing economies into advanced and emerging groups further illustrates that, although the majority of households in advanced economies are connected to the Internet (seen in the x-axis of the figure), only a few emerging economies

Box 1: Networks fit for purpose: Beyond download speed targets

Although the high download speed targets of many national broadband and ICT plans are laudable, ensuring full utilization of broadband technology requires an equal emphasis on additional components of broadband quality: upload speed and latency.

High download speeds are necessary for the consumption of large data files or the streaming of content, but synchronous communication, such as video conferencing, requires a parallel high speed of upload. Additionally, latency (measured as the time required for round-trip data transmission, calculated in milliseconds) is also critical for two-way communication over the Internet in a wide range of applications.

As more applications and services are hosted “in the cloud,” upload speed and latency become more essential. Cisco’s Visual Networking Index 2012–2017 estimates that nearly three-quarters of mobile IP traffic is cloud-based. That share is forecasted to rise to 84 percent of all mobile data traffic by 2017.

Additionally, Cisco’s Global Cloud Index estimates that, for business and consumer applications delivered by the cloud, an advanced level of cloud application readiness requires latency below 100 milliseconds. This latency threshold is required in order to support high-definition (HD) video conferencing, advanced multiplayer gaming, and the streaming of super HD video. Intermediate cloud application readiness (to support IP telephony, basic gaming, basic video chat, basic video conferencing, advanced social networking, and HD video streaming) requires latency of between 100 and 159 milliseconds. Basic readiness is above 160 milliseconds.

Sources: Cisco Mobile VNI Forecast 2012–2017; Cisco Cloud Readiness Index 2012.

have a majority of households connected.⁹ And although some advanced and emerging economies have similar coverage and speed levels, a few emerging countries appear as outliers, with very high average speed (Romania, for example) or very high household coverage (Qatar).

Coverage and download speed, although important, are not the only factors that should be taken into account. Fully leveraging the benefits of broadband requires adequate upload speed as well as latency (Box 1).

POLICY OPTIONS: SUPPLY- AND DEMAND-SIDE DRIVERS

Other research has characterized broadband markets as an ecosystem with components covering hard infrastructure as distinct from policy environments, or applications and content access as distinct from connectivity and user skills. We have applied a

Figure 2: Categories of supply- and demand-side policies

SUPPLY-SIDE POLICIES	DEMAND-SIDE POLICIES
I. Competition and investment	I. Affordability of devices and access
II. Spectrum allocation and assignment	II. Government leadership in broadband use and online activity
III. Reducing infrastructure deployment costs	III. ICT skills development
IV. Core network expansion: Market led, government led, or a mix	IV. Online and local content, applications, new technologies, and services
V. Inclusive broadband availability (e.g., with universal service obligations or universal service funds)	V. Consumer protection and empowerment

Source: Authors.

supply-side versus demand-side approach, because this distinction more clearly demonstrates the fact that public policy can impact most facets of broadband adoption (Figure 2). The supply- versus demand-side categorization also points to the separate and distinct outcomes of expanding availability of broadband or stimulating utilization.

On the supply side, we have categorized the range of policy options into five groups, with specific examples of recommendations that are included in national broadband and ICT plans.

1. *Competition and investment policies.* These policies encourage private-sector entry and investment in broadband networks, as well as technology- or service-neutral rules that give operators the greatest degree of flexibility. In addition, they can include policies that promote effective competition in international gateways and/or wholesale nondiscriminatory access. For example, the United States' *Connecting America: The National Broadband Plan* (2010) included a wide range of recommendations to provide greater clarity on its broadband market and encourage investment; the recommendations in that plan ranged from reviewing wholesale competition regulations and clarifying interconnection rights and obligations to recommending balance in policies around copper retirement.¹⁰
2. *Spectrum allocation and assignment.* These policies allocate and assign spectrum to allow both existing and new companies to provide bandwidth-intensive broadband services. These policies also encourage the implementation of rules to allow operators to engage in spectrum trading. The Slovak Republic's *National Strategy for Broadband Access in the Slovak Republic* (2009) outlines a vision of effective utilization of spectrum frequency.¹¹ The plan recommends the transition toward the digital dividend, repurposing excess spectrum obtained by switching analogue to digital broadcasting.
3. *Reducing infrastructure deployment costs.* These include policies that allow for access to rights-of-way, infrastructure sharing, and/or open access on critical infrastructure. Public rights-of-way can include existing infrastructure owned by public entities, such as railways or electricity grids. Open-access policies can include government-sponsored or dominant-operator networks to enable greater competition in downstream markets. Germany's *Federal Government Broadband Strategy* (2009) includes measures to optimize the shared use of existing infrastructure and facilities.¹² Among these measures are developing an infrastructure atlas and database on construction sites, and promoting collaboration on ducts and other infrastructure.
4. *Core network expansion: Market led, government led, or a mix.* This category includes explicit and implicit strategies for core network infrastructure expansion that are: (1) market driven with few government directives, (2) a government-led (or majority-owned) network company, or (3) some combination of public and private cooperation in core infrastructure buildout that can encompass an official public-private partnership or a division in roles between public and private entities to provide the core network. Australia's *National Broadband Network* (2009) is an example of a national plan where a government-owned entity will provide national core network infrastructure.¹³
5. *Inclusive broadband availability.* These policies focus directly on closing broadband availability gaps for remote or marginalized populations. Options here include actions to build out infrastructure to underserved and/or rural areas, possibly utilizing universal service obligations and/or universal service funds. The United Kingdom's *Britain's Superfast Broadband Future* (2010) report emphasizes the Broadband Delivery UK

model for delivering connectivity in rural and hard-to-reach areas to stimulate private-sector investment with available funding.¹⁴

Demand-side policies focus on greater broadband adoption through intensifying the motivators of usage. From increasing affordability to fostering trust in the online environment, these policies are categorized into the following dimensions:

1. *Affordability of devices and access.* These policies include, but are not limited to, targeted subsidies for device purchases by low-income households, decreasing or removing luxury taxes on ICT devices, and low-cost leasing programs. Morocco's *Digital Morocco 2013 (2008)* strategy highlights programs to subsidize computers and Internet connections for teachers and students.¹⁵ The strategy also emphasizes public-private partnerships to offer similar low-cost device-and-access packages to different sections of the population.
2. *Government leadership to utilize and promote broadband.* These include policies that encourage the deployment of e-government services and portals, as well as the government operating as an "anchor-tenant" for broadband service. Japan's *New Strategy in Information and Communications Technology (IT)* (2010) highlights recommendations for improving and increasing the availability of e-government services and for driving efficiency in government ICT systems.¹⁶ These services include an emphasis on cloud technology and promoting citizen participation in political activities by electronic voting.
3. *ICT skills development.* This category includes programs to increase ICT-related skills and familiarity across the population, such as digital literacy programs. ICT skills development policies also target actions intended to increase community usage and access through "telecenters" and public-access sites as well as increasing technical skills, such as computer science and network engineering. Nigeria's *National Information Communication Technology (ICT) Policy DRAFT* (2012) emphasizes the introduction of ICT training at all school levels through the development of specialized training institutes.¹⁷ It also provides for computer and Internet access in public facilities such as post offices, schools, and libraries.
4. *Facilitating online and local content, applications, new technologies, and services.* These policies include programs such as targeted campaigns to increase and localize online content, sometimes

with a focus on translation into local language(s). This category also includes actions and legislation that can foster new applications, technologies, and services by supporting e-transactions or online payments and enforcing intellectual property protection to foster innovation in online services and applications. Qatar's *National ICT Plan: 2015* (2011) recommends policies to accelerate small- and medium-sized enterprise use and involvement in ICT services.¹⁸ The plan also emphasizes local content creation, technology to recognize Arabic characters, and a focus on an e-health system that employs broadband and ICTs to enhance healthcare services.

5. *Consumer protection and empowerment.* These policies protect consumers and enhance transparency between businesses and customers. They include clear regulations around personal data, privacy, and truth in advertising of broadband offerings. These actions help to ensure consumer trust in conducting private and business activity online. The *Philippine Digital Strategy: Transformation 2.0* (2011) calls for online consumer protection, consumer awareness, and the creation of data security as well as data privacy regulations.¹⁹

TAXONOMY FOR BROADBAND AND ICT PLANS

We classified plans based on their relative emphasis on supply- and/or demand-side policies within the categories identified above. Plans moved from limited in their focus to extensive along both supply- and demand-side dimensions as they increase in the number of policy categories included in a plan. We set this threshold when plans have policy recommendations in at least four of the five categories listed under each supply and demand.

Comparing the extent of both supply- and demand-side level policy coverage, we then sorted national plans into four relevant categories. The most comprehensive plans that include extensive supply- and demand-side coverage are defined as *broad-based*, while plans that are more heavily focused on one dimension are either *supply-driven* or *demand-driven*. The plans that have been published with fewer specific recommendations across the range of policy options are classified as *emergent*. Figure 3 illustrates the typology and the number of plans in each category; Appendix A lists each plan.

Broad-based plans are the most comprehensive and incorporate a wide range of policy recommendations on both supply- and demand-side dimensions. Of the 28 plans reviewed, 9 plans are categorized here as broad-based and focus on increasing the availability of high-speed networks as well as the activity on those networks

Figure 3: Taxonomy for national broadband/ICT plans

		DEMAND-SIDE	
		Limited	Extensive
SUPPLY-SIDE	Limited	Emergent (2)	Demand driven (8)
	Extensive	Supply driven (9)	Broad based (9)

Source: Authors' calculations.
 Note: The number in parentheses is the number of plans in each category out of the 28 plans reviewed.

to drive utilization. Examples of broad-based plans include the United States's *Connecting America: The National Broadband Plan* (2010), Qatar's *National ICT Plan 2015* (2011), and Egypt's *eMisr National Broadband Plan* (2011).²⁰

Supply-driven plans focus on actions to build out infrastructure and increase broadband availability through competition and investment policies; they also include direct action to reach underserved populations. The nine supply-driven plans identified here, however, vary in the extent of public investment directed to core infrastructure expansion. Australia's *National Broadband Network* (2009), for example, initiates the construction of a government-owned public infrastructure network, while Germany's *Federal Government's Broadband Strategy* (2009) and the United Kingdom's *Superfast Broadband Future* (2010) focus on market players to drive core investment and provide public investment at the municipal level for underserved regions to access high-speed infrastructure.²¹

In some cases, such as in Australia, a supply-driven plan may be complemented with a demand-driven one. In 2011, Australia released its *National Digital Economy Strategy*,²² emphasizing policies in most of the demand-side categories noted above; the two Australia plans together formulate a comprehensive approach to increasing availability and utilization of broadband.

Other examples of the eight demand-driven plans identified here include Morocco's *Digital Morocco 2013* (2008) and Poland's *Strategy for the Development of the Information Society in Poland until 2013* (2008).²³ These plans focus more on intensifying the utilization of broadband and ICTs to drive economic growth.

Few plans are categorized as *emergent*, as the effort to formulate a national strategy tends to result in a comprehensive set of policy recommendations. However, the classification reinforces the importance of a broad review of available policy levers in the pursuance of goals of increasing broadband availability and utilization.

A distributional review of the plans highlights that, while the demand-driven plans range widely in the years of their publication (they start in 2005 and go to 2012, with no more than two plans published in the same year), the supply-driven plans are heavily concentrated in 2009. This trend reflects the broadband infrastructure investment emphasis as a series of countercyclical responses to the global economic crisis. Additionally, all nine of the broad-based plans identified here were published from 2010 to 2012, signaling an evolution in the way national governments are now shifting policy emphasis to encompass both supply and demand.

CONCLUSION: DIVERGENT PLANS, COMMON UNDERSTANDING

Countries around the world have developed national plans to accelerate broadband adoption. These plans vary by both goals and policy recommendations. Our taxonomy of *broad-based*, *supply-driven*, *demand-driven*, and *emergent* provides a clear method for categorizing national broadband and ICT plans on the breadth of their policy options. This classification is a starting point in the review and comparison of national plans. Further, it can aid policymakers in countries that have strategic plans underway as they work to increase broadband adoption.

Further research on the efficacy of existing broadband plans and evidence that points to the identification of an optimal policy formulation is crucial. Additional issues that need to be addressed include determining whether there are differential impacts of supply- versus demand-side policies; if such differences do exist, whether they depend on current levels of broadband adoption (e.g., are supply-side policies more relevant in countries with extensive Internet adoption or vice versa), and determining which variables—such as the implementing agency and the extent of the consultative process—impact how successful a plan is in achieving the target goals.

What is clear now is that the relationship between broadband and national objectives, such as growth and employment, has led to an increasing number of broadband and ICT plans. As variations in plans exist, this taxonomy establishes a common descriptive language for broadband plans and thus sets the baseline for continued research that will enable us to achieve further detail in understanding how best to unleash the potential benefits of broadband for all governments, businesses, and citizens.

NOTES

- 1 See Bresnahan and Trajtenberg 1995, who define general-purpose technologies, and Qiang and Xu 2012, who measure the impact of ICTs across sectors in various economies and determine that broadband is the ICT that has the characteristics of general-purpose technology.
- 2 UN Broadband Commission 2012 and Qiang 2010.
- 3 Kelly and Rossotto 2012. Note that country-specific effects may be present. *Induced employment* typically refers to employment that results from added consumption of goods and services by direct and indirect employment.
- 4 Atkinson, Castro, and Ezell 2009 review the network effect multiplier on employment in the United States.
- 5 Qiang and Xu 2012.
- 6 Koutroumpis 2009 has identified that increasing returns to broadband investment occurs when a critical mass of penetration is reached at levels above 20 percent (20 subscriptions per 100 people).
- 7 UN Broadband Commission 2011.
- 8 EC *Digital Agenda for Europe 2010–2020*.
- 9 Advanced versus Emerging economy classification as defined by the International Monetary Fund's *World Economic Outlook* database, April 2012.
- 10 FCC 2010.
- 11 The Slovak Republic 2009.
- 12 Federal Ministry of Economics and Technology 2009.
- 13 Australian Government, Department of Broadband 2009.
- 14 BIS 2010.
- 15 Kingdom of Morocco 2008.
- 16 Prime Minister of Japan and His Cabinet 2010.
- 17 Nigeria 2012.
- 18 ICT Qatar 2011.
- 19 Philippine Government 2011.
- 20 FCC 2010; ICT Qatar 2011; eMisr (Egypt) 2011.
- 21 Australian Government 2009; Federal Ministry of Economics and Technology 2009; BIS 2010.
- 22 Australian Government 2011.
- 23 Kingdom of Morocco 2008; The Republic of Poland 2008.

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Appendix A: Broadband and ICT plans reviewed

The table below illustrates the different categories of policies present in each broadband/ICT plan reviewed. The roman numerals refer to the policy categories shown in Figure 2.

Category	National broadband and ICT plan name	Economy	Year	Supply-side policies					Demand-side policies				
				I	II	III	IV	V	I	II	III	IV	V
Broad-based plan	eMisr National Broadband Plan	Egypt	2011	■	■	■	■	■	■	■	■	■	■
	National Telecom Policy 2012	India	2012	■	■	■	■	■	■	■	■	■	■
	National Information Communication Technology (ICT) Policy DRAFT	Nigeria	2012	■	■		■	■	■	■	■	■	■
	The Philippine Digital Strategy: Transformation 2.0: Digitally Empowered Nation	Philippines	2011	■	■	■	■	■		■	■	■	■
	2015: Qatar's National ICT Plan	Qatar	2011	■	■	■	■		■	■	■	■	■
	National Development Plan 2030: Our Future – Make It Work	South Africa	2012	■	■	■	■	■	■	■	■	■	
	ICT for Everyone: A Digital Agenda for Sweden	Sweden	2011	■	■	■	■	■		■	■	■	■
	National Broadband Policy	Thailand	2010	■	■	■	■	■		■	■	■	■
	Connecting America: The National Broadband Plan	United States	2010	■	■	■	■	■	■	■	■	■	■
Supply-driven plan	The National Broadband Network	Australia	2009	■		■	■	■					
	Broadband Canada: Connecting Rural Canadians	Canada	2009	■	■		■	■					
	The National Broadband Access Policy - Broadband Strategy of the Czech Republic	Czech Republic	2005	■		■	■	■		■	■	■	
	The Federal Government's Broadband Strategy	Germany	2009	■	■	■	■	■		■			
	Next Generation Broadband: Gateway to a Knowledge Ireland	Ireland	2009	■	■	■	■	■			■		
	The National Broadband Plan: Enabling High Speed Broadband Under MyICMS 886 *	Malaysia	2004	■		■	■	■		■	■	■	
	Ultra-Fast Broadband Initiative + Rural Broadband Initiative	New Zealand	2009	■		■	■	■			■		
	National Strategy for Broadband Access in the Slovak Republic	Slovak Republic	2009	■	■	■	■	■		■			
	Britain's Superfast Broadband Future	United Kingdom	2010	■	■	■	■	■			■		■
Demand-driven plan	#AU20: The National Digital Economy Strategy	Australia	2011						■	■	■	■	
	2008 Digital 21 Strategy	Hong Kong SAR	2007	■	■		■		■	■	■	■	■
	National Broadband Strategy	Hungary	2005	■	■			■	■	■	■	■	■
	A New Strategy in Information and Communications Technology (IT)	Japan	2010		■					■	■	■	■
	Digital Morocco 2013: The National Strategy for Information Society and Digital Economy	Morocco	2008	■					■	■	■	■	■
	Draft National IT Policy (Revised) 2012	Pakistan	2012	■		■			■	■	■	■	■
	The Strategy for the Development of the Information Society in Poland until 2013	Poland	2008						■	■	■	■	■
	Realising the iN2015 Vision – Singapore: An Intelligent Nation, A Global City	Singapore	2006	■		■	■		■	■	■	■	■
Emergent plan	Plan for a Digital Canada	Canada	2010	■		■		■		■	■		■
	Estrategia Digital: Digital Development Strategy 2007–2012	Chile	2007					■		■	■	■	

* In 2010, Malaysia launched five initiatives as part of a National Broadband Initiative; however, we were unable to obtain an official comprehensive document to review here.

Note: The plans we reviewed consist of the most current plans with official English language versions. In a few cases, we included draft plan documents that were released to the public for review.

Appendix B: Examples of goals found in national broadband/ICT plans, by economy groups

Economy group	Goal			
	Broadband coverage	Broadband speeds	Economic impacts (including employment)	Other goals (including sector-specific targets)
Advanced economies	Germany By 2014, 75 percent of households to have Internet access of at least 50 Mb/s	New Zealand By 2020, download speeds of at least 100 Mb/s and upload speeds of at least 50 Mb/s (connected to 75 percent of New Zealanders)	Singapore By 2015, achieve a twofold increase in the value-added of the ICT industry to \$26 billion, a threefold increase in ICT export revenue to \$60 billion and create 80,000 additional jobs	United States By 2020, create a nationwide, wireless, interoperable broadband public safety network and a clean energy economy where every citizen can use broadband to track and manage real-time energy consumption
	Sweden By 2020, 90 percent of all households and businesses have access to broadband at a minimum speed of 100 Mb/s	United Kingdom By 2015, all homes will have access to a minimum level of service of 2 Mb/s	Japan By 2020, create new related markets worth 70 trillion yen	Australia By 2015, 495,000 telehealth consultations will have been delivered, providing remote access to specialists for patients in rural, remote, and outer metropolitan areas; by 2020, 25 percent of all specialists will be participating in delivering telehealth consultations to remote patients
Emerging economies	Thailand By 2015, develop the broadband network to provide access for at least 80 percent of the population, and access for at least 95 percent by 2020	Egypt By 2021, 90 percent of households will have access to 25 Mb/s broadband availability and 90 percent of the population will have 4G/LTE coverage	Pakistan In 10 years, create 5 million new jobs across Pakistan linked to the ICT- and IT-enabled services (ITES) sectors; quadruple the percentage of women participating in the ICT and ITES workforce from the current 13 percent; double the GDP per capita by improving agricultural yields using ICTs and ITES; leverage the cellular phone network for education and access to information; localize content and broad-based growth of the ICT and ITES sectors	Philippines By 2016, increase the country's score on the UN e-Participation Index from 24.49 in 2008 to above 40; at least 50 percent of government websites will include interactive services (up from 31 percent in 2010); at least 20 percent of government websites will include transactional services (up from 4.61 percent in 2010)
	South Africa By 2020, achieve target of 100 percent broadband penetration	Slovak Republic By 2020, fast broadband (greater than 30 Mb/s) coverage for all; greater than 100 Mb/s for 50 percent of households' broadband subscriptions	Morocco By 2013, establish 58,000 jobs in IT (up from 32,000 in 2008); direct additional GDP: 7 billion Morocco Dirham (MAD); indirect additional GDP: 20 billion MAD	India Enable citizens to participate in and contribute to e-governance in key sectors such as health, education, skill development, employment, governance, banking, and so on to ensure equitable and inclusive growth