

An Open Technology Initiative Policy Brief
100 Megabits or Bust!
An Overview of Successful National Broadband Goals from Around the Globe

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When the Federal Communications Commission delivers a National Broadband Plan to Congress in February 2010 the United States will not be among the first countries to implement a national broadband strategy.¹ Taiwan, Japan, and Korea all introduced national broadband strategies in the beginning of this decade and fifteen European Union Member states proposed National Broadband Strategies in 2003.² This report reviews successful strategies and goals from six of these countries: Japan, Korea, Finland, Sweden, Denmark, and Taiwan. These countries share similar goals reflecting the societal need for universal access to the Internet, the importance of providing baseline broadband speeds, and the longer-term benefits of providing broadband up to 100 Mbps. The success of these goals demonstrates the importance of requiring *baseline* speeds up to or exceeding 2 Mbps, as well as the viability of increasing penetration rates for 100 Mbps broadband.

Country	Year	Broadband Plan Short-Term Goal	Broadband Plan Long-Term Goal	Achievement
Japan	2001-2005	30-100 Mbps for ten million households (13 %)		20 Mbps-100 Mbps for 16% population
South Korea	2002-2010	20 Mbps for 80% households	50-100Mbps	32% subscribership
Finland	2008-2015	Universal 1 Mbps	100Mbps	2 Mbps for 60% subscribers
Sweden	2007-2010	Universal 2 Mbps	Develop “future proof” access	2 Mbps for 98% of households and businesses
Denmark	2001	Broadband defined as 2 Mbps		Up 2 Mbps for 96% households and business
Taiwan	2006-2011	1.5 Mbps for 69% households	6Mbps for 69% households 30Mbps for 80% subscribers	1.5 Mbps for 69% households 10Mbps for 99.1% population

Japan was not only one of the first countries to implement a national broadband strategy but also among the first to concretize the goal of 100 Mbps broadband service. Initiated by IT Strategy Headquarters in 2001, *e-Japan strategy* set the goal of establishing fixed network infrastructure with speeds ranging from 30 to 100 Mbps broadband at affordable rates to at least 10 million households.³ By 2005, DSL service in Japan reached 14 million subscribers, or 11% of the population, with speeds reaching ranging from 20 Mbps to 40 Mbps.⁴ Fiber optic providers offered speeds up to 100 Mbps and reported 4 million subscribers, while cable Internet customers accounted for an additional 3 million subscribers, totaling 5% of the population combined.⁵ According to the Organization for Economic Cooperation and Development (OECD), total broadband subscribership in Japan exceed 30 million in December 2008, or 24% of the

population.⁶ Japan also has the highest average advertised download speed with (92.8 Mbps) according to the OECD.⁷

Korea was also an early adopter in developing a national broadband strategy; the government first began establishing Master Plans for the development of the information society in 1996. In 2002 the government established *e-Korea Vision 2006* with the aim of building a broadband network infrastructure to increase the efficacy of all socio-economic activities, improve higher national performance and raise the quality of life for all Koreans. *E-Korea Vision 2006* defined a short-term goal of providing universal broadband Internet access of 1 Mbps downstream by 2005, which was subsequently upgraded to 2 Mbps by 2006.⁸ According to the Korean Ministry of Information and Communication, in 2006 12.1 million Koreans, or 25% of total population, had high-speed broadband access.^{9,10}

In 2007, Korea introduced expanded goals with *e-Korea Master Plan*, focused on accelerating construction of broadband coverage networks (BcNs) and facilitating the infrastructure to standardize models and integrate services in converged forms of communications, broadcasting, and the Internet to allow differentiation of service quality. The Korean government expects to provide Internet service with download speeds of 50 to 100 Mbps to 20 million subscribers by 2010.¹¹ Based on data available from OECD, as of 2008, Korea had fifteen million broadband subscribers, or 32% of the population, with an average advertised download speed of 80 Mbps.¹²

Finland's Ministry of Transportation and Communications released their strategy, *Making Broadband Available to Everyone: The national plan of action to improve the infrastructure of the information society* in 2008, defining concomitant short and long-term broadband goals for the country. At the time, nearly all of the 2.4 million households in Finland had access to broadband speeds of 256 kbps, which the reports stipulates as "only adequate for basic level services" and inadequate for "efficient e-services."¹³ *Making Broadband Available to Everyone* recommended raising the universal service obligation for broadband downstream speeds to 1 Mbps by the end of 2010.¹⁴ OECD reports that Finland had 1.6 million subscribers, or 30% of the population, by December 2008.¹⁵ OECD data also lists the average advertised download speed in Finland at 19 Mbps.¹⁶ And at the beginning of 2009, the Finnish Communications Regulatory Authority estimated that 60% of all subscribers had access to a 2 Mbps connection.¹⁷

Making Broadband Available to Everyone proposes a longer-term goal of providing access to a 100 Mbps connection to "at least 99 percent of permanent residences and permanent offices of businesses and public administration bodies have access, through a fixed or wireless subscriber line of no more than two kilometres' [sic] length linked to the said network" by 2015.¹⁸

Sweden's electronic communication authority, the National Post and Telecom Agency of Sweden, released *Proposal for Swedish Broadband Strategy* in February 2007 with the goal of providing access to 2 Mbps downstream speeds to "all households, business, and public operations by 2010."¹⁹ At the time, just over 50% of households had access to 2 Mbps broadband.²⁰ By 2008, 98% of households and business had access to broadband capable of 2 Mbps or better.²¹ *Proposal for Swedish Broadband Strategy* stops short of defining longer-term speed goals, but acknowledges that 2 Mbps is not future proof.²² In 1999 the Swedish ICT Commission published a report claiming a future proof Internet connection was 5 Mbps "costing no more than a bus pass."²³ Based on increasing bandwidth needs of Internet usage, longer-term goals of broadband speeds will need to reflect a combination of high bandwidth and affordability. Sweden currently has 2.9 million broadband subscribers, or 32% of the population, with an average advertised download speed of 12.3 Mbps.²⁴

Denmark was another early developer of a national broadband strategy. The Danish Ministry of Information Technology and Research presented their strategy *From Hardware to Content: Strategy for Fast, Cheap and Secure Internet to all of Denmark*, in 2001.²⁵ *From Hardware to Content* proposes universal access to high-speed affordable broadband and the strategy is reviewed annually. In a 2005 report published by the Ministry of Science, Technology and Innovation, *IT and Telecommunications Policy Report 2005*, the Ministry reports that only 75% of families had access to the Internet, and 82% of

businesses had Internet speeds of 144 kbps or higher.²⁶ By 2009, 96% of households and business had access to 2 Mbps or greater.²⁷ Additionally, the OECD reports that Denmark had 2 million subscribers, or 37% of the population in December 2008, with average download speeds of 14.6 Mbps.²⁸

Taiwan initially introduced modest goals when Taiwan's National Information and Communication Initiative Group (NICI) and other government agencies launched the *e-Taiwan Program* in 2002 and began a more ambitious strategy in 2007. The *e-Taiwan Program* focused on developing national information and communications infrastructure and applications.²⁹ The government expected to provide broadband Internet at 1.5 Mbps for six million households as short-term goal and developed a longer-term goal of providing high-speed Internet at 6 Mbps for more than 70% population.³⁰ By 2006, 99% of Taiwanese residents had Internet access at the speed of 10 Mbps.³¹ In March 2007 the NICI introduced the *National Information and Communication Initiative (2007 – 2011)* with the goal of providing access to 30 Mbps broadband to at least 80% of Taiwanese people (approximately 18.4 million people) by 2011.³²

The precedent set by the national broadband strategies of these half-dozen nations raises concerns about the current broadband position and ambitions of the United States. In October 2000, a report by the Danish National IT and Telecom Agency, *The Status of Broadband Access Services for Consumers and SMEs*, estimated that the United States was "12-24 months ahead any European Country" in terms of broadband penetration and access.³³ Today, although the United States can boast the highest number of subscribers (with 77.5 million) after China, the OECD ranks the United States 15th in terms of broadband subscribership rates with only 26% of the population.³⁴ Today Denmark has the highest broadband subscribership rate (37%), illuminating how far the United States has slipped behind in broadband access and penetration.³⁵ Additionally, the OECD ranks the United States 24th in terms of broadband speeds with an average advertised download speed of 9.6 Mbps.³⁶

In order for the United States to regain positioning as a broadband leader in access and available speeds our forthcoming National Broadband Plan needs to remain on par with the goals already being achieved by other leading industrial nations. Universal access must serve the entire population with a baseline level of service that allows for users to realize the benefits, communication, and information available through high-speed Internet connections. Additionally, the successes these nations have had in increasing penetration of 100 Mbps broadband connections illustrates the viability of the United States reaching the same outcome. A National Broadband Plan must combine the short-term goal of achieving universal access with the longer-term need for an infrastructure capable of supporting high-bandwidth applications to ensure continued leadership in the growth and innovation of the Internet.

¹ Pursuant to the American Recovery and Reinvestment Act of 2009

² See *Bridging the Broadband Gap* at: http://eur-lex.europa.eu/LexUriServ/site/en/com/2006/com2006_0129en01.pdf

³ See *E-Japan Strategy and Target* at: http://www.kantei.go.jp/jp/it/network/dai1/0122summary_j.html (Japanese); http://www.kantei.go.jp/foreign/it/network/0122full_e.html (English)

⁴ The Japanese population in 2005 is 127.77 million according to the Ministry of Internal Affairs and Communications <http://www.stat.go.jp/english/data/kokusei/2005/poj/pdf/2005ch01.pdf>

⁵ "Number of Broadband Service Subscribers in Japan" in *Policy Framework For Ubiquitous Network Society in Japan* presented by the MIC; March 2006, p. 2. <http://www.oecd.org/dataoecd/43/28/36275193.pdf>

⁶ See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: <http://www.oecd.org/dataoecd/22/15/39574806.xls>

⁷ See *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: <http://www.oecd.org/dataoecd/10/53/39575086.xls>

⁸ *e-Korea Vision 2006. The Third Master Plan for Information Promotion (2002-2006)*. Established in April 2002. http://www.ipc.go.kr/ipceng/public/public_view.jsp?num=2007&fn=&req=&pgno=5

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- ⁹ 2006 “Korea Internet White Paper”, p. 30, 45. Published by *National Internet Development Agency of Korea*, (2006). Source from Korean Ministry of Knowledge Economy. <http://www.itstat.go.kr/eng/>
- ¹⁰ The South Korea population is estimated 48.5 million in mid-2006 by 2006 World Population Bureau in *World Population Data Sheet*, p. 10 <http://www.prb.org/pdf06/06WorldDataSheet.pdf>
- ¹¹ See *U-Korea Master Plan 2006* at: http://www.ipc.go.kr/ipceng/public/public_view.jsp?num=2480&fn=&req=&pgno=1
- ¹² See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: <http://www.oecd.org/dataoecd/22/15/39574806.xls>, *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: <http://www.oecd.org/dataoecd/21/35/39574709.xls> and *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: <http://www.oecd.org/dataoecd/10/53/39575086.xls>
- ¹³ See *Making Broadband Available to Everyone: The national plan of action to improve the infrastructure of the information society* at: http://www.lvm.fi/c/document_library/get_file?folderId=57092&name=DLFE-4311.pdf
- ¹⁴ See *Making Broadband Available to Everyone: The national plan of action to improve the infrastructure of the information society* at: http://www.lvm.fi/c/document_library/get_file?folderId=57092&name=DLFE-4311.pdf
- ¹⁵ See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: <http://www.oecd.org/dataoecd/22/15/39574806.xls> and *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: <http://www.oecd.org/dataoecd/21/35/39574709.xls>
- ¹⁶ See *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: <http://www.oecd.org/dataoecd/10/53/39575086.xls>
- ¹⁷ See *Finnish Communications Regulatory Authority Market Review 1/2009* at: http://www.ficora.fi/attachments/5i5K1R7Jv/2009_1_Market_review.pdf
- ¹⁸ See *Making Broadband Available to Everyone: The national plan of action to improve the infrastructure of the information society* at: http://www.lvm.fi/c/document_library/get_file?folderId=57092&name=DLFE-4311.pdf
- ¹⁹ See *Proposed Broadband Strategy for Sweden* at: <http://www.pts.se/en-gb/Documents/Reports/Internet/2007/Proposed-Broadband-Strategy-for-Sweden---PTS-ER-20077/>
- ²⁰ http://www.pts.se/upload/Documents/EN/Proposed_broadband_strategy_eng.pdf
- ²¹ Capability means a capacity of, or the ability to be upgraded to, 2 Mbps. See *Broadband Strategy 2008* at: <http://www.pts.se/upload/Rapporter/Internet/2009/broadband-survey-2008-pts-er-2009-8.pdf>
- ²² See *Proposal for Swedish Broadband Strategy* at: http://www.pts.se/upload/Documents/EN/Proposed_broadband_strategy_eng.pdf
- ²³ Id., referencing the Swedish ICT Commission Report *Framtidssäker IT – infrastruktur för Sverige* [A future-proof IT infrastructure for Sweden]
- ²⁴ See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: <http://www.oecd.org/dataoecd/22/15/39574806.xls>, *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: <http://www.oecd.org/dataoecd/21/35/39574709.xls>, and *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: <http://www.oecd.org/dataoecd/10/53/39575086.xls>
- ²⁵ See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: <http://www.oecd.org/dataoecd/22/15/39574806.xls>
- ²⁶ See *IT and Telecommunications Policy Report 2005* at: <http://en.vtu.dk/publications/2006/it-and-telecommunication-policy-report-2006/it-and-telecommunication-policy-report-2006.pdf>
- ²⁷ See *IT and Telecommunications Policy Report 2008* at: http://en.itst.dk/the-governments-it-and-telecommunications-policy/it-and-telecommunications-policy-reports/filarkiv/IT_and_Telecommunications_Policy_Report_2009.pdf

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- ²⁸ See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: <http://www.oecd.org/dataoecd/22/15/39574806.xls>, *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: <http://www.oecd.org/dataoecd/21/35/39574709.xls>, and *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: <http://www.oecd.org/dataoecd/10/53/39575086.xls>
- ²⁹ See *E-Taiwan Program Vision* (May, 2002) at: http://www.etaiwan.nat.gov.tw/content/application/etaiwan/egeneralb/guest-cnt-browse.php?cnt_id=366
- ³⁰ “Privatization of Telecommunication Business Policy White Paper”, published by Ministry of Transportation and Communications; January 2001, p.33. The number of households in Taiwan is 6.5 million in 2000. See: <http://www.stat.gov.tw/lp.asp?ctNode=549&CtUnit=384&BaseDSD=7>
- ³¹ Taiwan National Information and Communication Initiative Committee announced “National Information and Communication Initiative” and provide details of the plan “National Information and Communication Development Plan (2007-2011)”. p.12.
http://www.nici.nat.gov.tw/content/application/nici/generala/guest-cnt-browse.php?cnt_id=2283
- ³² National Information and Communication Initiative established by NICI, p.11.
http://www.nici.nat.gov.tw/content/application/nici/generala/guest-cnt-browse.php?cnt_id=2283
- ³³ See *The Status of Broadband Access Services for Consumers and SMEs*, p. 4 (Oct, 2000) at: <http://en.itst.dk/the-governments-it-and-telecommunications-policy/publications/the-status-of-broadband-access-services-for-consumers-and-smes/The%20status%20of%20broadband%20access%20services%20for%20consumers%20and%20SMEs.pdf>
- ³⁴ See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: <http://www.oecd.org/dataoecd/22/15/39574806.xls> and *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: <http://www.oecd.org/dataoecd/21/35/39574709.xls>
- ³⁵ See *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: <http://www.oecd.org/dataoecd/21/35/39574709.xls>
- ³⁶ See *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: <http://www.oecd.org/dataoecd/10/53/39575086.xls>