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THE DIGITAL DIVIDE

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INTRODUCTION

The term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with respect to both their opportunities to access information and communication technologies (ICTs) and their use of the Internet.[2] In the "new," knowledge-based economy, technologies that allow information to be rapidly and widely disseminated are generally viewed as important social and economic development tools; these technologies can enhance the ability of countries to create new economic opportunities and to improve the education, skills and quality of life of their citizens.

In recent years, the digital divide issue has received a great deal of attention. Various world bodies, including the Organisation for Economic Co-operation and Development (OECD) and the United Nations, have examined the subject, and many countries have begun to measure the extent of the digital divide, its socio-economic impact, and how the divide can be reduced. This paper examines the Canadian digital divide, and federal policies and initiatives that have been implemented to attempt to bridge the gap. An overview of the types of policy measures employed by OECD central governments to reduce domestic digital divides is also presented. Finally, the paper discusses Canada's involvement in developing policies and programs intended to help reduce the global digital divide, thus allowing citizens in all countries to fully reap the benefits of digital technologies.

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(1) An earlier version of this document was prepared for the 48th Annual Commonwealth Parliamentary Association Conference, Namibia, 4-14 September 2002.

(2) OECD, *Understanding the Digital Divide*, OECD, 2001, p. 5.

THE CANADIAN DIGITAL DIVIDE: CHALLENGES

In the 1994 Speech from the Throne, the federal government announced its intention to develop and implement a Canadian strategy for developing the "Information Highway" – the advanced information and communications infrastructure underlying the new economy. Industry Canada released a strategic framework to guide the process, and established the Information Highway Advisory Council (IHAC). The government informed IHAC that in the development of the Information Highway, three strategic objectives were to be met: i) the creation of jobs through innovation and investment in Canada; ii) the reinforcement of Canadian sovereignty and cultural identity; and iii) the assurance of universal access to the Information Highway at reasonable cost.

Among the 300-some recommendations made by IHAC following the first phase of its mandate in 1995[3] was a call for the government to develop a strategy for national universal access to the Information Highway. The report was criticized by the not-for-profit sector and community groups because solutions to promote universal access focused on enhancing technologies and opening up the marketplace, solutions judged to be "naïve" and "oversimplified" by some commentators.[4] In 1996, the federal government responded with its action plan for developing the Information Highway.[5] By the time IHAC released its final report in 1997,[6] the Internet had gained in importance, and IHAC's recommendations dealing with Information Highway access issues focused on ensuring access to the Internet. The Council noted that certain groups, such as low-income households and people in rural and remote areas, seemed to be using ICTs, including the Internet, less than the rest of the population. At the time it released its report, IHAC was unsure whether there would be an Internet access problem in the future, but it recommended that the federal government monitor the way in which the market for Internet access developed, and take steps to correct any access problems that emerged. It also

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(3) Information Highway Advisory Council, *Connection, Community, Content: The Challenge of the Information Highway*, 1995.

(4) Brian Campbell, "The Politics of Universal Access," in *Understanding Telecommunications and Public Policy: A Guide for Libraries*, ed. Karen Adams and William F. Birdsall, Canadian Library Association, Ottawa, 1999, pp. 51-69.

(5) Industry Canada, *Building the Information Society: Moving Canada into the 21st Century*, 1996.

(6) Information Highway Advisory Council, *Preparing Canada for a Digital World*, 1997.

recommended that Statistics Canada develop ways to measure Internet access and collect and publish the statistics.

Statistics Canada began collecting statistics on household Internet use in 1997, and in 2000 an entire General Social Survey was dedicated to individuals' access to and use of technologies (particularly the Internet, which is considered to be the backbone of the Information Highway). The 2000 survey, part of which looked at the use of the Internet, e-mail, computers, fax machines, cellular telephones and automated teller machines, illustrated the extent of the Canadian digital divide between rural and urban areas, and among provinces.(7) The percentage of the population using these ICTs was, in all cases, higher in urban than in rural Canada. The difference was especially pronounced for Internet use (55.0% vs. 44.9%, respectively). In terms of provincial use of the Internet by individuals, usage was highest in British Columbia (61.2% of the population) and Alberta (60.3%), and lowest in New Brunswick (44.5%) and Newfoundland (43.5%).(8) The survey also showed that Internet use varied with age (a higher proportion of young than older people used the Internet), level of education (usage was highest among individuals holding a university degree and lowest among individuals with no high school education), gender (a higher proportion of males than females used the Internet), household income (a higher proportion of individuals from households with relatively high incomes used the Internet than did individuals from lower-income households), and language (a higher proportion of anglophones used the Internet than did francophones or those individuals speaking another language).(9)

At the level of the household, Internet penetration rates in Canada increased from 16% in 1997 to 48.7% in 2001. The highest growth rate over this period was in lower middle-income (i.e., second quartile) households. Despite gains in penetration rates in lower-income households, the difference in penetration rates between the top and bottom quartiles of the income scales, i.e., the lowest- and highest-income households, has actually widened since 1997.(10)

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(7) See summary in: Statistics Canada, *Overview: Access to and Use of Information Communication Technology*, March 2001.

(8) See Appendix 1.

(9) See Appendix 2.

(10) Statistics Canada, *Household Internet Use Survey 2001*, July 2002. See Appendix 3.

In terms of the digital divide and household Internet use, a study[11] conducted in 2000 suggested that the "non-user" group is not homogeneous. According to the study, the non-user group is divided into "near-users" and "distant-users." Near-users are those individuals who have varying degrees of interest in being connected, but are unable to do so because of a number of barriers, of which the most important are cost/affordability and technical literacy. The second group, distant-users, consists of people who have little or no interest in the Internet and on-line services, or perceive no value in the Internet to meet their everyday economic or social needs. For these distant-users, a perceived or real lack of relevant Internet content, rather than access or literacy barriers, appears to be the main reason for low use of the Internet.

In addition to the gap separating different groups in terms of access to basic Internet services, another divide exists in terms of Canadian households and businesses that have access to high-speed Internet services and those that do not. Different carrier technologies are available on the market, which provide differing speed and quality of Internet services. Basic dial-up (modem and telephone) access is relatively cheap and widely accessible, but access to the Internet is slow and the technology is not adequate for high bandwidth applications. Other carrier technologies such as digital subscriber line[12] and cable provide higher-quality, faster service, but they are more expensive than conventional dial-up access and are not available in all areas of the country. Satellite technology is widely available, but is relatively expensive. Some large businesses have expensive, fibre-optic networks, which are capable of data transmission at very high speeds. A report by the National Broadband Task Force[13] in 2001 estimated that high-speed Internet services were not available to 79% of Canadian communities, home to approximately 25% of the Canadian population. The report indicated that rural, northern and First Nations communities have the lowest levels of access to high-speed Internet but would likely benefit the most from the services it can provide (e.g., tele-health, distance learning and video-conferencing). The Task Force recommended that all Canadians should have access to

(11) Andrew Reddick, Christian Boucher and Manon Groseilliers, *The Dual Digital Divide – The Information Highway in Canada*, The Public Interest Advocacy Centre, Ottawa, 2000.

(12) Digital subscriber line (or DSL) uses the unused digital portion of a standard copper telephone line to transmit and receive data.

(13) National Broadband Task Force, *The New National Dream: Networking the Nation for Broadband Access*, Report of the National Broadband Task Force, Industry Canada, June 2001.

broadband[14] networks, but that the federal government's first priority should be to ensure that the aforementioned communities have access to such services.

THE CANADIAN DIGITAL DIVIDE: SOLUTIONS

Given the size of Canada's landmass, the geographical distribution of its communities, and income disparities among individuals, it is doubtful whether market forces alone will be able to rapidly reduce the digital divide. The private sector is unlikely to provide Internet services and other ICTs to groups or regions of the country where it cannot make a profit in the short to medium term. In 1996, the federal government made a commitment to intervene in the marketplace, if necessary, to ensure universal access to the Information Highway: "Where market forces fail to provide this level of access, the government is prepared to step in to ensure affordable access to essential Information Highway services for all Canadians, regardless of their income or geographic location."[15] No elaboration was provided, however, on what the terms "affordable" and "essential" meant.

Building on the recommendations of IHAC, the federal government, in partnership with the provinces, territories and private sector, launched the "Connecting Canadians" strategy in 1998. The goal of this strategy is to make Canada the most connected country in the world and a global leader in ICTs; "connectedness" is one of Industry Canada's five strategic objectives intended to help Canada achieve economic growth and sustainable development. The connectedness agenda focuses on improving ICT infrastructure, use and content. A commitment to modernize legislative and regulatory frameworks and pursue telecommunications policies that promote competition forms part of the federal government's strategy to improve connectedness. Other initiatives involve more direct intervention in the marketplace. As a whole, the Connecting Canadians strategy is built on six pillars: Canada On-line, Smart Communities, Government On-line, Connecting Canada to the World, Canadian Content On-line and Electronic Commerce. Within these pillars are numerous initiatives that are

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(14) The Task Force defined "broadband" as a high-capacity, two-way link between an end user and access network suppliers capable of supporting full-motion, interactive video applications. A minimum two-way transmission speed of 1.5 Mbps per individual user is required to meet this standard (current DSL and cable technologies do not fit this definition, but the Task Force believed that these services will offer full broadband capability by 2004).

(15) Industry Canada, *Building the Information Society: Moving Canada into the 21st Century*, 1996.

intended to help reach the overall goals of the strategy, many of which had already begun before the strategy was announced.(16)

The Connecting Canadians initiative has proved successful in reducing the digital divide in several areas. For example, "Canada's SchoolNet" (part of Canada On-line) is a partnership among federal, provincial and territorial governments, universities and colleges, and educational associations that provides Internet learning resources to Canada's public schools, libraries and First Nations schools. SchoolNet's original mandate was to connect Canadian schools and libraries to the Internet by 31 March 1999. This goal was achieved, and Canada became the first country in the world to connect all its public schools and libraries to the Information Highway. The success of the first phase of the SchoolNet initiative is particularly impressive given that it was launched during the mid 1990s, a period of fiscal restraint in which the federal government was cutting programs and services, and also because education is a provincial, not a federal, responsibility. Collaboration among partners, a decentralized administration, and the leveraging of financial resources all helped to overcome these potential barriers. The federal government has taken care to act as a facilitator rather than a director of operations in this initiative.(17)

Following up on the success of SchoolNet, the federal government launched its "Community Access Program" (CAP), which has now become the key component of the Connecting Canadians initiative. Under the Program, public locations such as schools, libraries and community centres act as "on-ramps" to the Information Highway, and provide computer support and training. The Program is a partnership between governments, the private sector, and community organizations that is designed to help accelerate public access to the Internet across Canada. CAP started in 1994 in rural communities with populations up to 50,000. In December 1999, after a successful pilot program in urban communities, CAP was extended to larger population centres of over 50,000. By 31 March 2002, there were 8800 CAP sites in more than 3800 communities across Canada.(18) The Program is now concentrating on sustaining the existing sites (no new sites are envisioned at present), and promoting the benefits of CAP sites

(16) See the full list and description of all initiatives that make up the Connecting Canadians strategy. http://www.connect.gc.ca.

(17) KPMG Consulting, *Evaluation of the SchoolNet1 Initiative*, 2000.

(18) Government of Canada, *Achieving Excellence: Investing in People, Knowledge and Opportunity*, February 2002, p. 74.

working together as networks to better serve local needs. The Program's web site describes individual community success stories but provides no information on the sustainability of CAP sites or on the overall impact of the Program. Officials at CAP indicate that an evaluation of the rural component of the Program was conducted, but the results of this evaluation are not currently available to the public.

Another component of the Connecting Canadians strategy, "CANARIE" – an advanced Internet development organization – holds promise for providing wider access to high-speed Internet services. CANARIE, a not-for-profit corporation, collaborates with government departments, industry, and research and educational institutions to enhance the widespread adoption of new Internet technologies. One of CANARIE's most significant projects has been the development of CA*net 3 – the world's first national optical R&D network. Advances made in developing CA*net 3, which is used by Canada's high technology and research communities, are being applied to finding low-cost solutions to delivering high-speed Internet to all Canadians.

In its response to the 2001 Speech from the Throne, the federal government indicated that it would work with the private sector to determine the best ways to make broadband Internet access available to all communities by 2004. The federal government announced, in its December 2001 budget, that further planning was needed to properly achieve the government's commitment, and it revised the target date for national broadband coverage to 2005. It suggested that the best approach to ensuring national broadband access might be to expand SchoolNet and CAP. The government announced that it was extending these initiatives to 2003-2004 at an annual cost of $40 million, and it would also set aside $35 million a year for three years thereafter to support broadband expansion. The federal government's Innovation Strategy,[19] unveiled in February 2002, indicates that ensuring that rural and urban communities alike have access to broadband networks is important for strengthening innovation performance at the community level. The Strategy suggests that partnerships among the private sector, governments and communities are essential to realizing the goal of providing national broadband access. In September 2002, the federal government announced that it was setting up the Broadband for Rural and Northern Development Pilot Program with the $105 million announced for broadband expansion in the 2001 budget. The Program is intended to help communities that have no publicly available broadband infrastructure develop and implement business plans for

(19) *Ibid.*, p. 77.

broadband deployment; priority will be given to First Nations, northern, rural and remote communities.

Despite the successes of the Connecting Canadians strategy along with those of similar provincial and territorial initiatives, and the federal government's pronouncements on its commitment to ensuring national access to broadband networks, some observers suggest that the Canadian digital divide will linger for many years to come. According to these observers, the cost and affordability of ICTs, and/or a lack of interest or perceived need in using the Internet, will be responsible for the continuing divide.(20) One analyst has gone so far as to suggest that the digital divide will never be eliminated in Canada because it reflects the prevailing North American liberal public welfare philosophy that has resulted in a stratified dual structure in the distribution of social benefits.(21) Other commentators, however, have suggested that access to computers and the Internet (at least in advanced economies) will, in the not too distant future, be affordable "to practically anyone who wants it."(22) These analysts use the example of trends in access to or ownership of telephones and televisions over the past few decades to illustrate their point.

POLICIES TO REDUCE THE DIGITAL DIVIDE IN OECD COUNTRIES

The central governments of most OECD countries have introduced policies and programs over the last few years in an attempt to reduce digital divides within their own countries. Approaches include the introduction of policies to improve network infrastructure (e.g., regulatory reform to enhance competition), policies for development and diffusion of ICTs (e.g., R&D support for basic research, support for ICT training and education, and assistance to specific industrial sectors or regions), government ICT projects (e.g., government "leading by example" through on-line initiatives), and multilateral co-operation to learn from the experiences of other countries.(23) Many governments are introducing policies to encourage investment in

(20) See, for example, Reddick, Boucher and Groseilliers, *The Dual Digital Divide – The Information Highway in Canada*.

(21) William F. Birdsall, "The Digital Divide in the Liberal State: A Canadian Perspective," *First Monday*, Vol. 5, No. 12, December 2000, http://www.firstmonday.dk/issues/issue5_12/birdsall/#b5.

(22) Michael Margolis and David Resnick, *Politics As Usual: The Cyberspace "Revolution,"* Sage Publications, Thousand Oaks, California, 2000, p. 214.

(23) OECD (2001), p. 31.

broadband infrastructure and wide broadband access because they believe that such access is important for future socio-economic development. Public policy approaches to improve broadband access generally fall into one of three categories: 1) limited regulatory reform (in which there is minimal central government involvement – e.g., New Zealand); 2) a mix of regulatory reform and programs to improve access (governments target their policies to those areas and groups where it is believed market forces will not adequately address disparities – e.g., Canada); and 3) comprehensive national broadband plans (in which the government is the national technology leader – e.g., Korea).(24) In terms of broadband penetration (subscribers per 100 inhabitants), Korea, Canada, Sweden and the United States, respectively lead the world. The OECD suggests that the most effective way to reduce the digital divide is through infrastructure competition and opening access networks to competition, but it does acknowledge that specific government policies may be needed to help certain socio-economic groups benefit fully from ICTs.(25)

A debate about federal policy to reduce the U.S. digital divide recently erupted following the release of the Bush administration's fiscal year 2003 budget. The budget proposes to eliminate spending on two programs that provide grants to improve community access to ICTs and for training to use them (funding for these programs had already been reduced in the two previous budgets). The administration contends that these programs are no longer necessary, and that funds are provided for similar types of activities in other programs. A report(26) released by the Department of Commerce in February 2002 contends that the United States is now "truly a nation online" since more than half of all Americans use computers and the Internet. The report shows that Internet use in the United States has expanded across all demographic groups and geographic regions, and that the rate of growth is fastest among the poor, minorities and in rural areas. Government officials argue that these statistics indicate that the U.S. digital divide is closing, and such programs are no longer required. Critics of the cuts see them as premature and evidence that the administration has abandoned the battle to bridge the U.S. digital divide. Proponents of such programs counter that despite gains in the rate of Internet take-up by certain

(24) James Savage, *International Public Programs to Provide Broadband Access to the Internet*, Industry Canada, 2001.

(25) OECD, *OECD Information Technology Outlook 2002*, 2002.

(26) U.S. Department of Commerce, *A Nation Online: How Americans Are Expanding Their Use of the Internet*, February 2002.

groups, the report's statistics demonstrate that the size of the divide between those with access to the Internet and those without it has actually increased since 1997.(27) Debate about the level and nature, if any, of government involvement necessary to reduce the digital divide is likely to increase in industrialized countries as more and more people gain access to the Internet and other ICTs.

THE GLOBAL DIGITAL DIVIDE: CANADIAN SOLUTIONS?

Despite the digital divide that exists within Canada, on a global scale Canada ranks high in terms of the proportion of its citizens who have access to ICTs and who use the Internet. The Conference Board of Canada produces an annual report that quantifies Canada's progress in connectedness compared to that of nine other OECD countries (the other G7 countries plus Australia, Finland and Sweden). The Conference Board's "Connectedness Index" measures and compares these countries' performance in terms of availability, price, reach and use of ICTs. In 2001, Canada ranked second, behind the United States but ahead of Sweden, Finland and the United Kingdom, on the Connectedness Index. Canada has finished in second place for three consecutive years.(28)

On a global scale, the digital divide between Canada and other advanced economies is relatively small. Much larger is the divide that separates advanced economies and developing countries. For example, the number of telephone mainlines per 1000 people in developing countries in 1999 was 69; in high-income OECD countries, the figure was 594. Similarly, the number of Internet hosts per 1000 people in developing countries in 1999 was 1.0; in high-income OECD countries it was 96.9.(29) More than 75% of Internet users live in high-income OECD countries, which contain only 14% of the world's population.(30)

Several international bodies (e.g., the World Economic Forum and the United Nations) are examining the global digital divide and how it can be reduced. One of the major initiatives has been the G8-driven Digital Opportunity Task Force (DOT Force). At the G8

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(27) Mark N. Cooper, *Does The Digital Divide Still Exist? Bush Administration Shrugs, But Evidence Says "Yes,"* Consumer Federation of America, May 2002.

(28) Natalie Gagnon, Goshu Adane Gebremichael and Brian Guthrie, *Pursuing Excellence Through Connectedness: Canada's Quest for Global Best*, Conference Board of Canada, June 2002.

(29) Sakiko Fukado-Parr, *Human Development Report 2001*: *Making New Technologies Work for Human Development*, Oxford University Press for the United Nations Development Programme, 2001, p. 63.

(30) *Ibid.,* p. 40.

Summit in Okinawa, Japan, in 2000, G8 leaders recognized that the global digital divide would likely worsen existing socio-economic inequalities among countries, and that action had to be taken to narrow it. The G8 leaders released the *Okinawa Charter on Global Information Society*,(31) in which they agreed to establish the DOT Force with the aim of integrating global efforts to bridge the digital divide. The DOT Force, formed in late 2000 with a two-year mandate, was a mix of representatives from various world governments, international organizations, and the private and not-for-profit sectors. The DOT Force presented a report(32) to the G8 leaders at their Summit in Genoa, Italy, in July 2001. The report analyzed the underlying causes of the global digital divide, how ICTs can reduce poverty, and what policy options might narrow the divide between developed and developing countries. The document included a nine-point action plan, "The Genoa Plan of Action," that identified priority actions intended to aid developing countries realize ICT-enabled sustainable social and economic development. The G8 leaders endorsed the DOT Force report during the Genoa Summit.

Following the Summit, seven international, multi-stakeholder implementation teams were tasked with developing concrete initiatives to advance the Genoa Plan of Action. The seven teams addressed the following issues: access and connectivity, national e-strategies, human capacity and knowledge, enterprise and entrepreneurship, ICTs for health, global policy participation, and local content and applications. The progress of the DOT Force, through the work of its implementation teams, was reported on at the G8 Summit in Kananaskis, Alberta, in June 2002. The report card,(33) the DOT Force's final report, indicated that the DOT Force has generated more than 20 bilateral and multilateral initiatives intended to advance the use of ICTs in developing countries and promote ICT-based development. The DOT Force has paid particular attention to developing initiatives for the least developed countries. The implementation teams, and other bodies such as the United Nations ICT Task Force established in November 2001, will continue the work that the DOT Force started.

Canada, as the most recent Chair of the DOT Force, co-ordinated the work of the implementation teams. Additionally, as a member of five of the seven teams, Canada (represented by Industry Canada, the Canadian International Development Agency, the

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(31) *Okinawa Charter on Global Information Society*, http://www.g8.gc.ca/genoa/okinawa_charter-e.asp.

(32) DOT Force, *Digital Opportunities for All: Meeting the Challenge*, May 2001, http://www.dotforce.org/reports/DOT_Force_Report_V_5.0h.pdf.

(33) DOT Force, *Report Card: Digital Opportunities for All*, June 2002.

International Development Research Centre, and Telesystems, a telecommunications company) played a pivotal role in developing some of the initiatives. Canada's major DOT Force-related commitments include: i) developing a Canadian point of contact for the International e-Development Resource Network, a network that will exchange regulatory, policy and strategy expertise on ICT-based development between North and South; ii) helping to set up the DOT Force Entrepreneurial Network (DFEN), an organization led by the private sector that will help small and medium-sized enterprises and entrepreneurs in developing countries realize the benefits of ICTs; and iii) creating a Centre for Connectivity in Africa which would adapt Canadian models such as SchoolNet to Africa's needs. Much of the focus of the DOT Force's legacy is likely to be on Africa. The *New Partnership for Africa's Development* or NEPAD is a program initiated by African leaders to eradicate poverty and to place their countries on a path of sustainable growth and development. It has identified the need to increase access to ICTs in Africa in order to help realize the program's goals. The G8 Africa Action Plan,(34) announced at the G8 Summit in Kananaskis in June 2002, describes the G8's commitments in support of the NEPAD. The plan includes support for DOT Force initiatives that can help create digital opportunities in Africa. Canada's financial contributions ($35 million to date) for its commitments arising from the DOT Force's work are all directed towards Africa.

Although the DOT Force appears to have met the commitments set out in the Genoa Plan of Action, and each G8 member, with the exception of Russia, has played an important role in the DOT Force's work,(35) a great deal of work remains to be done to bridge the global digital divide. The DOT Force agenda in its present form is largely a business plan; concrete resources need to follow in order to put the plan into action. Further political and financial commitment from the G8 and other advanced economies will be necessary to ensure that the DOT Force's efforts do not go to waste. Canada, as a world leader in ICTs and connectedness, has much expertise and many resources to offer in this regard. Some commentators are sceptical about whether the developed world will offer enough assistance to help improve access to and use of ICTs in the developing world.(36) They point to the low

(34) G8 Africa Action Plan, June 2002, http://www.g8.gc.ca/kan_docs/afraction-e.asp.

(35) Robert Bacinski, Ryan B. Lavallee and Andrew Morgan, "Bridging the Digital Divide – Dot Force," in *Keeping Genoa's Commitments: The 2002 G8 Compliance Report*, University of Toronto G8 Research Group, June 2002, http://www.g7.utoronto.ca/g7/evaluations/2002compliance/index.html.

(36) See Margolis and Resnick (2000), p. 215.

priority given to development assistance on many governments' policy agendas over the last few years. Many countries, however, recently affirmed their intention to increase their official development assistance (ODA). Canada, whose ODA as a percentage of GDP was at 0.23% in 2001 (18th position in a 2001 survey of the 22 countries that belong to the OECD's Development Assistance Committee),(37) has pledged to double its development assistance from current levels by 2010. Whether Canada and other advanced economies live up to their commitments, and what level of assistance will be targeted to programs intended to reduce the global digital divide, remain to be seen.

CONCLUSION

Information and communication technologies (ICTs) are widely viewed as important tools for social and economic development. As in many other nations around the world, the use of ICTs and access to the Internet by Canadians has increased dramatically over the last few years. However, access to and use of ICTs varies with such variables as education, income level, age, and place of residence, creating a digital divide between different socio-economic groups. The divide can result from barriers such as the relatively high cost of access to some ICTs or a lack of digital literacy. For the Internet, low levels of use can also be related to a perceived or real absence of relevant content.

The federal government has set a goal of making Canada the most connected country in the world. It has introduced several initiatives, grouped together under the Connecting Canadians strategy since 1998, that are intended to achieve this goal. The success of SchoolNet and other components of this strategy can be attributed in large part to the shared vision and collaboration of all stakeholders involved. Continued collaboration among stakeholders and leadership from all levels of government will be necessary to bridge the Canadian digital divide. Regular evaluation of the federal government's initiatives, to ensure that the Connecting Canadians strategy is meeting its goals, is also essential. Although ensuring that Canadians have access to the Internet is important, users must also have the appropriate skill sets to benefit fully from what the Internet has to offer in terms of enhancing social and economic development. Any policy to reduce the digital divide should consider this

(37) OECD, Net Official Development Assistance Flows in 2001 (Provisional Data), May 2002, http://www.oecd.org/pdf/M00029000/M00029445.pdf.

requirement, especially as more and more Canadians begin to use the Internet. The introduction of new ICTs that have important potential as socio-economic development tools (e.g., high-speed Internet) poses long-term policy challenges since each time a new technology enters the marketplace, a new digital divide may develop. In such cases, the government should carefully assess the social benefits of wide diffusion of the technology, the size and nature of the divide, and whether specific government policies and programs to help bridge the divide are really necessary.

Canada, in collaboration with other countries, has an important role to play on the world stage to help reduce the global digital divide. Support and expertise from rich, connected countries such as Canada is critical to the success of any initiatives intended to help bridge the huge digital gap that currently separates developed from developing countries. Strong global policies and collaboration between rich and poor countries are essential to ensure that citizens around the world can benefit from the social and economic opportunities offered by ICTs.

APPENDIX 1

Percentage of the Population Aged 15 and Over Using Technology in the Past 12 Months, by Urban/Rural, Canada and Provinces, 2000[1]

	Total Population	Internet	Internet Connection at Home*	E-Mail	Computer	Fax Machine	Cellular Telephone	Automated Teller Machine (ATM)
	(000s)	%						
Canada	24,566	52.8	42.2	46.7	65.3	50.3	51.8	78.2
▪ Urban	19,380	55.0	44.1	48.9	67.0	51.6	52.5	79.2
▪ Rural	5,186	44.9	35.2	38.1	58.7	45.6	49.3	74.8
Newfoundland	441	43.5	30.7	36.7	55.3	42.3	46.9	76.5
▪ Urban	254	52.3	38.0	45.2	61.7	45.9	53.1	81.1
▪ Rural	187	31.5	20.7	25.3	46.6	37.4	38.7	70.1
Prince Edward Island	110	48.2	34.4	42.0	60.2	45.6	48.8	77.9
▪ Urban	51	50.2	37.7	46.7	62.8	47.0	48.0	83.2
▪ Rural	58	46.5	31.7	37.9	58.1	44.5	49.6	73.3
Nova Scotia	762	52.0	40.7	46.4	63.4	43.6	51.9	79.0
▪ Urban	416	57.2	44.9	51.7	68.3	49.8	53.1	81.4
▪ Rural	346	45.7	35.6	40.2	57.4	36.2	50.4	76.0
New Brunswick	612	44.5	32.7	37.5	59.0	40.5	51.5	74.7
▪ Urban	331	50.4	38.7	44.2	63.7	42.5	51.5	78.5
▪ Rural	280	37.5	25.6	29.6	53.5	38.2	51.6	70.3
Quebec	5,975	45.6	33.8	38.2	60.6	49.4	41.1	80.9
▪ Urban	4,657	47.9	35.8	40.5	63.1	51.2	42.5	82.4
▪ Rural	1,318	37.4	26.5	29.9	51.7	43.1	36.3	75.8
Ontario	9,333	54.7	46.7	49.3	66.3	48.4	53.3	75.8
▪ Urban	7,822	55.7	47.6	50.5	66.7	48.9	53.8	75.7
▪ Rural	1,511	49.6	42.0	43.1	64.2	45.6	51.0	76.3
Manitoba	895	46.0	32.4	39.3	60.9	43.7	48.9	75.0
▪ Urban	664	48.3	33.5	42.0	63.1	43.8	47.0	78.5
▪ Rural	232	39.3	29.4	31.3	54.6	43.2	54.2	64.9
Saskatchewan	790	50.1	34.3	41.9	63.1	45.2	57.0	73.8
▪ Urban	513	53.4	37.7	46.1	67.2	44.7	56.1	76.6
▪ Rural	277	43.8	28.0	34.2	55.4	46.0	58.6	68.6
Alberta	2,353	60.3	47.7	54.2	71.5	57.5	64.4	81.0
▪ Urban	1,922	61.6	48.2	55.8	72.2	57.2	62.2	82.3
▪ Rural	430	54.4	45.4	47.2	68.3	59.0	74.3	75.4
British Columbia	3,296	61.2	49.6	55.7	71.4	59.8	58.1	81.0
▪ Urban	2,749	62.7	50.5	56.9	72.8	60.9	59.5	81.5
▪ Rural	547	53.3	45.1	49.6	64.2	54.3	51.1	78.2

* Individual has Internet connection at home but may not use it.

Note: Totals exclude "not stated."

Source: Statistics Canada, General Social Survey, Cycle 14. Results are based on responses from a total of 25,090 individuals between January and December 2000.

(1) Statistics Canada, *Overview: Access to and Use of Information Communication Technology*, March 2001, p. 5, http://www.statcan.ca/english/freepub/56-505-XIE/0000156-505-XIE.pdf.

APPENDIX 2

Percentage of Internet Users, Aged 15 and Over, by Selected Socio-Demographic Characteristics, Canada, 2000[1]

	TOTAL POPULATION			USER		
	Total	Male	Female	Total	Male	Female
	(000s)			(%)		
Canada	24,566	12,093	12,473	52.8	56.1	49.6
Age group						
15 to 24	4,134	2,113	2,021	84.5	85.6	83.4
25 to 34	4,376	2,206	2,171	66.1	68.2	63.9
35 to 44	5,292	2,654	2,638	60.3	62.2	58.4
45 to 54	4,348	2,164	2,184	50.7	52.5	48.8
55 and over	6,416	2,956	3,460	18.7	23.4	14.8
Education						
University degree	4,466	2,349	2,117	79.3	83.1	75.1
College diploma/certificate	5,607	2,732	2,876	57.5	59.8	55.4
Some university or college	3,503	1,674	1,829	69.4	71.2	67.7
High school diploma	4,399	2,068	2,330	41.2	44.7	38.1
Less than high school	6,120	3,056	3,064	30.9	34.3	27.4
Household Income						
Less than $30,000	3,834	1,618	2,216	32.8	33.4	32.4
$30,000 to $49,999	4,002	2,014	1,988	49.9	50.0	49.8
$50,000 to $79,999	4,469	2,489	1,980	65.5	65.1	66.1
$80,000 or more	3,675	2,211	1,465	80.5	80.6	80.4
Language						
English only	16,007	7,810	8,196	58.5	61.8	55.3
French only	5,380	2,668	2,712	43.9	47.4	40.4
Other language	2,982	1,532	1,450	40.0	43.6	36.1
Urban/rural						
Urban	19,380	9,513	9,867	55.0	59.3	50.7
Rural	5,186	2,581	2,606	44.9	44.4	45.5

Note: Totals exclude "not stated."

Source: Statistics Canada, General Social Survey, Cycle 14. Results are based on responses from a total of 25,090 individuals between January and December 2000.

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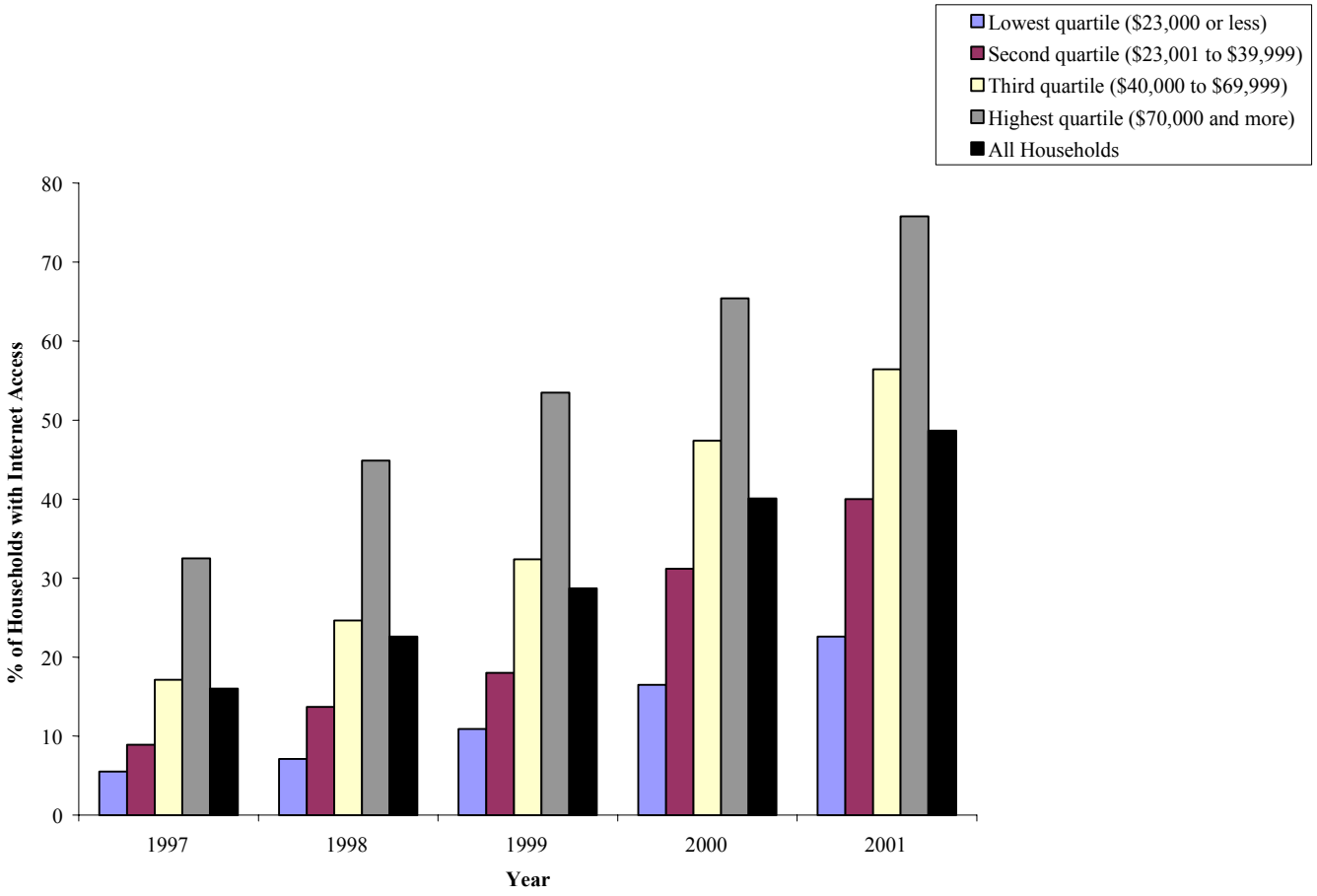
(1) Statistics Canada, *Overview: Access to and Use of Information Communication Technology*, March 2001, p. 7, http://www.statcan.ca/english/freepub/56-505-XIE/0000156-505-XIE.pdf.

APPENDIX 3

Household Internet Penetration Rates by Household Income Level, Canada, 1997 to 2001[1]



(1) Data from Statistics Canada, *Household Internet Use Survey 2001*, July 2002. Results are based on responses from a total of 34,518 households in January 2002.