

*Supplementary Information on Overseas
National Information Infrastructure Policies*

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Prepared by

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SUPPLEMENTARY INFORMATION ON OVERSEAS NATIONAL INFORMATION INFRASTRUCTURE POLICIES

1. Introduction

1.1 The meeting of LegCo Panel on Information Policy of 23 January 1997 requested the Research and Library Services Division to provide further information on the government NII-related assistance on education and research and development. Tables 1a - 3 list government plans of different territories for NII-related education and research and development.

Methodology

1.2 Requests on information had been sent to governments of Canada, Finland, Hong Kong, Japan, Korea, Singapore, Taiwan, the UK and the U.S.. To date, only the governments of Canada, Finland and Hong Kong had responded. As a result, information is mainly drawn from the response from these governments.

2. Education

2.1 As reported in our research paper entitled "Overseas National Information Infrastructure Policies" (RP06/96-97 dated January 1997), many governments have drafted and implemented plans for extending NII-related education to schools and to all citizens so as to equip them to make use of the benefits available through the NII. For example, the Ministry of Education of Finland set up an Expert Committee in 1994 to prepare a strategy for education, training and research in the information society. Subsequently, the Ministry prepared an action programme in 1995 using the general objectives set out in the strategy prepared by the Expert Committee. In North America, the government of Canada also responded to the recommendations made by the Information Highway Advisory Council by drawing up an action plan in 1995. Table 1a - 1d give details of these government plans. The U.S. government also set up the Information Infrastructure Task Force (convened by the U.S. President and chaired by the Secretary of Commerce) to propose policies and initiatives to accelerate deployment of a NII.

Overseas Findings

2.2 One of the features of many government plans is a construction of a network linking all the schools or libraries to the Internet or to the information highway if it already exists. The use of information and information technology is therefore promoted to students and citizens through such networks. Examples are Canada, Finland and Japan.

2.3 The other feature is to provide students access to the network through computers. The governments of Canada and Japan have developed plans to provide computers for schools either through direct acquisition or through liaison with commercial companies for computer provision.

2.4 Plans to equip teachers with information technology is also a focus of many government plans. Canada, Finland and Japan have developed strategies to train teachers to employ information technology in classrooms.

Hong Kong

2.5 Although Hong Kong does not have a blueprint for building its NII or extending NII-related education to schools, efforts have been made by the government to provide limited computer resources to secondary schools. The Education and Manpower Branch responded to us that the government would allocate 21 computers to each public secondary school for each computer class provided that it would offer Computer Studies in Form 4 and Form 5. At present, 377 out of 387 public secondary schools benefit under this scheme.

2.6 However, no computer provision is made for Computer Literacy classes in Form 1 to Form 3. This means that education in computer literacy is truncated: computer resources for classes are made available only to students in Form 4 to Form 5 who take Computer Studies. We have been informed that the Curriculum Development Council will look into this issue in due course. In addition, we have been informed that the Education Department is examining the possibility of providing computer systems to public sector primary schools.

2.7 Although public secondary schools are not required to provide Computer Studies or Computer Literacy classes for students, at the moment, 286 out of a total of 387 public secondary schools are providing Computer Literacy classes for their Form 1 to Form 3 students. Since no funding is made for Form 1 to Form 3 Computer Literacy classes, these students would have to share the limited computers provided for the Form 4 to Form 5 Computer Studies classes.

2.8 Tertiary students have access to the Internet through the Hong Kong Academic and Research Network (HARNET) and computers provided by the computer centers and library facilities of their respective tertiary institutions. The University Grants Committee (UGC) is exploring ways to upgrade the telecommunications links in UGC-funded institutions with overseas institutions.

Table 1a - Government Plans For Extending Information Technology Education In Schools

	Government Plans For Extending Information Technology Education In Schools
Canada	<ol style="list-style-type: none"> 1. The ministries of education or educational institutions are building the networking infrastructure for the schools which is called SchoolNet. SchoolNet introduces new technologies in the classroom at primary, intermediate and advanced levels. It also helps facilitate the use of information technology in the schools and the connectivity of all Canadian schools to the Internet by 1998. Over 8,000 (50%) of the country's 16,500 schools are now connected to the Internet. 2. The Computers for Schools (CFS) Program is established by the government to bring educational institutions, communities, business, federal, provincial and territorial governments together to channel surplus computer equipment and software to Canadian elementary and secondary schools; this program is partly sponsored by the government. To date, over 25,000 computers and 40,000 software had been distributed to schools and libraries across Canada.
Finland	<ol style="list-style-type: none"> 1. The National Board of Education is carrying out an extensive reform of curricula in general and vocational education. Students must learn how to use computers and the most common software applications in different subjects. Information technology must be taken into account from a variety of points of view in all studies. 2. The Ministry of Education is initiating a project to develop an information network linking schools and educational establishments.
Hong Kong	<ol style="list-style-type: none"> 1. The Education Department is examining the possibility of providing computer systems to public sector primary schools. 2. The Joint Committee on Student Finance is exploring the possibility of introducing a loan scheme to assist students in meeting certain academic expenses, including the purchase of computer.
Japan	<p>The introduction of computers has been carried in accordance with a 5-year plan from 1990 established by the Ministry of Education and the Ministry of Home Affairs. They will carry out a systematic introduction of computers by rental or leasing arrangements, with the aim of allocating 22 computers per primary school, 42 computers per junior high schools, 8 computers per school of special education, and 42 computers per senior high school offering general courses, over a period of roughly six years up to 1999. As of the end of 1992, the number of students per computer was 38.6.</p>

Table 1b - Government Plans For Extending Information Technology Education To Teachers

	Government Plans For Extending Information Technology Education To Teachers
Canada	School Net is developed by the government to support the development of various training models and tools to help educators learn how to use IT more effectively in classrooms.
Finland	<ol style="list-style-type: none"> 1. It is planned to revise the form, content and practice of teacher education so as to allow for a more open and flexible learning and more opportunities in using information technology skills in the curricula of teacher education. 2. It is also planned to improve the information technology equipment available at teacher education units. Concrete details are not available to RLS.
Hong Kong	<ol style="list-style-type: none"> 1. Training materials of the Computer Education Centre will be made available at the Computer Education homepage through Internet. 2. In the past ten years, a number of courses have been organized to update teachers on computer-related topics to teachers. (In total for the past ten years, about 210 courses on advanced computer science topics were organized for 6,300 computer teachers; 600 courses on various IT topics were organized for 20,000 teachers; 24 courses on the use of Internet were organized for 700 teachers.)
Japan	<ol style="list-style-type: none"> 1. Efforts have been made to improve the information processing capabilities of teachers through teacher training activities carried out by the Ministry of Education. As of the end of 1992, the ratio of teachers who can provide instruction on computers was 11.3% and in primary schools, 5.9%. 2. The Ministries of Education and Home Affairs implemented a system in 1994 to assign information technology engineers as temporary lecturers for the training of teachers to prefectural boards of education, as a means of promoting information-related education.

Table 1c - Government Plans For Extending Information Technology Education To Citizens

	Government Plans For Extending Information Technology Education To Citizens
Canada	The government establishes the Community Access Program (CAP) to help provide rural communities with affordable access to the Information Highway. This is a cost-shared programme in which the government finances up to 50% of the costs of establishing access sites in rural Canada. To date, more than 800 communities already share information worldwide. By 1998, a total of 1,500 communities will gain access points to the Internet through CAP.
Finland	An action programme using the general objectives set out in the National Strategy for education, training and research in the information society was drawn up to develop initial and continuing education in information technology. The objectives of the programme include: <ol style="list-style-type: none"> 1. increase the training opportunities related to information society skills in adult education through civic institutes, open course centres, labor administration finances retraining schemes; 2. improve the ability of libraries and information services to serve the public in acquiring information; and 3. disseminate knowledge of the applications and possibilities of information technology through nationwide communications channels.
Hong Kong	Not available
Japan	Not available

Table 1d - Other Government Plans For Extending Information Technology Education

	Other Government Plans For Extending Information Technology Education
Canada	LibraryNet is developed to facilitate connectivity and use of the Information Highway by Canada's 3,400 public libraries by the year 1999. As of October 1996, 867 Canadian public libraries were connected to the Information Highway, with 450 of these libraries providing Internet access to the public.
Finland	<ol style="list-style-type: none"> 1. A development programme was prepared for public libraries to strengthen their role in providing user support for information networks and electronic information products. 2. It is planned to enhance digitization of national information resources, promote information production and give support for the content industry in Finland.
Hong Kong	not available
Japan	The Ministry of International Trade and Industry will promote the allocation of computers through the low-interest loan system of the Japan Development Bank to educational computer rental business.

3. Research and Development

3.1 Table 2 gives examples of government assistance on promoting NII-related research and development. Many governments (Canada, Japan and the U.S.) would set up special committees to look after the research projects or conduct NII-related research projects themselves.

Table 2 - Government Plans For Promoting Research and Development

Government Plans For Promoting Research and Development	
Canada	<ol style="list-style-type: none"> 1. The Science and Technology Strategy is recently announced by the government to support research in universities, colleges and private sector and to provide information and analysis. 2. The Canadian Network for the Advancement of Research, Industry and Education (CANARIE) was set up by the federal government in 1993. 3. Canada's Communications Research Centre, the government laboratory, was assigned to focus research on Information Highway.
Finland	The government will define areas of research which are relevant to the strategy for development of the information society.
Hong Kong	<ol style="list-style-type: none"> 1. Hong Kong Institute of Education have developed a number of research projects about the Internet for Education. For example, they have developed World Wide Web courseware for teaching some of their students. 2. Between 1988 and 1996, the Research Grants Council supported a total of 233 research projects related to information technology or information infrastructure.
Japan	<ol style="list-style-type: none"> 1. An Inter-Ministerial Research Information Network was established by the government, which connected research institutes of research domains, ministries, agencies and countries. 2. A research information network discussion group was set up to coordinate the development of networks for research. 3. Ten supercomputers are scheduled to be introduced in eight national organizations to facilitate research on basic software and simulation.
U.S.	<ol style="list-style-type: none"> 1. Introduction of information systems in research has been promoted under the High Performance Computing and Communication Plan (HPCC) (established by the High Performance Computing Act of 1991) which is being implemented with the mutual cooperation of many agencies and state organizations. The HPCC also funds research to develop faster communication networks. 2. The establishment of supercomputer centers (to facilitate research for basic software and simulation) has been promoted with the financial cooperation of National Science Foundation.

4. Funding

4.1 Table 3 shows the amount of government funding for NII-related education and research and development projects. Although the relative proportion of financial support given by the government and private sector to the promotion of NII-related education and research and development is uncertain, it is clear that many governments would either undertake to finance the projects themselves or would share the funding with other institutions. Examples are Canada and the U.S..

4.2 Although Hong Kong government has given some financial support to education and research and development, such funding is not geared to the development of a NII in Hong Kong. Rather, funding is dedicated to achieve different policy objectives which are yet to be coordinated to develop a NII in Hong Kong. In contrast, funding of some projects in Canada, Japan and the U.S. are NII-specific. Therefore, it is not clear to us whether or not we can relate the achievements of those funded projects in Hong Kong to the development of its NII.

Table 3 - Funding For Projects of Education and Research and Development

	Funding For Projects of Education and Research and Development
Canada	<ol style="list-style-type: none"> 1. C\$52 million over 4 years have been allocated to different NII-related educational networks and programs. 2. C\$3.2 billion was spent on R & D by government laboratories on Science and Technology Strategy. 3. C\$104.5 million federal funds was allocated to build the CANARIE.
Finland	✓
Hong Kong	<ol style="list-style-type: none"> 1. Industry Department operates an Industrial Support Fund, which is allocated an amount of around \$200 million every year, and funds projects considered by the Industry and Technology Development Council or its committees to be beneficial to the industrial or technological development of Hong Kong. 2. Between 1988 and 1996, the Research Grants Council has funded 233 IT-related research projects which involved a total funding of HK\$96.7 million. 3. The University Grants Committee has invested a total of HK\$18 million in the improvement of the Hong Kong Academic and Research Network (HARNET) and upgrading the HK/U.S. telecommunications link to enable students in UGC-funded institutions to have access to the information superhighway. 4. A further HK\$30 million has been provided as targeted technological support for the UGC-funded institutions' own libraries, information and communications networks. 5. The Finance Committee approved in 1996 a setting-up grant of \$90 million for the Hong Kong Institute of Education. Part of the grant will be used to enhance the computer / information technology training for pre-service and in-service teachers.
Japan	✓
U.S.	<ol style="list-style-type: none"> 1. U.S.\$1.96 billion for the project on High Performance and Communications Program. 2. Grants to fund projects to connect institutions to existing networks, to enhance communications networks and permit users to interconnect among different networks.

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