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From Awareness to action: An Evaluation of the Bank's Policy on Information Age Technologies and Development (OP-711)

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ACRONYMS

2G	Second-generation mobile communication
3G	Third generation mobile telecommunication
B2B	Business-to-business
B2C	Business-to-customer
CAF	*Corporación Andina de Fomento*
CIDH	Center for International Development, Harvard University
ECLAC	Economic Commission for Latin America and the Caribbean
E-GP	Electronic government procurement
EIU	Economist Intelligence Unit
ENSI	*Estrategias Nacionales para la Sociedad de la Información*
FAO	Food and Agriculture Organization
G2B	Government-to-business
G2C	Government-to-citizen
G2G	Government-to-government
G8	Group of Eight
GDP	Gross domestic product
GSM	Global system for mobile communications
ICANN	Internet Corporation for Assigned Names and Numbers
ICT	Information and communication technologies
ICT-4-BUS	Information and Communication Technology for Business
IDB	Inter-American Development Bank
IFC	International Financial Corporation
IIC	Inter-American Investment Corporation
IIRSA	Regional Infrastructure Integration in South America
IMF	International Monetary Fund
IPES	Report on Economic and Social Progress in Latin America
IP	Internet protocol
IS	Institutional Strategy
ISP	Internet service provider
IT	Information technology
ITU	International Telecommunication Union
LAC	Latin America and the Caribbean
MIF	Multilateral Investment Fund
NGO	Non-governmental organizations
NRI	Networked Readiness Index
OECD	Organization for Economic Co-operation and Development
OP	Operational policy guidelines
OVE	Office of Evaluation and Oversight
PPMR	Project Performance Monitoring Report
PPP	Purchasing power parity
PRI	Private Sector Department
R&D	Research and development
RE1/SC1	Region 1 / State and Civil Society Division

RM	Reform and modernization of the state
ROS	Office of Regional Operations Support
ROS/PRM	Office of Regional Operations Support / Procurement Policy and Coordination Office
SDS/ICT	Sustainable Development Department / Information Technology for Development Division
SDS/SGS	Sustainable Development Department / State, Government and Civil Society Division
SIAF	*Sistema Integral de Administración Financiera*
SME	Small and medium enterprises
SUS	Sistema Único de Saúde
TC	Technical cooperation
TCP/IP	Transmission control protocol/Internet protocol
TDMA	time division multiple access
TFP	Total factor productivity
URL	Uniform resource locator
VSAT	Very small aperture terminal
WB	World Bank
WTO	World Trade Organization

FROM AWARENESS TO ACTION: AN EVALUATION OF THE BANK'S POLICY ON INFORMATION AGE TECHNOLOGIES AND DEVELOPMENT (OP-711)

EXECUTIVE SUMMARY

(June 2003)

The purpose of this report is to present to the Executive Directors an evaluation of the Bank's Operational Policy on Information Age Technologies (OP-711) that was approved in December 1998. The report establishes, first, that information age technologies are vital as enablers of progress in each of the pillars of the Bank's 1999 Institutional Strategy and, second, that the technologies present important policy challenges that appear to call for public action, including, in principle, a considerate and dynamic response by the Bank, assuming that problems of information failure can be solved. The report covers the period 1999 – 2002 and answers four key questions:

Relevance: Is OP-711 "relevant" in the sense that it identifies the right kinds of policies and activities to foster connectivity, networked readiness and the diffusion of information and communication technology (ICT) in the economy and the public sector of borrowing countries?

Institutional arrangements: Did OP-711 and the supporting documentation and provisions approved by the Executive Directors position the Bank adequately, and does this package provide the right framework, incentives and guidance for the institution to fulfill the dynamic role that OP-711 intended it to play?

Operational response: Has the Bank's operational response supporting networked readiness and the diffusion of ICT in the public and private sectors evolved satisfactorily, given the strategic importance of this crosscutting sector for all aspects of development?

Results: To the extent that this can be assessed at the present time, what results have been achieved?

With respect to the first question, the report concludes that OP-711 and the underlying source material are projecting an appropriate and appropriately ambitious vision of development accelerated by the promises of ICT. However, in framing OP-711 the Bank did not undertake the empirical work regarding the state of connectivity in the Region and the use of technology in public administration, public services, and private activity that would have been required to generate a benchmark against which to specify targets for action and prioritize specific kinds of interventions. As a result, the OP-711 package turned out strong on vision, but did not connect with realities in borrowing countries and was not sufficiently selective and prescriptive as a guide to action. After the approval of OP-711, serious institution-wide reflection was required on the nature of the Bank's comparative advantage in ICT and on what it would take to build comparative advantage where none existed. This reflection did not take place. OP-711 needs to be up-dated and revised and, more importantly, it needs to be complemented by a business plan with a monitorable results framework for Bank action.

With respect to the second question, the report concludes that the institutional arrangements provided for under the OP-711 package have not produced the anticipated results. Action within the institution remains partial and fragmented despite the creation of a specialized focal point (in

SDS) to deal with this issue. The approach of taking on board a new development challenge and tasking a newly created focal point/division with the responsibility to deliver on that challenge is found in this case to have limited buy-in on the part of senior management while keeping the IT issue at some distance from the Bank's programming dialogue with the countries.

With respect to the third question, the report finds the Bank's operational response to have the following characteristics:

- In information infrastructure, the Bank is appropriately playing a subsidiary role to the private sector, although the downturn in the investment climate for telecommunications and value-added services suggests a role for the Bank when appropriate investment opportunities arise.
- In the regulatory area, the Bank is hardly present, perhaps understandably so in light of the limited in-house expertise and the presence of rather strong competence in regional organizations and certain national telecoms/Internet regulators in Latin America with an acknowledged record of good practice and achievements.
- In government and public services, the Bank manages an important portfolio of investments with ICT components. However, much of what is being done is for the traditional purpose of buying hardware and information solutions for public administration, rather than e-government applications at progressively higher levels of functionality, the transformation of public services, and the use of technology to enhance education, health care and other aspects of the standard of living as foreseen under OP-711. Indeed, there is a lack of coherence between the declared strategy for the transformation of the state and the delivery of social services as stipulated under OP-711, on the one hand, and the *de facto* strategy revealed by the content of the investments that are actually being financed, on the other.
- In regional integration through enhanced connectivity and value-added services (a key priority under OP-711), the Bank has done little in the four years since the Policy was approved, but this may change in the context of IIRSA in which the Bank has recently played a role towards the production of a policy paper on a broad range of challenges and investment needs related to connectivity and ICT.
- Finally, the theme of developing national strategies for ICT for development (suggested as a line of action under OP-711) has been taken up with some vigor by the focal point in SDS. However, the report finds that the task tends to be approached generically, rather than reflecting in-depth country-specific analysis. Furthermore, as delivered, the task is de-linked from country programming.

With respect to the fourth question, regarding results, the report concludes that results are unknowable because the ICT components of the projects that were reviewed are not evaluable: results frameworks are not specified *ex ante* and the project performance monitoring reports do not track progress in the projects' ICT components. More fundamentally, the report finds that the Bank does not know how much it lends for ICT because the proposed investments are found to be incompletely justified and specified, and the budget tables in loan documents (as well as the budget categories in the Loan Management System) are not detailed enough to enable reliable *ex ante* and *ex post* knowledge of the amounts invested in ICT and of the breakdown of the investments according to meaningful categories.

Overall, the report concludes that the Bank should re-think its stance with respect to ICT. The topic is critical, given the pivotal role of technology and R&D for competitiveness, the terms of countries' insertion into the global knowledge economy, the transformation of government, and the efficient delivery of client-oriented public services. ICT is a constantly evolving tool of the knowledge economy and the Bank, as concluded in this report, has been slow to deal with the systemic importance of the different elements that need to be in place. The following recommendations are offered with the aim of facilitating the process of addressing the challenge:

First, up-date and revise OP-711, but above all produce a business plan with a monitorable results framework for Bank action. Prioritize the pursuit of productivity gains in the public and the private sector as the key objective and guiding principle.

Second, in this context, develop policy guidelines beyond a deal-by-deal approach for lending for connectivity and universal access, and for lending and technical assistance for improvements in regulatory frameworks (licensing, interconnection, regulatory convergence).

Third, transform the institutional/organizational arrangements for ICT for development with a view to enabling a coherent and effective role by the Bank centered on country programming.

Fourth, strengthen skills and databases in priority areas of ICT for development retained under the up-dated and revised OP-711.

Fifth, integrate the Bank's policies and/or strategy statements that aim to provide guidance to the institution for fostering education, innovation, connectivity, productivity and competitiveness.

Sixth, in the context of every operation with an ICT component, invest in risk analysis with a view to mending the information failures that are known to threaten the effectiveness of IT investments in government and the private sector.

Seventh, develop and apply standards for the analysis, justification, budgeting, and the monitoring and evaluation of ICT components in Bank loans.

It is proposed that an inter-departmental Task Force be established to solve key issues towards the new OP-711 to be developed. The Task Force should address: (i) the strategic issues in play and the challenge of organizing the institution and work processes for a cutting-edge, client-oriented role, and (ii) the problems of quality and effectiveness (including transparent budgeting) that affect lending for ICT components in modernization of the state and the delivery of public services.

I. INTRODUCTION

1.1 The purpose of this report is to submit to the Executive Directors an evaluation of the Operational Policy Guidelines on Information Age Technologies and Development that they approved on December 16, 1998.

1.2 The Operational Policy Guidelines—hereafter referred to as OP-711 or "the Policy"—were presented to the Executive Directors as a package that also included the IDB Strategic Statement *Latin America and the Caribbean in the Information Age: A Gateway to the Future*[1] and a Plan of Action for initiating the Bank's activities in the area of information age technologies as provided for under the Policy.[2] Central to the Plan of Action was the creation of the Information Technology Operational Unit, now the Information Technology for Development Division of the Sustainable Development Department (SDS/ICT).[3]

1.3 The evaluation (largely written in January-February 2003) is motivated by, and timed to inform, Management's review and updating of OP-711 scheduled for delivery in 2004,[4] in compliance with provisions in the 1999 Institutional Strategy (IS) to the effect that "[the] goals and objectives of Bank interventions in the main sectors ... need to be kept current by the Board of Executive Directors through a regular review of the Bank's strategies and operational policies" (IS, paragraph 6.12).

1.4 The evaluation is designed to answer the following key questions:

1. Relevance: Is OP-711 "relevant" in the sense that it identifies the right kinds of policies and activities to foster connectivity, networked readiness and the diffusion of information and communication technology (ICT) in the economy and the public sector of borrowing countries?

2. Institutional arrangements: Did OP-711 and the other identified elements of the package approved by the Board of Executive Directors position the Bank adequately, and does the package provide the right framework, incentives and

[1] Document GN-2024-3, dated December 11, 1998, contains both the Strategic Statement and the Operational Policy Guidelines. OP-711 can be downloaded from the Bank's Intranet (type "Manuals" and go to "Operations Policies").
[2] Document GN-2024-2, dated November 20, 1998.
[3] The Unit was originally established in the Office of Regional Operational Support (ROS) for the period 1999-2000, such period being seen as "a reasonable time frame for evaluating the performance of the proposed unit ("sunset provision") and for ascertaining whether it should continue to operate in its present form" (Minutes of the Policy and Evaluation Committee of the Board of Executive Directors, Meeting 98/11; December 3, 1998; paragraph 29.5). In July 2000 the Unit submitted a self-evaluation report to the Executive Board's Policy and Evaluation Committee. The report recommended the Unit's transformation into a permanent division of the Sustainable Development Department. This transformation became effective on January 1st, 2001. It was formally proposed in Document GA-183-4, dated October 25, 2000 (*Assessment of the 1999 adjustments to the basic organization of the Bank and suggestions for additional modifications. Revised Version*) and approved by the Executive Board on November 29, 2000.
[4] Document GN-2077-15, dated December 27, 2001: *Review of sector strategies, policies, and guidelines. Revised version.*

guidance for the institution to fulfill the dynamic role that OP-711 intended it to play?

3. Operational response: Has the Bank's operational response supporting networked readiness and the diffusion of ICT evolved satisfactorily, given the strategic importance of this crosscutting sector for all aspects of development?

4. Results: To the extent that this can be assessed at the present time, what results have been achieved by means of the Policy and other elements of the package, on the one hand, and the operational (i.e., lending) response, on the other?

1.5 Answers to these questions will be developed following a four-pronged approach:

1. A standard against which to judge the evaluative criterion of relevance is established through a needs analysis that also delimits and characterizes the "market" in which potential Bank action would operate (Chapter II).

2. The origins and strategic intentions of OP-711 are analyzed and evaluated in terms of their policy relevance and the appropriateness of the institutional arrangements created (Chapter III). This includes an assessment of the role of SDS/ICT.

3. The ICT components of selected Bank operations in different sectors are reviewed and evaluated with a view to judging their pertinence, the quality of their design, implementation progress, and—to the extent possible—results (Chapter IV). This includes a judgment of the "materiality" or "substantiveness" of the Bank's response and of the consistency and coherence between OP-711 (the declared strategy) and the operational portfolio (the *de facto* strategy).

4. Conclusions are drawn and recommendations developed with a view to facilitating decisions that need to be taken for the Bank to support borrowing countries more effectively in their efforts to achieve the promises of ICT, networked readiness, and information infrastructure for all (Chapter V).

1.6 The method employed is that of a desk study supported by the documents cited in the text and conversations with stakeholders. The activities reviewed essentially cover the four-year period 1999 – 2002. Developments and activities in 2003 are not taken into account. Fieldwork was not undertaken, except for a limited assessment of the ICT components of three projects in "modernization of the state" chosen for reasons of convenience to illustrate certain general points.

1.7 The ICT components of all projects approved in or after 1999 and under implementation by the end of 2002 in health, education, science and technology, and modernization of the state were reviewed.[5] Inventories of projects in connectivity by the Inter-American Investment Corporation (IIC) and the Multilateral Investment Fund (MIF) were also compiled.

[5] Bank's sector classification.

II. NEEDS ANALYSIS: ICT AS AN ENABLING FACTOR FOR DEVELOPMENT

2.1 Following the methodology outlined above, the purpose of this Chapter is to examine available theoretical arguments and evidence regarding the paths by which ICT can accelerate development, provided that appropriate supporting policies and investments are in place. Five topics are addressed to set the stage for the evaluation of OP-711 and Bank action in ICT:

- The linkages between ICT and productivity gains
- The role of ICT in the transition to the knowledge economy
- The state of connectivity and networked readiness in the Region
- The role of ICT in public sector management and public services, and
- The state of e-government in Latin America and the Caribbean.

2.2 This Chapter takes up these issues and, in the concluding section, links what has been learned to the four pillars of the Bank's 1999 IS. The conclusion is that, first, ICT is vital as an enabler of progress in each of those pillars, and second, ICT presents important policy challenges that appear to call for public action—including, in principle, a considerate and dynamic response by the Bank.

A. Productivity and growth

2.3 Investment in ICT can lead to economic gains in three ways. The first is the reduction of transaction costs and increased responsiveness of economic agents thanks to network externalities in traditional ("old economy") activities such as manufacturing, transportation, retailing, and financial services.[6]

2.4 Second, "new economy" activities linked to the global value chain can become a source of growth, for example: semi-conductor assembly and manufacturing of high-tech components (cf. Costa Rica); launching of a software industry;[7] back-office functions for the international financial, insurance, travel, and healthcare industry; and different forms of e-commerce or B2B and B2C transactions for the domestic economy and for export.[8]

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[6] Network externalities exist when the value of a product to any user increases with the number of other users of the same product. Thus, the value of subscribing to the public telephone network is a function of the number of others with whom a subscriber can communicate. This principle applies to the Internet, but the functionality of the Internet exceeds that of traditional telecommunications: Whereas the latter carry essentially two-way simultaneous voice traffic along dedicated circuit-switched paths, the Internet is both multi-way and interactive, can send any electronic signal, and is packet-switched, meaning that no continuous path is devoted to the delivery of a message. It has been demonstrated that user willingness to adopt Internet service is an increasing function of network size. See R. Cooper and G. Madden, *Network Externalities and the Internet*, paper presented to the Department of Economics, University of Western Australia, Perth, 2001.

[7] The Latin American software industry has been in a mode of contraction in the past two years according to information assembled for this study.

[8] E-commerce (domestically and foreign sales-oriented), which has been growing in Latin America, continues to be hampered by the limited access to computers and information technology in the Region, in addition to the constraints that are specific to this particular activity, namely legal and regulatory considerations, the management

2.5 Third, indirect effects. Network externalities and the reordering of production processes should in time lead to increased multi-factor productivity, i.e., growth in output that is not explained by changes in all individual inputs being considered such as the number of work hours and computers and other machinery employed.

2.6 The presence of positive indirect effects is documented in recent literature, although there is disagreement among the experts studying the US economy regarding the associated lags, the paths, the intensity, and the sustainability of the effects (authoritative analyses for Latin America and the Caribbean could not be located on this point).[9] Some dispute the significance of the Internet and ICT as revolutionary forces comparable to the inventions of electricity, chemical and other technologies in the second half of the nineteenth century that changed the economy fundamentally. Others point out that it takes time (in fact, possibly many years) for businesses to adapt their processes and organization sufficiently to take advantage of a major innovation. In the US, heavy investment in computers since the 1970s failed to show up in productivity statistics until the mid-1990s, a phenomenon dubbed the "computer paradox." Between 1995 and 2000, however, productivity growth—both labor productivity and total factor productivity—accelerated rapidly. Many have credited this to the maturing of the Internet and networked information technology applications to businesses, but the literature is not unanimous on this point.[10]

2.7 The available literature thus establishes only a suggestive and plausible connection between ICT investment and productivity growth. Many of the forces that drive productivity and growth in the wake of innovations are complex and incompletely understood. With reference to teledensity, Figure 2.1 suggests that the relationship between connectivity and growth is bi-directional, with the relative strength of the two directions of causality likely to vary according to a country's level of development and other factors. "Endogenous" arguments advocating investment in technology emphasize the uses to which technology is put, rather than technology *per se*, noting that many of these uses cannot be predicted at the time when an innovation is developed or investments in its application are made.

B. ICT and the knowledge economy

2.8 The fundamental role of knowledge as a factor of production has long been recognized. In 1890 Alfred Marshall wrote in the Principles of Economics: *capital consists in a great part of knowledge and organization*. The information revolution extends the frontier of possibilities in this regard. It creates new opportunities for generating and transforming knowledge. It enables the reorganization of processes of production. And it expedites

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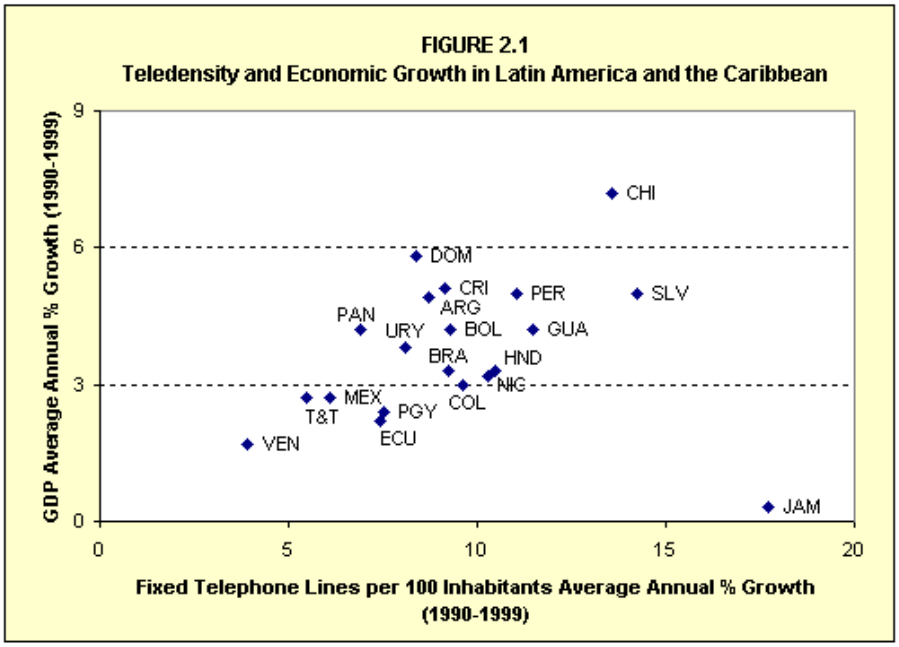
of payment and credit risks online, security and privacy issues, and reliable ways to deliver the goods purchased online.

[9] IDB, *IPES 2001*, Chapter 14, addresses these issues with reference to literature related to the US. In Latin America and the Caribbean there may not yet be a sufficient critical mass of "adopters" of the Internet and ICT for statistical effects of network externalities and TFP growth to show up.

[10] In *Beyond the Dot.coms: The Economic Promise of the Internet*, Brookings Institution Press, Washington DC 2001, R. Litan and A. Rivlin argue that the Internet may add 0.25% to 0.5% annually to US productivity growth over and above what it would otherwise be for the next five years.



Source: World Bank, World Development Indicators 2001, and ITU, ITU Internet Report: Internet for a Mobile Generation 2002.

Box 2.1. Policy Framework for the Knowledge Economy

Part I: Market Environment
HUMAN RESOURCES
Education:
Content-related: training of educators; integration of ICT in curriculum
Infrastructure-related: connecting schools
Government spending on education
Labor:
Skills development and certification
Skills matching
Reversing brain drain
CAPITAL
Early-stage financing: incubation, venture capital
Later-stage financing: access to capital markets
TECHNOLOGY
Diffusion of technology:
Through trade
Through foreign direct investment
Innovation:
Financing: grants, tax concessions, subsidies, loans
University-business collaboration
Industry clusters
Ease of patent registration

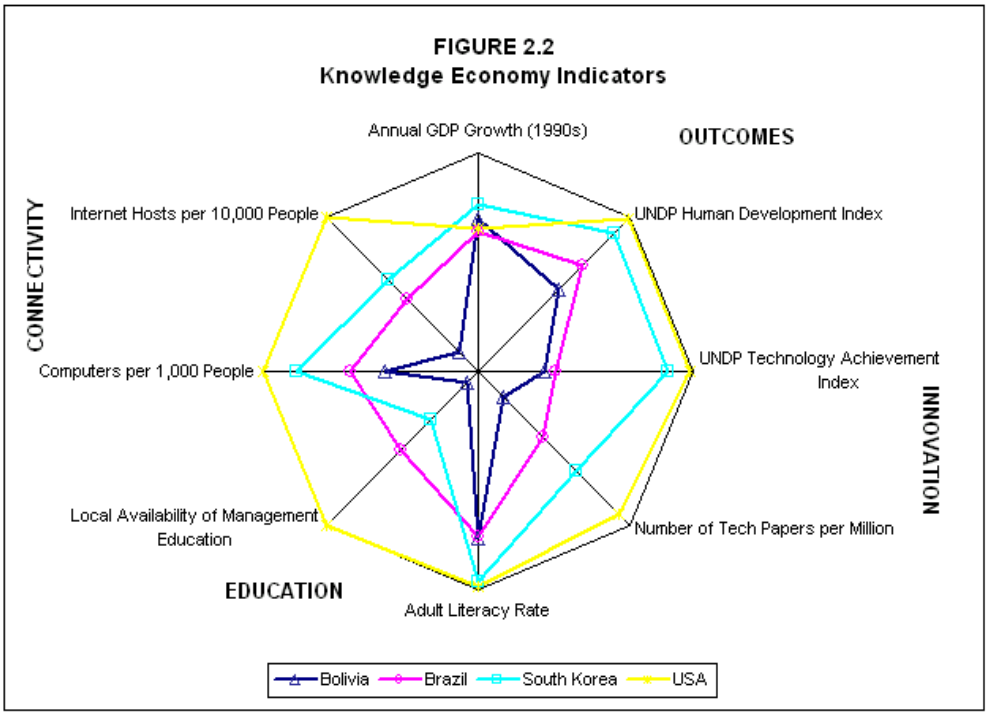
Part II: Legal and Regulatory Framework
LEGAL FRAMEWORK
Basic framework: property rights; contract law
New legislation: e-commerce
Harmonization with international law
REGULATORY FRAMEWORK
Regulatory independence and capacity
Degree of regulation
Regulatory process: standard setting; interconnection

Part III: Infrastructure
Market structure:
Privatization, liberalization
Pricing:
International: cost of connecting to international gateways, accounting rates, internet telephony
Domestic: choice of regulatory pricing regime, metered versus non-metered; subsidies
Universal service/access:
Local content; content regulation; taxation; privacy; consumer protection
Network quality: network service and support; quality of service monitoring; security
Supporting infrastructure: electricity; postal service; customs, transport logistics
Financial infrastructure: payment gateway; identification and authentication

Source: Adapted from INSEAD, World Economic Forum, and Infodev: The Global Technology Report 2002-2003, Oxford University Press, p. 27.

innovation and adaptation capacity. At the same time, it likely intensifies competitive pressures in the context of increasing global trade.

FIGURE 2.2
Knowledge Economy Indicators



Source: Developed based on the World Bank's Knowledge Assessment Methodology (KAM) available at http://www1.worldbank.org/gdln/kam.htm.

2.9 Figure 2.2 suggests that Latin America is not faring satisfactorily in the knowledge economy. Blueprints for the strategies to be followed to make more effective use of knowledge and technology do not exist. But a framework of basic factors combining determinants of the market environment, legal and regulatory conditions, and infrastructure can be identified—see Box 2.1.

2.10 The "model" suggested in the Box implies in the first place a need to improve human resources to create the conditions to respond to the demand for skilled labor in the presence of technological change. Consequences for education, and for the school environment and other arrangements that affect the way people learn, arise.[11] There are implications for teachers and teacher training and for the use of technology both to transform learning and to reach more learners. Arrangements for lifelong learning are an important element of a human resource strategy for the knowledge economy.

2.11 Another strategic aspect is financing, i.e., the availability of venture capital and, for later stages in product development, access to equity and bond markets. The conditions under which innovation occurs need to be understood: university-business partnerships, special

[11] World Bank, *Lifelong Learning in the Global Knowledge Economy: Challenges for Developing Countries*, 2002, distinguishes the following characteristics of effective learning environments: learner centered, knowledge rich, assessment driven, and community connected (pp. 25-26).

technology parks, appropriate patent legislation, and financing are likely to be important. Of fundamental importance is an appropriate legal and regulatory framework, including e-commerce legislation, and a conducive information infrastructure, elements of which are discussed in the next section.

TABLE 2.1.
World Regions: Fixed Telephone Lines per 100 Inhabitants (1990-2001)

World Regions	1990	1995	2001
U.S. & Canada	54.6	60.7	66.4
Japan & Asian Tigers [1/]	39.8	46.6	56.4
Western Europe	38.8	45.6	52.0
Eastern Europe [2/]	13.4	17.3	25.2
Middle East	7.8	12.5	17.9
Latin America & Caribbean	**6.5**	**9.2**	**16.5**
South & East Asia [3/]	0.7	2.3	7.7
Africa	1.4	1.8	2.6
WORLD	9.9	12.1	17.2

Source: ITU.
[1/] Asian Tigers: Hong Kong, Singapore, South Korea, and Taiwan.
[2/] Includes Belarus, Estonia, Latvia, Lithuania, Moldova, Russia, and the Ukraine.
[3/] Excludes Japan and the Asian Tigers.

TABLE 2.2
World Regions: Cellular Mobile Subscribers per 100 Inhabitants (1996-2001)

World Regions	1996	2001
Western Europe	5.6	66.3
Japan & Asian Tigers [1/]	16.6	63.4
U.S. & Canada	16.0	43.2
Latin America & Caribbean	**1.4**	**16.0**
Middle East	1.3	14.5
Eastern Europe [2/]	0.4	13.4
South & East Asia [3/]	0.4	5.8
Africa	0.2	2.9
WORLD	2.5	15.6

Source: ITU.
[1/] Asian Tigers: Hong Kong, Singapore, South Korea, and Taiwan.
[2/] Includes Belarus, Estonia, Latvia, Lithuania, Moldova, Russia, and the Ukraine.
[3/] Excludes Japan and the Asian Tigers.

C. Connnectivity and networked readiness

2.12 The vision of many strategists and planners that developing countries can grow rapidly by competing in the global knowledge economy thanks to ICT is tempered by the reality of great disparities in the access to connectivity and other tools for the creation of knowledge and wealth.

2.13 The review in this section of the state of connectivity in the Region, starting with telecommunication, serves to illustrate this while at the same time pointing to significant achievements in the past decade.

1. Telecommunication—the foundation of connectivity

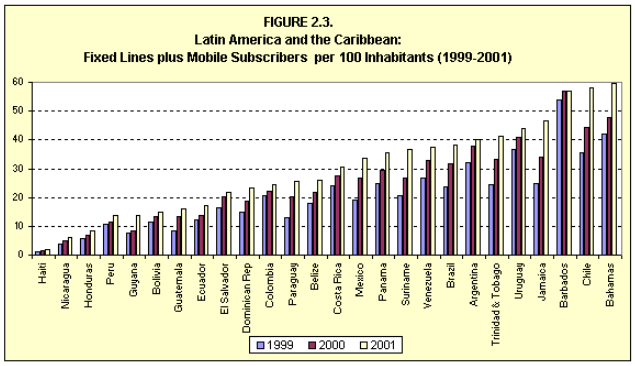
2.14 Most countries in the Region embarked on reforms during the past ten years that led to substantially increased and improved access to services. As a result: (i) a catching-up phenomenon is at work, illustrated by the change of fixed line penetration in the Region from 66% of world average in 1990 to 96% in 2001; (ii) a "mobile revolution" is taking place, illustrated by the diffusion of mobile phones between 1996 and 2001 at an average annual rate of growth exceeding 60%; and (iii) a strategic shift has occurred inasmuch as the Region as a whole displays both fixed line and mobile penetration rates today that exceed the level of 10 per 100 inhabitants which many experts consider the basic threshold for joining the information revolution and for network externalities of significance to "kick in" (Tables 2.1, 2.2).

2.15 Despite these achievements, great gaps remain, as shown in Figure 2.3 on the between-country variation for fixed lines and mobile telephony combined, a measure of the state of access to telecommunications, but with the difficulty that one does not know the extent to which cellular phones are being used as an alternative rather than a supplement to fixed lines. ITU data indicate that in Panama, Paraguay, and Venezuela, for example,

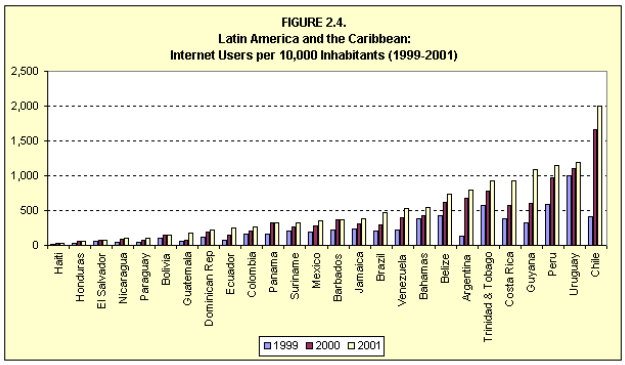
penetration was driven by cellular mobile telephony in recent years. In other words, mobile communications extended access rather than simply supplementing it. The three countries belong to a group of at least twelve in the Region in which the number of cellular subscribers is greater than that of fixed lines today. Other countries display a more balanced pattern of growth in the two services. Brazil, Guyana, and Mexico, for example, had the Region's highest 1999-2001 growth in fixed telephony while displaying strong growth in cellular services as well.

2. Internet use and e-readiness

2.16 A similar pattern of between-country variation emerges from Figure 2.4 on the growth in the number of Internet users between 1999 and 2001—the size of the digital divide varies greatly between (and within) countries. The indicator depicted in the figure, Internet users/10,000 inhabitants, is one of a number of variables that need to be considered for a full understanding of the state and determinants of countries' readiness for the knowledge economy and the information society. A more fully specified framework of "e-readiness," or "networked readiness," is presented in Annex 1, from which it follows that the Region occupies the lower half of a global ranking of preparedness to take advantage of the benefits of the Internet and information age technologies. This information provides a measure of the ground that most countries in the Region need to cover before they can compete with developed countries or even the more advanced emerging markets in this area. Room for complacency does not exist: e-readiness in the Region has slipped in absolute terms and relative to other world regions in the past twelve to eighteen months, in good measure because of the lack of progress in governmental readiness in most countries (Annex 1).



Source: ITU.



Source: ITU.

3. Local content

2.17 Intuitively, the existence of content for dedicated applications matters as a determinant of the demand for access and of users' willingness to invest in computers and other forms of connectivity, although the causality likely also works the other way around. The availability of content also matters as a determinant of the potential size of the network externalities that can be spawned. Many educational applications, most e-government uses, and many web-supported commercial and civic applications are premised on local content and customized resources for specific user groups, the generation of which in

Spanish and Portuguese is lagging[12] and should be accelerated as part of a strategy to bring societies online.[13]

4. Policy challenges

2.18 The key policy category that governments interested in deepening connectivity must address pertains to the regulatory framework for telecommunications and the IT sector. Almost all of the Bank's borrowing member countries have a regulatory authority for telecommunication in place today.[14] In fact, according to the ITU, the Americas region features the highest proportion of separate regulatory agencies in the world. The governance of these entities, the degree to which they are independent from interference by interest groups (operators, suppliers, government, politicians, the public), and the mechanisms by which they are funded, vary. But the goals and terms of reference of the entities in different countries have coalesced. With privatization of incumbent operators fading into the background, the entities must focus on the regulatory policy challenges of competition, protecting consumers from potential monopolies, promoting choice and universal access, creating incentives for investment, and guiding telecom operators and ICT industries to the technological frontier.[15] Each of these challenges is briefly addressed below.

2.19 Competition: Competition is an issue not adequately resolved in the Region. Most countries display participation by the private sector in local, long-distance, and cellular telephony today.[16] The companies are professionally run, employ state-of-the-art technology (including in most cases 100% digital networks) and have a favorable record in terms of the upgrading of services. But the presence of private operators does not automatically ensure competition, even when markets are classified as liberalized. Data compiled by OVE show that about half of the Bank's borrowing member countries maintained monopolies (in some cases duopolies) in local and/or long-distance fixed-line

[12] On this, see http://funredes.org/LC and ECLAC, *Latin America on its path into the digital age: where are we?* Serie desarrollo productivo (author: M. R. Hilbert), Santiago, June 2001.

[13] Under the Bank's loan for transparency and fiscal reform in Peru (PE-0212), the budget is published on the website of the Ministry of Economy and Finance and made available to civil society—an example of local content that should help raise the demand for connectivity: www.mef.gob.pe.

[14] In addition, a regional organization of regulators, Regulatel, exists; see www.regulatel.org. The members are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.

[15] Regulators' ability to deliver on these challenges can be affected by the nature of their jurisdiction over different types of services. In a small number of countries, public utility regulators have not so far been unbundled, i.e., the function of telecom regulation is not separated from that of the regulation of other services, such as water and electricity, that respond to completely different challenges. In other cases there are unresolved issues pertaining to regulation and convergence. New telecommunication regulators have generally been granted jurisdiction over new services, such as the Internet. But in some cases, including Brazil, some aspects of the Internet are managed by a third party, such as the Ministry of Science and Technology. "The splitting of functions and jurisdiction among government agencies [can] generate jurisdictional struggles among them as convergence of technologies, services, and markets moves from rhetoric to reality" (ITU, *Americas Telecommunication Indicators 2000*, p. 48; www.itu.in/ti).

[16] The exceptions are Bahamas, Costa Rica, and—for local and long-distance mainline calls—Ecuador, Haiti, Honduras, Paraguay, Suriname and Uruguay (local calls). In October 2000, the auction of 51 percent of Honduras's state-owned *Hondutel* failed because the one bidder present did not match the government's minimum asking price.

telephony in 2001. The other half, and cellular telephony in most countries, displayed different patterns and degrees of competition.

2.20 To a certain extent, this is the legacy of two approaches to privatization with different consequences for competition: Where the retirement of government debt was an important initial motivation underlying the privatization of the incumbent operator, exclusivity periods tended to be granted to the strategic investor in the interest of revenue maximization (Argentina). On the other hand, where the improvement of performance was the main consideration, fixed-line privatization—in a framework of realism over potential proceeds—tended to open the way to more far-reaching liberalization (Chile). Commitments by the majority of Latin American countries under the WTO Agreement on Basic Telecommunications Services require them to deepen the process of liberalization in the coming years.

2.21 Universal access: The presence of an unfinished agenda with respect to competition has not stood in the way of progress in extending phone coverage to remote areas in Latin America. Most countries that carried out some type of privatization of basic telecommunication services made an effort to expand services into isolated, high-cost areas.[17] They incorporated universal service obligations in concession contracts, created special telecommunication investment funds (this was done in Argentina, Bolivia, Brazil, Chile, Colombia, the Dominican Republic, El Salvador, Guatemala, Mexico and Peru), or established specific expansion programs to extend coverage in rural areas. Thanks to these programs the Region can point to considerable and rather successful experiences with the extension of service to outlying regions. In Chile, for example, the proportion of the population living without access to telephony was reduced from 15% in 1994 to 1% in 2002.[18] The scheme (probably the most successful such experience in the Region) was financed through a sequence of universal service auctions in which operators bid for a level of subsidy. This fostered competition, economized on the fiscal cost of subsidy, and allowed the market structure after the auction to be determined by the bids in the auction. The lesson is that it is possible to design subsidy plans that produce high impact at low cost.

2.22 The impact not only takes the form of greater access and connectivity but also comes in terms of direct economic benefits to rural households measured as reductions in the cost of communication compared with alternative means such as physical travel. Recent studies in the Region found this economic benefit (reduction in transaction costs) to be significant.[19] The many *telecentro* initiatives that are financed from public telecommunication development funds and NGO-led community investment projects are instruments in the service of this type of benefit. Examples of *telecentro* initiatives, often resourced through a mixture of local contributions and support from aid donors, include projects sponsored by *Red Científica Peruana* (www.rcp.net.pe), the *Comitê para Democratização da Informática* in Brazil (www.cdi.org.br), *Fundación Chasquinet* in Ecuador (www.chasquinet.org) and others now operating in every one of the Bank's

[17] IDB/RES, *Latin American Economic Policies*, Vol. 18, Second Quarter, 2002, p. 7 (see also IPES 2001).
[18] Wellenius, B., *Closing the Gap in Access to Rural Communication: Chile*, World Bank, November 2001.
[19] IDB/RES, op. cit.

borrowing countries. A recent review of NGO-supported and state-sponsored telecenters for socioeconomic and rural development in Latin America concluded that, collectively, these initiatives, including cyber-cafes and learning and networking portals run by NGOs, universities and schools, make an important contribution toward reaching the goal of universal access and bridging the digital divide.[20]

2.23 Investment: Extending coverage, broadening service beyond voice, and rolling out broadband requires investment, but capital is in short supply at the moment. Private investment in telecommunication equipment and infrastructure in key countries in Latin America grew rapidly during the 1990s (from US$32 billion in 1994 for Argentina, Brazil, Chile, Colombia and Mexico combined to US$99 billion in 2000, implying an average annual rate of growth of 18%, according to World Development Indicators 2002). But the variable has declined in recent times in the context of an unfavorable investment climate in telecommunication that is linked to developments in the industry as a result of which large operators (potential sponsors for PRI projects) have seen their share prices deteriorate—in many cases massively so—in the wake of an erosion of investor confidence. This has essentially shut down equity financing as a funding option.[21] Indebted operators have scaled back their international investment plans in the face of rising borrowing costs, abandoning countries viewed as "higher-risk." One consequence is that would-be entrants (mobile phone operators and Internet companies) are kept out of the market. This interferes with the need to deepen competition and slows the introduction of next generation technologies.

2.24 Convergence: Mobile and convergent, these technologies hold great potential for deepening connectivity and broadening applications that deliver value through ubiquitous computing. Internet technology has made previously distinct media and telecommunication technologies convergent to the point that voice and data (text, images, video, radio, TV, etc) can now be transmitted across the same networks. Convergence can take place at different levels (including terminals, such as handheld devices, and networks) that permit the interchange of data and value-added services between wired and wireless systems. Its leading aspect is the coming together of mobile telephony and the Internet—the migration from second to third generation mobile communication systems that has begun, but is expected to take a long time to define itself and play out.[22]

2.25 Driven by the principle of convergence, the pursuit of connectivity in the coming years will require continued efforts towards the inter-operability of radio interfaces and the evolution to an IP-based core network.[23] It will be a process not without surprises as

[20] Proenza, F. J., R. Bastidas-Buch, and G. Montero, *Telecenters for Socioeconomic Development in Latin America and the Caribbean*, FAO-ITU-IDB, May 2001 at http://www.iadb.org/regions/itdev/telecenters/index.htm. See also www.tele-centros.org for experience with telecenters in Latin America/Caribbean.

[21] World Development Indicators 2003 was not available at the time of writing, so more recent levels of private investment in telecommunication could not be ascertained from this source, but see IMF, *World Economic Outlook*, 2002, on the decline of capital flows to Latin America.

[22] For a comprehensive overview see ITU, *Internet for a Mobile Generation*, September 2002 at www.itu.int/mobileinternet.

[23] Ibid. Note that convergence presents a new generation of regulatory problems including spectrum management where the available frequencies are now more hotly contested, licensing, and the harmonization of numbering, routing, addressing systems, billing, technical standards and interconnection.

exemplified by the 802.11 (wi-fi) systems now becoming available that can radiate several hundred meters (and indeed several kilometers with directional antennas and other enhancement), offering new, wireless last mile solutions for villages and remote areas in the nature of "viral" connectivity at much lower cost than 3G—provided that a satellite link or other global-to-local connection exists.

D. ICT, public sector management, and public services

2.26 Governments have critical policy roles to play in creating the conditions under which connectivity and the knowledge economy can flourish. At the same time, governments must take advantage of the new technologies to render public sector management, public procurement, and the delivery of public services more efficient and effective (Box 2.2 on the use of ICT in the delivery of public social services.)

Box 2.2. Technology in Social Services

Telemedicine: The Chilean Ministry of Health has a program connecting primary care providers nationwide to hospitals and private practices through videoconferencing and e-mail consultation. The program allows for web-casting of lectures, meetings, surgical procedures, meetings for patients with far away relatives, and consultations for emergencies and second opinions (www.minsal.cl/sitionuevo/telemedi.htm).

Epidemiological surveillance: In cooperation with the Peruvian Ministry of Health and Telefónica, Voxiva (a voice and data solutions provider) is piloting a disease surveillance application that permits health personnel located in remote areas to report diseases to a central database in real time (www.voxiva.com).

Education: In Brazil, TV Escola is a distance education program for teachers and a source of content for the classroom (www.mec.gov.br/seed/tvescola); ProInfo is the national computers in education project (www.proinfo.gov.br); MultiRio provides multimedia training for teachers, and education materials for students, through a municipal network broadcast by TV Educativa and TV Bandeirantes (www.multirio.rj.gov.br). In Chile, Red Enlaces is about teacher training (www.redenlaces.cl). In Costa Rica, the Programa de Informática Educativa, for preschool and elementary education students, installs informatics labs and educational applications in schools. Telesecundaria extends secondary education access to rural areas (www.mep.go.cr/innovaciones/telesecundariaDesc.html). In Mexico, EDUSAT is a network of satellite educational television with national reach, but promoting coverage of rural and remote areas in particular (edusat.ilce.edu.mx).

2.27 Public procurement is a key area where ICT can make a difference. As the single largest purchasers in many of the Region's economies, governments are an important determinant of the level of economic activity, implying that efficient procurement is in the public interest in more than one respect. On-line public procurement is increasingly becoming the new standard in Latin America, with countries such as Chile, Mexico and Brazil standing out as regional leaders.

2.28 This section provides an overview of ICT in government and, effectively, of the state of *e-government* in the Region. Technology has begun to modify the functions, roles and performance of governments in Latin America and the Caribbean, paving the way for e-govern*ment* and e-govern*ance* as defined in Box 2.3. Technology can support the drive for modernization of the state by strengthening five attributes of better government: citizen participation, transparency, accountability, efficacy in satisfying client needs, and administrative efficiency. Change is underway in the Region in this sense, but the process has not evolved to the point of inducing a *transformation* of government and shaping *governance*, although society is increasingly aware of the scope for innovation in this respect.[24]

[24] Arguably, universal electronic voting in the recent national election has strengthened democracy in Brazil.

2.29 E-government is at an early stage in the majority of countries in the Region, but it is quite advanced in some important cases, notably Chile and Brazil (Box 2.4 on the latter). In addition, Mexico and Colombia have made substantial recent progress in delivering services online (go to www.e-mexico@sct.gob.mx and www.agenda.gov.co). Many other countries are much less advanced. To structure the analysis, it is useful to distinguish between three levels of functionality of government online: *web presence*, or the passive publishing of information, usually on an uncoordinated agency-by-agency basis (an advanced form of this is an integrated information delivery platform or one-way portal to all relevant agencies); *interactive communication*, where users can communicate with agencies (active/passive or active/active); and *transaction* (active/active).

Box 2.3. E-Government Defined

E-government is the use of ICT to promote the dissemination of information about political processes and public services and to facilitate both online interaction and transactions. The term *e-government* potentially "encompasses a broad spectrum of activities involving the purposed deployment of modern communications and information technologies to improve government operations and services as well as to enable a more cooperative and meaningful relationship with citizens and other non-state actors."[1] E-government thus defined is about the way governments operate. However, because of the associated empowerment of participants through information, e-government efforts also have the potential to *transform* government and governance itself, among other aspects by solidifying the scope for "vertical accountability" (citizens holding government accountable to electoral promises) and opening a space for "horizontal accountability" of the state to civil society, judicial and legislative institutions, watchdog entities and others.

[1] T. Northrup and S. J. Thorson, *The Web of Governance and Democratic Accountability*, Proceedings of the 2003 IEEE Hawaii International Conference on System Sciences (HICSS-36).

2.30 Chile's www.tramitefacil.cl, a one-stop shop to government online, is an example of "transaction" functionality. The country has developed intra-agency IT platforms and inter-agency coordination to a sufficient degree to be able to make available online services through this portal. The site is organized by area of government action and allows for immediate access to services without users needing to know which agency is responsible for a desired type of service. For most of the transactions listed, detailed guidance is available and online forms can be downloaded and submitted by e-mail. Some transactions (for example, civil registry certificates) can be paid for by credit card, and taxes can be filed and paid online as well. Supported by the rapid spread of connectivity in Chile, the site is visited and used numerous times a day.

2.31 Most e-government activity, however, takes place at the first, least-developed, level of "web presence" today: The task ahead if governments in the Region desire to realize the potential benefits of ICT more fully is therefore sizeable. A preliminary survey by OVE of e-government sites in the Region returned 971 addresses as of mid-September 2002.[25] The compilation covered all of the Bank's borrowing countries except for Suriname where no government URL was found. In this (incomplete) database some 9% of the sites correspond to the "transaction" level, 23% correspond to the "interactive communication level," the remainder conveying various types of "web presence," i.e., passive sites of varying sophistication that are very often not updated regularly (Table 2.3).

[25] The representativity and statistical properties of this data base (by S. Rubino-Hallman, available from OVE on request) were not investigated. The large size of the sample justifies its use for the purpose of reviewing trends.

Box 2.4. E-Government in Brazil

The leader in e-government in Latin America (Annex 1), Brazil views e-government ("a tool in the service of fiscal responsibility") as a strategic instrument for reducing spending without reducing services. Brazil defined its e-government vision, "Sociedade de Informação," in 1999. The key early initiative was "Rede Governo" (www.redegoverno.gov.br), the Brazilian government portal. Its objective is to promote reforms in public administration and increase transparency in government processes. Important achievements to-date include electronic voting in national elections,[1] over 90% of individual income tax declarations submitted electronically, the "Bolsa Escola" program,[2] and the modernization of the country's health system (www.datasus.gov.br), including expediting the "Cartão Nacional de Saúde" that enables efficient processing.[3]

The Accenture 2002 e-government survey of 23 countries identified 135 services the Brazilian federal government could deliver online and concluded that 103 are available to some degree, giving the country a Service Maturity close to the average calculated for the Accenture sample.[4] Online services introduced in 2001 include the Federal Justice Board's website (www.cjf.gov.br), connecting citizens to federal courts' websites where they can check information on trials, look up court verdicts, or send queries via e-mail, and the "Tô de Olho" initiative of the Ministry of Justice (www.mj.gov.br/dpdc/todeolho), which allows citizens to view information on consumer rights legislation. In October 2002, the government launched "ObrasNet" (www.obrasnet.gov.br), a site where citizens can monitor federally funded projects in any of the country's municipalities. Other sites of note, among many, include: "ComprasNet" (www.comprasnet.gov.br), the government's procurement service; the Welfare and Social Assistance Ministry's site (www.mpas.gov.br), which allows the requisition of social benefits electronically; the "Portal do Exportador" (www.portaldoexportador.gov.br), offering trade information and access to export-related links; "Infra-Estrutura Brasil" (www.infraestruturabrasil.gov.br), which offers information on infrastructure and investment opportunities; and the "Porta Aberta" initiative of the Postal Service (www.portaaberta.com.br), which offers citizens free e-mail.

E-government in Brazil is not restricted to the federal level. State and municipal governments also offer numerous services electronically. In the state of São Paulo, one can pay a water bill (www2.sabesp.com.br/agencia/janela.asp) or report a stolen vehicle, mobile phone, or identification card (www.policia-civ.sp.gov.br). In the state of Pernambuco, citizens can denounce environmental crimes (www.cprh.pe.gov.br/sec-fiscalz/frme-secund-fiscalz-denunc.html) or consult taxpayers' irregularities (www.sefaz.pe.gov.br/asp/mostra.asp?pai=49). In the state of Paraná, drivers can dispute traffic tickets (www.pr.gov.br/detran) and consumers can check the probity of businesses (www.pr.gov.br/proconpr). Aracaju, Campinas, Cuiabá, Curitiba, Goiânia, Londrina, Manaus, Natal, Palmas, Recife, Rio de Janeiro, Santo André, São Luís, São Paulo, Teresina, and Vitória are just some of the cities that offer various online services, ranging from government procurement to sewer treatment requests. Porto Alegre goes beyond offering online public services: it utilizes the Internet to bring the common citizen directly into the decision making process. Through the "Orçamento Participativo" (OP) initiative (www.portoalegre.rs.gov.br/Op), citizens decide on services to be offered and investments to be undertaken by the local government. Residents of Porto Alegre can obtain a username and password and register their suggestions and requests online. They can also use the web to accompany the course of negotiations. OP contacts registered participants via e-mail whenever necessary.

To democratize access to information and participation, governments have installed public terminals with free access to the Internet. The "Postos de Informação Participativos" established by the city of Campinas in eleven different localities are just one example of initiatives to grant citizens that do not own computers access to the extensive list of services and information made available online by the Brazilian public sector.

In terms of usage of e-government resources Brazil ranks 10th out of 82 countries (including developed countries), an achievement that is credited to the effective translation of a strategic vision into policy management, with the government acting as a catalyzing agent. [5]

[1] With the municipal elections of 2000, Brazil became the first country in the world to have a fully electronic electoral process in all of its municipalities. In the 2002 presidential elections, official results were known in less than twenty-four hours in all of the 26 states.
[2] In 2001, the "Bolsa Escola" program allocated R$124 million to the families of 8.25 million school children through the use of magnetic cards. The monthly distribution of funds to every family is conditional on a minimum school attendance rate of 85% per children.
[3] The "Cartão Nacional da Saúde" instrument was financed by the IDB.
[4] Service Maturity measures the level to which a government has developed an online presence (number of services and level of completeness with which each service is offered).
[5] The Global Information Technology Report 2002-2003, P. 109

2.32 The data indicate that e-government is so far largely a task of central governments and of the Executive, often through the Office of the President or the Ministry of Economy/Finance. Close to 80% of the sites are central government sites, some 15% refer to state/regional government, and some 5% are municipal sites. The distribution of URLs across the three powers of government—Executive, Legislative, Judiciary—is as follows in this sample: 87%, 5%, and 8%, respectively.

TABLE 2.3: E-government Functionality in Latin America and the Caribbean: Number of Websites (preliminary)

Country	Web Presence[2]	Interactive Communication	Transaction
Argentina	160	21	4
Brazil	98	33	21
Chile	94	21	22
México	76	16	6
Ecuador	70	9	8
Bolivia	46	4	2
Colombia	42	15	8
Uruguay	42	6	4
Peru	40	3	3
Dominican Republic	40	4	3
Venezuela	39	2	1
Paraguay	32	4	1
Jamaica	27	2	1
Guatemala	24	4	2
Barbados	21	2	0
El Salvador	21	7	1
Costa Rica	20	5	4
Panama	20	3	2
Nicaragua	17	0	0
Trinidad and Tobago	16	0	0
Belize	7	1	0
Guyana	6	0	0
Honduras	5	0	0
Bahamas	4	1	0
Haiti	4	0	0
TOTAL	971	163	93

[1] *Note on the completeness of the list of URLs embedded in Table 2.3: As of September 2002 URLs for 971 e-government websites were identified for 25 countries in the Region (no online data could be located for Suriname). This series of URLs corresponds to the universe of central/national government sites, as well as all state/regional and municipal e-government sites to which national-level sites refer. Thus, while the central/national government sites in the database are believed to be complete as of the date indicated, this cannot be said for state/regional and municipal sites. Many of the latter are listed under an individual's domain (such as the mayor's) or in a free-of-charge server such as geocities, yahoo, or msn, to name but a few. The table therefore does not account for all lower level government sites, but it is believed to account for all of those that convey a higher level of functionality than "web presence." The database was checked against listings of all "e-government relevant" organizations; some sites not otherwise encountered were found through this procedure. However, the depth of the Internet makes it impossible to certify the completeness of this database.*

[2] *The figures for this functionality include the other two functionalities also, because the mere existence of the site determines a web presence.*

Source: OVE compilation based on Internet search of government websites as of mid-September 2002.

2.33 Many of the executive-level applications cover such sectors as fiscal administration, public procurement, social security benefits, civil registry documentation, and customs procedures. In some of the countries where e-government functionality has been implemented in these sectors, a previous process of financial information systems integration can be observed—for example, adoption of the s*istema integral de administración financiera, SIAF*—a pre-requisite for the consolidated delivery of services by different fiscal agencies. In the legislative branch, most sites offer information about the members of parliament and approved legislation; more recently developed or up-dated legislative web sites also include the agendas of the plenary and of parliamentary committees, bills being debated (sometimes with the ability to send in comments and suggestions), and information about legislators' record of voting and attendance. In the judicial branch the most commonly available information refers to the organization and authorities of the Judiciary, as well as current legislation and regulations.

2.34 It is concluded that most countries are only beginning to develop e-government applications in a transactional sense. But borrowers are conscious of the potentially attractive features of government online, suggesting the existence of potential demand for Bank support and the need to respond to complex questions such as: How to gear different agencies to a common computing architecture with inter-operable systems as opposed to the stovepipe approaches common today? How to bring about convergence between the necessary infrastructure (computers and connectivity), the re-engineering of processes and information systems that is needed for efficiency reasons, and the shift to client-oriented services online? How best to transfer data from old systems to new ones? What software solutions to employ (customized versus off-the-shelf; proprietary versus open-source) and how to address security and privacy concerns? How to reach people who do not have easy access to computers or the Internet or lack the education and knowledge to use those resources? How to train all citizens to use the Internet so as to make access truly universal as is the case with radio today? And finally, how to evaluate new IT applications, measure the anticipated efficiency gains, and make sure that lessons learned are not lost?

2.35 It seems safe to state that the ability and/or the incentives to adequately manage the pitfalls and risks implied in these questions are in shorter supply than funding by which to pay for investments in ICT.

2.36 Evidence from OECD countries concurs: A study on governmental experience with large IT/ICT investments concluded that problems were frequent, with design issues and management difficulties occasioning substantial direct and indirect cost, discouraging staff, and in some cases threatening the loss of public confidence in public sector management. "Budgets are exceeded, deadlines are over-run and often the quality of the new system is far below the standard agreed when the project was undertaken."[26]

[26] OECD Public Management (PUMA) Policy Brief No. 8, *The hidden threat to e-government—avoiding large government IT failures*, March 2001. An authoritative evaluation of experience with IT projects in LAC could not be located.

2.37 Hence, the promise of better government and public services through ICT can be elusive unless the risks associated with investments in this area are managed successfully.

E. ICT as an enabler of the Bank's institutional priorities

2.38 From the foregoing it is evident without further elaboration that advances in each of the four pillars of the 1999 IS—competitiveness, regional integration, reform of the social sectors, and modernization of the state—are difficult to visualize without ICT:

- Along with other infrastructure such as transport and energy, telecommunication and the Internet are part of the "platform of efficiency" that is required for competitiveness and growth.
- Deeper, more far-reaching integration requires stronger digital links in addition to the physical links and the cross-border harmonization of policies and rules that have long been in the making.
- The quest for participation, transparency, client-orientation, and efficiency in public administration and the reform of social services is unrealistic without recourse to systematic and integrated information solutions.

2.39 The opportunity costs of not putting in place the regulatory and technological infrastructure for state modernization and the knowledge economy are high. The role of knowledge as a factor of production in diversified competitive economies has become more critical in the post-industrial era in which natural resource-based (Ricardian) notions of comparative advantage are becoming obsolete. The universal availability of knowledge (thanks to ICT) to those who know how to use it creates opportunities for economic diversification in developing and high-income countries alike, but the latter, with their relatively larger pool of skilled people and their relatively better situation in terms of other enabling factors, stand to gain disproportionately ("winner-take-all"). So the international community is challenged to come up with strategies to solidify the gains in developing countries from efforts to become part of the global knowledge economy. Latin America and the IDB are challenged to present strategies geared to the particular needs and constraints of the Region in this regard. The remainder of this report is designed to examine whether the IDB has gotten itself organized and has developed a position of comparative advantage for a meaningful role in ICT.

III. EVALUATION OF OP-711

3.1 In line with the methodology established for this report, the purpose of the present Chapter is to clarify the intent of OP-711 and to evaluate its strategic relevance and the appropriateness of the institutional provisions made with the intention of positioning the Bank for a high-quality, effective role in connectivity and ICT. All elements of the package approved by the Executive Directors in 1998—OP-711, the Strategic Statement, and the Plan of Action—will be invoked as needed.

A. Origin and Capsule of OP-711

3.2 OP-711 was drafted and approved in a climate of opinion which held that "the information revolution and associated technologies [are] rewriting the development paradigm."[27] While acknowledging the potential "cost saving attributes of automation" through computers and information solutions, OP-711 argues that ICT in the age of the Internet is not about supplying computers to borrowing countries. The challenge, rather, is about taking advantage of the opportunities afforded by the ability to create new and ever cheaper ways of storing, processing, distributing and accessing information and of building networks with growing reach. This, to paraphrase the Policy, potentially: affects economic opportunities; generates new possibilities to break barriers to education and access to knowledge; creates conditions for enhanced civic participation; makes possible improvements in the design and delivery of public services; increases the transparency and accountability of government action; and raises the quality, efficiency and coverage of public expenditure and the precision with which expenditure is targeted on the poor.

3.3 The Policy sets out the following *broad objectives* for the Bank:

- Increase opportunities for human capital formation and for lifelong learning
- Increase the efficiency of all markets by providing a new and more accessible medium for carrying out the communications needed for production and commerce
- Increase the access for low income individuals to information capable of empowering them with new avenues for better lives and improved welfare
- Increase the coverage of social services to more localities and more people
- Make governments more efficient, accountable, and transparent
- Increase the participation of citizens and citizen organizations in the processes of democratic regimes
- Increase the effectiveness of economic reforms
- Provide better communications among citizens, watch agents and public and private organizations for enhanced monitoring and surveillance of the environment
- Reduce the distance between economic agents at the national level and between national and foreign, and

[27] Document GN-2024-3.

- Create a complete new industry offering employment to individuals of different levels of skills.

3.4 The Policy recognizes that the vision of benefits that it projects rests on the premise of access, which is in part conditioned by the presence of an adequate information infrastructure. More generally, the Policy and the underlying Strategic Statement suggest that countries need enlightened technology policies and conducive economic and business conditions for connectivity to deepen and for e-learning, e-commerce, and the supply and use of e-government solutions to be "mainstreamed" in such ways as to favor the emergence of truly networked economies and societies.

3.5 To foster access and the development of content, and to promote the diffusion of ICT, the Policy directs Bank *action* to the following areas:

- Support of national efforts to define and implement a national strategy for information age technologies and development
- Support for the establishment of the regulatory and policy framework for the information age technologies and development sector
- Analyses of the information infrastructure needs of the region as a whole including integration components
- Support for national information infrastructure investment planning
- Lending for the building of information infrastructure on a national and regional basis
- Support for the development of the information-producing sector
- Lending to support the use of information technology to enhance the efficiency and coverage of public social services, and
- Lending to increase the access of low-income citizens to the empowering elements of the information revolution.

3.6 Thus, OP-711 advocates a proactive stance for the Bank (i) in analytical work and technical assistance for policy design, the development of regulatory frameworks, and analyses of investment needs nationally and regionally, and (ii) in lending to build out information infrastructure, foster universal access, and support e-government. The Strategic Statement also stresses the merit of promoting a new, technology-enabled culture of service-oriented and citizen-oriented government. As to lending for information infrastructure, it underscores the need for investment in Internet backbones and other elements of information infrastructure, and it points out the potential for adding value to right-of-way infrastructure (power lines, pipelines, waterways or highways) by installing fiber optic cable along it.

3.7 OP-711 sets out ten "broad principles" to "guide the Bank in establishing priorities for action:" the need to "consistently emphasize" the urgency of early adoption of national ICT strategies; and the need for the Bank to use its ability to convene as an instrument for fostering the transition to an information economy, to be active in regulatory reform in the telecoms sector, to focus on equity in the development of the Region's information infrastructure, to be attentive to opportunities for regional cooperation, to promote cross-country virtual networks in relevant sectors, to work with borrowers to take advantage of

the new technologies in Bank projects in general and in improving public services in borrowing countries in particular, to attempt to integrate the Bank's IT strategy with its strategy for science and technology, and to be "market-driven" in its investments by playing a subsidiary role to the private sector. With these principles in mind, we turn to evaluation.

B. Strategic Relevance

3.8 The evaluation of relevance is a judgment of the extent to which a policy or program addresses the developmental reality that it is called upon to modify. With reference to Chapter II it is clear that the vision underlying the Policy, and its objectives and strategic directions, are pertinent and strategically relevant (Table 3.1 on the congruence between the needs analysis of Chapter II and the postulates of OP-711[28]). More importantly, as is apparent from the previous Chapter, borrowers have evolved in the directions spelled out in the Policy and, as noted later, are formulating a certain demand for Bank assistance in those areas. It is therefore the judgment of this evaluation that the Policy and its source material, the Strategic Statement, conveyed an appropriate (and appropriately ambitious) vision of the "prize" to be pursued and broadly got the directions for action right at a time when there was much less literature and operational experience available in the field under review than there is today.

C. Prioritization and evaluability

3.9 At the same time, as explained below, it is the judgment of this evaluation that OP-711 needs to be updated and revised with a view to providing more focused and evaluable guidance for action.

3.10 The Policy and the underlying Strategic Statement project a vision of a "new, shorter link to a better and more prosperous future" thanks to ICT, and, with reference to this vision, emit directions for action that can be classified under the two pillars of *connectivity* and *content and applications*.

3.11 The actions to be taken in pursuit of the connectivity pillar are in the realm of universal access and the expansion and modernization of information infrastructure with particular emphasis on the installation of Internet backbones and broadband.

3.12 The actions to be taken in pursuit of the content and applications pillar are in the realm of e-government and empowerment of low-income individuals through citizens and interest group networks (the objective here being increased participation and political expression in the democratic context), e-learning, e-commerce, and the application of technology in education, health, agricultural extension, small-scale credit programs, online job fairs and other economic initiatives, including the training of ICT technicians and specialists. In addition, the Policy provides for action to support national and regional dialogue and strategies on information age technologies, analysis of the information infrastructure

[28] Annex 2 demonstrates that the World Bank Group, which recently evaluated its activities in ICT, approved a sector strategy in late 2001 that is congruent with OP-711 as far as the vision, the objectives and the thrust of the strategic directions are concerned, although the latter are spelled out in much greater detail in the World Bank's paper.

needs of the Region as a whole, including integration components, and efforts directed at the establishment of appropriate regulatory and policy frameworks for ICT.

TABLE 3.1
ICT "needs" and OP-711

Chapter II	OP-711
Regulatory framework, telecoms	yes
Invest in information infrastructure	yes (where private sector does not go)
Universal Access	yes
E-readiness	implicit; stress need for national strategies and investments
Content as a limiting factor	yes
Network externalities	yes
Knowledge and technology as factors of production and competitiveness	yes, central to vision
E-government	yes, in some respects implicit
Merits of information infrastructure and ICT for:	
. Learning	yes
. Health care	yes
. Public Sector Management	yes
. Civic Participation	yes
. Public service delivery (efficiency, coverage, "smart targeting")	yes
. Productivity growth (traditional and new activities)	yes
. Regional integration	yes
. Local content production	yes

3.13 This is a long, pertinent, non-prioritized, and in some respects vague agenda that can be overwhelming to operational staff seeking guidance. The elements that are too vague to be helpful include, for example, the call for support to the development of the information-producing sector (to be useful, this would require a discussion of, and guidance regarding, the market and market failures in this area), or the call for use of ICT to increase the effectiveness of economic reforms (if more is meant here than generic activities centered around e-government and transparency, then an analysis of the envisioned mechanisms is required). Similarly, the Policy's recommendation to use ICT to enhance communication among citizens, watch agents and public and private organizations for improved monitoring and surveillance of the environment raises questions. While ICT can be helpful in many ways in the pursuit of environmental protection, so can it be helpful in the pursuit of any worthy or unworthy cause, which is why it would have been necessary to justify the call for action in this particular area more fully. And finally, the Policy and the Strategic Statement mention the benefits of ICT for decentralization, but the documents are silent about how specifically ICT would support a strategy of modernization of the state that included this particular objective.

3.14 So the reader is left with a sense of disorientation in a sea of imaginative suggestions for action. Two types of resources that might have made it possible to sharpen the focus,

prioritize, and convey uniqueness to what the Bank was meant to do are almost entirely missing. The first is a grounding in empirical analysis of the sort offered in the previous Chapter and Annex 1. This would have permitted the specification of policy priorities and benchmarks with reference to which countries would have been able to set targets and monitor progress over time. The absence of an empirical baseline for relevant dimensions of the development *problématique* related to information age technology precluded the specification of indicators and a results framework against which the performance of the Policy and the Plan of Action as strategic expressions of institutional intent could have been verified.[29]

3.15 The second resource for informing and prioritizing Bank action would seem to reside in the concepts of market failure and information failure. To be sure, recent literature suggests that the concept of market failure is overrated as a principle to justify public intervention,[30] the argument being that what may look like market failure may well be the market at work, possibly producing socially undesirable results, and what may look like a case for public intervention on the surface may prompt second thoughts when it is realized that information problems in the public sector can complicate the prescription for action.

3.16 What this means for present purposes is first that analyses of "market failure" and of the case for governmental intervention (including action by the Bank) should be conducted in awareness of the likelihood that imperfect or asymmetrically distributed information will condition the effectiveness of public action; and second, as a corollary, that a carefully documented, empirical and experimental stance is probably the only meritorious approach to the challenge of guiding public action towards specified goals. However, this is not how OP-711 and its source material approached the task of guiding the Bank towards a meaningful role in ICT. Not only do the documents lack an empirical dimension, as stated; they also display little awareness about the complications introduced by information failure and the associated capacity constraints of public actors, including the Bank.[31]

D. OP-711 as a business proposition

3.17 The preceding discussion indicated that the Policy and the Strategic Statement do not provide for adequate prioritization or evaluability. In addition, it is argued in this section that they fall short from a business perspective. To see this, definitions need to be invoked. The 1999 IS defines sector strategies and policies as follows:

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[29] The analysis offered in the Policy and the Strategic Statement is not of an empirical sort, but of a general deductive kind that outlines the gains from the diffusion of ICT through plausible argumentation without clarifying many of the assumptions. The e-readiness rankings in Annex 1 exemplify the kind of empirical work that needs to be performed to develop a baseline and targets/indicators for where one wants to go.

[30] T. Cowen and E. Crampton, eds., *Market Failure or Success: The New Debate*, The Independent Institute, Edward Elgar, 2002. Also, see R. O. Zerbe jr. and H. McCurdy, "The End of Market Failure," *Regulation*, 23:2, 2002.

[31] OP-711 hints at the problem of costly information that can beset markets and institutions (as famously analyzed by J. E. Stiglitz, to whom the Policy and its source material do not refer). But the documents do not study the problem and the implications for action other than in general to recommend advances in connectivity, on the assumption that this would bring redress by fostering the flow of information and deepening what some (starting with T. de Chardin) have called the noosphere.

A) Sector strategies should be concise plans of action … [that] identify: (i) a set of achievable goals; (ii) actions to be undertaken; (iii) instruments and resources required; (iv) assignment of responsibilities; and (v) a timeframe for implementation and evaluation (para. 6.16)

B) Unlike sectoral strategies, which are geared to the achievement of specific goals, institutional policies should establish, on a permanent basis, the boundaries within which the Bank conducts its operations (para. 6.20).

3.18 From this, the Strategic Statement is evidently not a sector strategy as it satisfies none of the desiderata in quote A above. (Like the Policy, it does list domains of action for the Bank to engage, but they are too numerous to be meaningful for "strategic" purposes.) There is an explanation for this, but it is small consolation for those seeking guidance for their work in ICTs: The principal purpose of the Strategic Statement was not to work out a resourced blueprint for action, but to raise awareness in the Bank and with the Executive Directors about an ICT revolution that was in full swing without seemingly being noticed by the institution.

3.19 OP-711, in turn, meets the requirement of generality implied in quote B above and, through its ten "broad principles," does mark boundaries for Bank action (ignore the question of whether they are "permanent" as called for by the IS definition, for permanence is a rather unreasonable requirement for an operational/institutional policy). So OP-711 passes the IS test for a "policy." However, nowhere in the package consisting of the Policy, the Strategic Statement, and the Action Plan is reference found to anything resembling the following elements of any business school definition of the notion of strategy: [32]

- Determination of organizational purpose in terms of long-term objectives, action programs, and resource allocation priorities
- Attempt to achieve long-term sustainable advantage (including "uniqueness" distinguishing firm from competing suppliers) by responding appropriately to the opportunities and threats in the firm's environment
- Identification of distinct managerial tasks at corporate and functional levels
- Establishment of coherent, unifying and integrating pattern of decisions
- Development and upkeep of core competencies of firm.

3.20 In other words, the package approved in 1998 was not helpful in a business sense.[33] Proof of this is the fragmented approach to ICT issues that the Bank has taken since the adoption of the package (see below). This conclusion is also supported by the fact that interviews conducted for this evaluation found that few people in the Bank (particularly in operations) know about the existence or the content of OP-711. Thus, the strategic statement did not come with, and nobody has developed since its approval, a business plan that would accommodate and satisfy the above definitional requirements. This leads

[32] A. C. Hax and N. S. Majluf, *The Strategy Concept and Process: A Pragmatic Approach*, Prentice Hall Publishers, 1996; p. 14.
[33] However, see comments on the Action Plan later.

to two immediate questions: If the Policy is not known, how can it be applied? And if it is not applied, how can it be evaluated?

3.21 In one important respect—the financing of infrastructure—the Policy did seek to validate what its authors perceived as a long-term sustainable advantage of the Bank. The huge investment needs in information infrastructure prompted the Policy to carve out a role for the Bank in the financing of Internet backbones and the laying of fiber optics along existing physical infrastructure works, only to take the provision back, however, with the subsidiarity restriction on lending in an area dominated by the private sector. This restriction was appropriate: While Bank lending for connectivity is minimal, as seen in Chapter III, largely private sector-led recent advances in connectivity are considerable, as shown in Chapter II.

3.22 So the Bank's traditional comparative advantage as a financier of infrastructure has yet to provide the basis for a dynamic role in connectivity and the diffusion of ICT. It is important to recall, however, that the recent past has seen both a spectacular boom in private financing for communications infrastructure and an equally spectacular collapse following the boom. The new investment climate in this sector may be creating new opportunities for the Bank as a financier of connectivity, but the institution's strategic contribution in ICT, if any, is likely going to be in the domain of government, public services and the regulatory environment, rather than the financing of physical components of information infrastructure.

E. The Action Plan and SDS/ICT

3.23 Paragraph 6.19 of the IS states that *For sector strategies to be effective, they must commit the whole Bank to their pursuit generating synergies across the organization*. Clearly, it was this sort of motivation (even though the IS was written after the approval of the OP-711 package) that led to the formulation of the Action Plan for initiating the Bank's activities in the area of information age technologies—a Plan, as it turns out, that essentially consisted of the Terms of Reference for what would become the SDS/ICT Division.

3.24 The Terms of Reference, which are in agreement with the spirit of OP-711 and the Strategic Statement, made possible the Board's decision to create the Unit that later became SDS/ICT—the first step toward making OP-711 operational, presumably on the assumption that the Unit/Division would take over and "commit the whole Bank."

3.25 It is important to examine closely the logic behind this institutional response. The creation of a dedicated unit implied the recognition that existing organizational structures and incentives had not adequately come to grips with the challenges posed to the Bank by the information revolution. Yet the creation of a small dedicated unit left untouched the prevailing structures and incentives, essentially requiring that the staff of the Unit "commit the whole Bank" using only the power of analysis and persuasion. This was an extremely demanding assignment.

3.26 Fundamentally, the Terms of Reference gave the Unit/Division six functions which seem entirely relevant today:

A) Technical backstopping for ICT projects or project components financed by the Bank (to include promotion of IT applications in priority sectors and reform of regulatory frameworks)
B) Strategic and technical advice to governments on ICT for development
C) Preparation of strategic analyses of needs, priorities and opportunities in borrowing countries
D) Identification and development of cooperation agreements and co-financing arrangements
E) Promotion of linkages between public and private national and regional institutions to support applied research and pilot programs related to utilization of ICTs
F) Dissemination and training.

3.27 When the Unit/Division got started in early 1999, it understood that to be successful it needed to develop technical and analytical expertise on a regional basis and establish itself as a source of knowledge to which project teams from the operational departments would turn for advice in the design of the ICT components of their loans. It now has a liaison person for each of the three operational departments to build working relationships and mediate collaboration with project teams. According to data provided to OVE it has interacted with, or supported, project teams for 77 loans between 1999 and the end of 2002, having seconded staff or consultants as formal team members to 13 of these.[34] It has developed thematic activities in what it calls *new economy*, *human capital*, and *digital democracy*. It is active at the regional level, supporting technical cooperation (12 projects) and numerous activities in *IT dissemination and awareness* (participation in 27 events since 1999, fifteen of which it organized or co-sponsored).[35] And it takes to heart OP-711's call on the Bank to use the institution's ability to convene as a means to build awareness and expertise in the Region. The Second IDB Consultative Meeting on ICT for Development, held in November 2002 in Washington DC, is an example of a set of activities undertaken in this respect: IT leaders from the public sectors of 21 countries convened to network with each other, learn about the Bank's instruments and programming, and discuss an agenda covering national ICT strategies, connectivity and regional integration, and ways to expedite the process of project identification and preparation in collaboration with the Bank's operational departments.[36]

3.28 Thus, the Division is engaged on many fronts (Annex 3), despite rather limited resources for the tasks given to it: It has a staff of 14 (Bank employees and consultants), and it depends on trust fund money for many of its activities, including the organization of

[34] Data provided to OVE indicate a wide self-declared range of services rendered to project teams, including the preparation of terms of reference for consultants, the review of documentation and proposals, and the design of sub-components of projects' ICT components.
[35] Annex 3 provides an overview of the Division's activities since 1999, classified according to its various "strategic objectives."
[36] It was agreed to continue this Consultation in a virtual space online. As part of the Consultation of November 2002, participants visited the Bank's regional departments to identify possible projects.

meetings and technical cooperation. It has been quite effective at mobilizing trust fund resources.[37]

3.29 At the same time, four concerns deserve attention in OVE's view:

- The review of projects in the next Chapter points up important problems pertaining to the design and implementation of the (proliferating) ICT components in Bank projects. Clearly, the technical backstopping of Bank project teams and the Resident Missions is not functioning properly, even though there may be isolated cases of success.

- No concrete achievements could be located for the second part of Function A above, i.e., case-specific analysis (as opposed to general pronouncements) and/or concrete projects in priority sectors of intervention (health, education, e-commerce, etc) or the reform of regulatory frameworks. (The ICT-4-BUS initiative launched jointly with MIF in July 2002 is expected to lead to a first set of projects with small and medium-sized businesses this year.)

- The strategic advice on ICT for development given to governments is poorly documented and does not appear to be grounded in concrete, country-specific analysis. The ENSI program (*Estrategias nacionales para la sociedad de la información*) adopted by the Division in 2001 and brought to such countries as Bolivia, the Dominican Republic, Paraguay and Uruguay is a generic formulation of what an information society is and of the potential links between ICT and development. Drawing on Spanish and Canadian models and recently relabeled the ALDEA Program, it focuses on Internet in education, universal access, e-government, and ICTs to improve business activity. The point that needs to be made is that borrowers are beyond the stage where generic considerations are helpful: consciousness with respect to the potential benefits of ICT is already widespread, as demonstrated among other aspects by the advances in connectivity and regulatory provisions discussed in Chapter II which are considerable in almost every country despite the huge unfinished agenda that still lies ahead. The challenge of developing (or advising on) a national ICT strategy calls for in-depth country-specific work as a precondition for being able to come up with pertinent, customized proposals.

- OVE did not detect substantive contributions beyond the generic toward Function C above (the preparation of strategic analysis of needs, priorities and opportunities in borrowing countries).[38] ICT issues, and the work of the unit, have not yet been internalized in the country programming process.

[37] In 2002, the Division's budget (as part of the Bank's budget) was US$319,200.00. The Division spent trust fund resources n the amount of US$602,500.00.

[38] A recent e-government manual commissioned by Region 1 and produced jointly between RE1/SC1 and SDS/ICT begins to address Function C. Cf. BID, *manual.gob: Estrategias de gobierno electrónico en los países de la Región 1 – definición de un modelo de análisis y estudio de casos* (P. Valenti, R. Anta and M. Bendersky), Enero 2003.

3.30 Therefore, in OVE's view, the Unit/Division still faces the challenge of meeting the high expectations placed upon it regarding the first three functions cited above. The Unit/Division's acknowledged resource limitations and the fact that most of its initiatives are of recent vintage must be factored into this finding, but it remains the case that the Unit/Division has not "committed the whole Bank" nor has it established itself as the recourse of choice for knowledge and advice on ICT for development that it was meant to be.

3.31 The Unit/Division has been rather more successful with respect to Functions D, E and F above, particularly as far as Function E (the "promotion of linkages" of different kinds) is concerned.[39] The Division has begun to act as a broker between borrowing countries, a number of whom are responding, and the Bank for projects (particularly technical cooperation) that may be of mutual interest. This can help clarify the countries' expectations regarding the nature of the assistance potentially available from the Bank while affording the regional departments opportunities to learn about borrowers' activities in ICT for development and the evolving needs in this field. At the same time, the scope for contributing to F (dissemination and training) is affected by the quality of analytical resources that are being brought to bear. Many external respondents interviewed for this evaluation expressed the view that the papers that the Division presents at seminars and conferences are generic and should begin to reflect realities and needs in borrowing countries more cogently. Also, the Division needs to rethink its pattern of resource allocation between international conferences on the "digital divide" and purposeful work in selected country-relevant aspects of ICT for development.

3.32 The question that arises is whether it is realistic to assume, as the framers of the Plan of Action did, that one can organize and "commit" the Bank to deliver on a major new challenge by handing a newly created Unit or Division in a non-operational department essentially the full responsibility for that challenge. As shown in the next section, the depth of the problem of fragmentation is such that the answer to the question is probably negative, implying the need for a different institutional approach to establishing direction for the Bank in this area.

F. One Bank, six systems

3.33 A look at e-government and the special topic of e-procurement as handled by the Bank suggests that much remains to be done to instill coherence into the Bank's activities in ICT. E-government is addressed in six different fashions in the Bank today, the actors being the three regional departments (where the state and civil society divisions have loosely designated a staff member as an e-government focal point[40]), SDS/ICT, ROS/PRM, and SDS/SGS. The latter division coordinated the production of a toolkit on e-government for the November 2002 session of the Management and Transparency

[39] Note that this assessment refers to the apparent pertinence of the activities undertaken (again, refer to Annex 3), not to the results of the activities which are not documented and which it may be premature to attempt to determine at this time.

[40] Note that (unlike the case of other sectors or special topics) there is no e-government "network" in the Bank. An attempt by SDS/ICT to start a network ended after a first exploratory meeting of interested parties in the fall of 2001.

Network of the Regional Policy Dialogue.[41] At about the same time it sought approval from the Board for a new Modernization of the State Strategy in which, arguably, ICT and the notion of e-government do not receive the attention that would seem warranted.[42] Documents now on the table by several of these actors—the SDS/SGS toolkit, a draft strategy by ROS/PRM (see below), the RE1/SC1-SDS/ICT *manual.gob* referred to above, SDS/ICT's ENSI/ALDEA material, and a paper on e-government in the Caribbean under preparation in Region 3 as of early 2003—differ in vision, scope and method (Table 3.2). It is true that diversity of opinion can have value, and it is also true that e-government is a new topic in the Bank (after having been flagged in OP-711 and then forgotten). Still, it is this evaluation's judgment that fragmentation comes at a cost: the borrowers are given conflicting signals and, because quality is uneven as discussed in the next Chapter, the sum of the efforts can hardly be said to amount to more than the parts.

TABLE 3.2.
IDB Policy Statements Regarding e-Government

Source	Product [1]/	Comment
ROS/PRM	e-GP Strategy	Comprehensive discussion of e-government from the point of view of the relationship between government and citizens, and government and the business sector, with specific analysis of the benefits of electronic procurement as an e-government application, highlighting the role thereof in transparency, efficiency, employment and growth, and regional integration. The recommendations emitted are grounded in case knowledge and offer a possible roadmap for getting started. Not yet assimilated by regional departments, the document could be used as a tool to assist countries that consider embarking on, or improving, electronic public procurement.
SDS/SGS	e-Gov't toolkit	First cut, generic conceptual analysis of e-government cases and principles around the world. Offers definitions and discusses context (i.e., digital divide, opportunities of the information economy). Selectively discusses e-government experience in Latin American, referring to three cases, but ignoring others that represent important advances in many of the areas addressed. Makes generic recommendations regarding the need for resources, leadership, integration and measurement of impact.
RE1-SDS/ICT	Manual.gob	Presents itself as a practical tool (a manual) for working towards definitions and design of e-government initiatives. In practice, professes a limited view of e-government, largely focusing on ICT in administrative reform and the shifting of information and services online. Analyzes case studies in Southern Cone in function of this view of e-government. Recommendations are generic in kind, not grounded in comparative analyzes of advantages and disadvantages of specified approaches and of experience already accumulated in several of the countries under review. References to declared good practice fail to offer a detailed analysis of the way given practices were resourced and implemented in the countries under review.
SDS/ICT	ENSI/ALDEA	Main concern is that the formulation of the ENSI/ALDEA program is rather abstract in terms of its conceptualization and outdated by the standards of available literature (and operational practice) on e-government in the Region and around the world. Makes recommendations on institutional mechanisms (high-level committee for the information society) without a discussion of the advantages and disadvantages of this and other institutional models.
RE3/OD6	e-Gov't Report	A conceptual analysis of e-government understood as the use of technology to transform business processes in government. Includes review of Caribbean countries' efforts in e-government, classifying them according to the United Nations e-government stages definition. Concludes that there is a need to further the consolidation of national and regional efforts in this matter (among other aspects as a mechanism for regional integration). Offers no specific recommendations on lines of action or implementation-related aspects.

[1]/ See main text

[41] Canadian Centre for Management Development, *A Toolkit for E-Government: Issues, Impacts and Insights* (G. Dinsdale, S. Chhabra, and J. Rath-Wilson), Draft, October 11, 2002.

[42] GN-2235, dated November 25, 2002. The dimensions of governance that the strategy refers to (for instance, elections, "principles and norms for state interactions," "capability of the authority to identify needs, assign resources…") are treated without reference to ICT (or to electronic voting in the case of the first item). In para. 1.5 the document affirms that the aim of the strategy is "the development and perfection of democratic governance, and as such, a strategy of construction of the State's institutional capabilities" as well as those of society. Yet the document does not address the role that ICTs in general and e-government applications in particular can specifically play in this context. The document discusses civil society participation without convincing reference to the scope for ICT to shape the process. Furthermore, it does not refer to experience of modernization of the state in the legislative branch, such as *Interlegis* in Brazil (BR-0288), which have been financed by the Bank.

3.34 The internal multiplicity of approaches reflects to a considerable extent the multiplicity existing in the outside world, as reflected in a February 2002 regional seminar organized by the Procurement Policy and Coordination Office, ROS/PRM, together with SDS/ICT, in response to demand from borrowing countries to learn about experience with different approaches and their potential applicability to national realities.[43] The result of a process of analysis by ROS/PRM of e-procurement experience around the world, the event was well attended, with participants discussing experience from Mexico (*compranet*), Brazil *(comprasnet* and city of Sao Paulo), Argentina (city of Buenos Aires), Chile (*Chilecompra*), Western Australia (contact referred to the Bank via the Asian Development Bank), the U.K. (city of Leeds), and Canada. Attempts to promote convergence toward a common approach were resisted by participants: the conference ended without the hoped-for progress in this respect.[44]

3.35 Data presented at the event and subsequently documented the advantages of e-procurement in terms of potential cost savings, the creation of a level playing field for large and small national and international suppliers and the merits of harmonization of standards and procedures (required under WTO rules) for regional integration. In addition, data presented at the event showed that even such regional e-procurement leaders as Brazil, Chile, and Mexico—and to some extent developed countries such as Canada and the U.K.—display dysfunctionalities that can manifest themselves in low rates of return on the investment in e-procurement (measured against savings realized) and much lower rates of market penetration after several years of operation than anticipated. In Chile, for example, only 5% of companies that do business with the government do it through the e-procurement platform, which is essentially an information system rather than a transaction device, and half of the bidding opportunities are posted after the bids are adjudicated.[45]

3.36 As a follow-up to the event in February 2002, ROS/PRM developed a draft e-GP ("e-government procurement") strategy for the Bank that as of March 2003 was waiting to be reviewed and processed to approval within Management, prior to eventual consideration by the Board. This paper mentions the reasons for the dysfunctionalities referred to above, including: lack of political will to underwrite an all-out solution; lack of planning and cross-agency coordination and cooperation, even in countries that have officially subscribed to a single, all-encompassing e-procurement system for the public sector; inadequate understanding of the implications of contracting a private operator versus having a system owned and operated by government; absence of communication protocols and other standards (including security) to ensure inter-operability and shared usage of e-procurement platforms; choice of proprietary architecture that may be incompatible with desirable standards (as opposed to open source code); use of *ad hoc* rather than international product classification systems (this undermines transparency and price-quality comparability); and lack of training of suppliers, buyers and managers.

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[43] http://www.iadb.org/exr/events/e-gp/index_esp.htm

[44] A recent (undated) paper by the Government Best Practices Unit of AICD-OAS, *Profiles of Electronic Government Procurement Systems*, presents profiles of 11 national and sub-national government procurement solutions around the world. See www.iacd.oas.org/template-ingles/E-Procurement.

[45] C. A. Osorio*, e-Procurement in the Chilean Public Sector 1997-2002*, Presentation at the World Bank, January 21, 2003.

3.37 The purpose of the draft strategy is to have a set of shared principles governing the Bank's interaction with, and advice to, borrowers in the matter of e-procurement, both to avoid re-inventing the wheel and to send a message about the Bank's commitment to efficiency and transparency in this field. The uptake by the regional departments so far has been slow.

G. Conclusion

3.38 This Chapter evaluated OP-711 in terms of its policy relevance and usefulness in a business sense and with respect to the appropriateness of the institutional arrangements created. The first of two conclusions that can be reached at this stage of our report is that OP-711 and the underlying Strategic Statement continue to be developmentally relevant today, but need to be updated and rendered purposeful and evaluable.

3.39 Updating should take into account the changes that have occurred in the Region in the years since OP-711 was approved regarding connectivity and e-readiness; regulatory issues; ICT applications for government, governance, and the delivery of public services; and the policy and incentive framework for the knowledge economy. The exercise of updating and revision should be anchored in empirical analysis of these aspects as a prerequisite for formulating baselines and quantitative goals. Updating might also include an expression of intent, and a plan of action, particularly in the regulatory area, for narrowing the digital divide and fostering universal access in the Region: There are great differences in connectivity and e-readiness between and within the borrowing member countries, yet (as evident from the next Chapter) the Bank concentrates a large share of its efforts and lending in ICT on its digitally more advanced borrowers in response to the demand emanating from those countries. What role and timeline for the Bank to work toward resolution of the problem of glaring digital inequality?

3.40 Updating and the prioritization of Bank action should converge on what is important, i.e. productivity gains in the public and private sector and greater transparency and participation. Prescriptive statements should be explicit about the information failures and constraints that can be a threat to the efficiency and effectiveness of public intervention, including intervention by the Bank.

3.41 Second, the institutional arrangements created under the OP-711 package have not been successful in "committing the whole Bank to the pursuit of ICT for development, generating synergies across the organization," to paraphrase a statement from the IS that was cited above. The Bank's approach remains fragmented, the experience of SDS/ICT suggesting the need for reflection on what can be achieved by tasking a new, heavily trust fund-dependent unit in a non-operational department with the responsibility for a particular development challenge, and what mechanisms need to be put in place to mainstream attention to the challenge.

3.42 Clearly, part of the solution lies in introducing the issue of ICT into country programming. Another part, however, is about strengthening the expertise that the Bank brings to the table and making sure that the best available knowledge can be accessed and shared by all those who work in ICT. The knowledge available in the Bank with respect

to current practice and constraints related to ICT is deficient. For example, the Bank does not possess data bases, let alone knowledge management systems, covering all borrowing countries on say e-commerce (legislation, structure of market, performance indicators), e-procurement, e-government, ICT applications in the social sectors, infrastructure for connectivity, regulatory challenges in the face of convergence, and the policy framework for the knowledge economy as outlined in Box 2.1. Similarly, the issue of Internet governance in Latin America, although not raised in this report so far, is not covered in the Bank. It should become the subject of analysis with a view to offering a platform for discussion with borrowing countries in such forums as ICANN, ITU, WTO and the December 2003 World Summit on the Information Society. A more advanced (and continuously updated) empirical understanding of what is going on in the Region in these areas would seem to be indispensable as the institution rethinks its role in ICT in the context of the revision of OP-711.

IV. EVALUATION OF BANK OPERATIONS

4.1 Following the methodology established for this report, the purpose of this Chapter is to inventory and evaluate (i) Bank operations aiming to deepen connectivity and (ii) the ICT components of recent Bank operations in science and technology, education and health, and modernization of the state—a set of sectors that are instrumental for ICT for development as visualized under OP-711. The Chapter attempts to answer the following:

- What does the Bank do in the way of operational activities falling under the purview of OP-711?
- How much congruence is there between the precepts of OP-711 and the intent and objectives of the operational portfolio reviewed?
- How evaluable are the activities reviewed in this Chapter? and
- What preliminary results (if any) can be discerned at this time?

4.2 We start with Bank operations devoted to connectivity, then comment on technical cooperation, and finally move to consider projects in the sectors identified above.

A. Connectivity

4.3 The Bank does not have a strong tradition of lending for connectivity, but a modest increase in activity is on the books in recent times. Since its inception, the Bank financed fifteen (public sector) telecommunication projects, the last one in 1985. In the mid-1990s, the Bank got involved in telecommunication sector reform in some countries through conditionality in policy-based loans that was aimed at privatizing the incumbent operator.

4.4 More recently, the Private Sector Department financed a project in 1999: *CTR*, a greenfield telecommunication operation in nine rural zones in southern Chile (CH-0156).[46] A second telecommunication project (*Redibol*, BO-0204) was approved on November 13, 2002. Its objective is to provide long-distance telephony and data connections through a fiber optic network extending from Cascavel, Brazil, through Bolivia to the borders with Peru and Chile. Two other PRI projects have passed the investment eligibility review and are undergoing due diligence at the present time: *TIM Peru* to provide financing for the expansion of Telecom Italia Mobile Peru's digital wireless network; and *TeleNorte Leste* for a partial credit guarantee to underwrite a domestic currency corporate bond issued to support capital expenditures related to fixed-line expansion and the modernization of equipment of a subsidiary of the operator, Telemar. Two project proposals by PRI—*Pegaso Telecomunicaciones S. A. de C. V.* (Mexico, 1999) and *Algar Telecom* (Brazil, 1999)—were abandoned after initial review, *Pegaso* after a dispute within the Bank over policy related to the funding of

[46] Well-documented semi-annual project supervision reports indicate dollar-denominated revenue and cash generation performance of this project falling short of projections due to market, economic and exchange rate factors.

telecommunication projects, and *Algar* because a restructuring of the parent company after investment eligibility was declared made the operation ineligible for funding.[47]

4.5 Following *Pegaso*, PRI wrote an Issues Note on the financing of telecommunication projects (CP-1877, dated March 9, 2000) of which Management's Programming Committee *took note*,[48] i.e., neither approving nor disapproving it, but indicating that the document *constituye una guía que debe ser tomada en cuenta*—as if to underscore the reigning uncertainty regarding when (i.e., under what conditions) to intervene financially in the telecom sector. This uncertainty is a major obstacle to the development of a robust program of private sector lending in this area. Given the current depressed state of the market, and given the importance of deepening connectivity and of encouraging new competitors to get involved, there is probably the basis for the Bank and its Private Sector Department to be cautiously receptive of invitations to provide risk mitigation and comfort to attract back telecommunication/IT players and investors.[49] The data presented in Figure 2.3 on between-country differences in telephone penetration rates suggest that particular attention should be paid to C&D countries in this regard, since this is where the challenge to catch up is particularly pronounced. However, the Figure also shows that this should not be taken as axiomatic as there are at least two B countries (Colombia, Peru) that manifestly display levels of teledensity below the LAC average.

4.6 An aspect to note is the relatively low mobilization of outside private financing for each dollar of PRI funding in telecommunications: CH-0156 (A-loan: US$25 million) carried no B-loan because of a lack of appetite for rural telephony on the part of commercial banks in this case; BO-0204 and PE-0238 (A-loans: US$37 million and US$60 million, respectively) carry expected B-loans amounting to US$3 million and US$30 million, respectively. IFC investments in information infrastructure mobilize US$8.7 for each dollar of IFC funding.[50] PRI's comparative record in this respect therefore appears to lag behind IFC's, but the figures are not fully comparable because of IFC's more widely spread portfolio in country and sectoral terms (covering all information infrastructure as opposed to largely telephony in PRI's case).

4.7 The IIC made a series of investments in technology companies during the 1990s: three direct investments and eleven investments in private equity funds that so far have funded a total of 27 technology firms engaged in different aspects of connectivity and Internet services—see Annex 5. The MIF, in turn, is/has so far been active in 21 operations with "information technology" as one of the categories or sub-categories. The operations' objectives converge on the provision of support (financing, training) to technology up-starts, the supply of computer equipment, the training of workers and youth in IT skills, the building up of e-commerce including exports of handicrafts online, and the

[47] After IDB pulled out, *Pegaso* did not obtain capital financing comparable to what had been envisaged under the PRI project, but relied on what vendor financing it could obtain. It was later acquired by Telefónica and is presumed to have pursued a different financing strategy since then (information provided by PRI).
[48] Minutes of the Meeting of the Programming Committee, March 15, 2000.
[49] The Bank/PRI is not alone in this sector: see Annex 4 on telecom investment activity by CAF and the World Bank/IFC.
[50] World Bank, *Sector Strategy Paper Information and Communication Technologies (ICT)*, draft final report, August 10, 2001; p. 14.

development of employment portals to match job supply and demand. The currently active portfolio of MIF projects with an identifiable ICT component is given in Annex 6. It consists of twelve country-level (as opposed to regional) operations for which disbursement has started, of which seven in Region 1, two in Region 2 and three in Region 3. MIF regional projects with an ICT component currently in execution are listed in Annex 7. Three MIF operations for the modernization of telecommunication are currently being executed: MIF/AT-267 and MIF/AT-428 for Trinidad and Tobago and MIF/AT-336 for Guyana.

4.8 A sizeable portion of the budgeted ICT component of these projects is for the purchase of computer equipment (see Annex 6). OVE is presently evaluating the effectiveness-impact of this portfolio as part of a comprehensive commissioned evaluation of the Multilateral Investment Fund. A conclusion that can be reached by comparing this portfolio with the e-readiness assessment in Annex 1 is that MIF activity focuses disproportionately on the relatively more advanced countries; it does not on the whole favor the technologically/digitally lagging borrowers.

4.9 Two public sector projects with connectivity components, but including important e-government applications and training of IT technicians, for Jamaica and Guyana, have been prepared in 2002. Project JA-0116 was approved on November 27, 2002. According to the Loan Document, its components (to foster "integrated approaches to the promotion of ICT in society") include capacity building in the Ministry of Industry, Commerce and Technology to permit project implementation; initiation of transactional e-government in key agencies; community connectivity (60 telecenters); and a scholarship program to train IT specialists. The aim of the e-government component includes enabling all fiscal agencies to transact online (G2G and G2B). Project GY-0066, currently at the proposal stage, intends to provide for building up the ICT Unit in the President's Office; e-government; community outreach; promotion of ICT service exports; and development of ICT resources at the University of Guyana. Among other aspects, the intent of the e-government component is to develop web pages and online forms for all ministries, have post offices operate as interfaces between government and citizens, and establish a centralized help desk. Consideration of the project by the Bank's Board is delayed because of legal proceedings related to regulatory provisions proposed under the project.

4.10 Finally, connectivity and regulatory harmonization figure among the objectives of regional programs supported by the Bank, notably Plan-Puebla-Panama with its *autopista mesoamericana de la información* (a proposed broadband backbone) and IIRSA, the Program for the Integration of Regional Infrastructure in South America. In ICT, IIRSA's goals include the expansion of infrastructure, regional integration, the addition of value to the network, spectrum interconnection, technical standards, and measures to universalize web applications in the service of trade and integration). A Working Group coordinated by the Bank is tasked with developing actionable proposals at the present time. Its draft report[51] identifies important regulatory issues in need of being addressed and also analyzes the options for the development of, and the fostering of access to,

[51] *Tecnologías de Información y Comunicación al Servicio de la Competitividad y la Integración Sudamericana, Plan de Acción*, February 2003.

communication infrastructure. In this respect it documents the decline in investment in recent years (mentioned in Chapter II) and argues the case for installing fiber optics along right-of-way infrastructure and creating national access points (NAPs), the latter because of the cost and efficiency advantages they offer to ISPs and their customers, eliminating the need to route traffic through points abroad.

4.11 OVE's evaluative assessment of Bank Group action as described above is that this action appears to address the connectivity challenge in relevant ways and that it is in tune with the precepts and objectives of OP-711. What is open to discussion, however, particularly in view of the relative neglect of the less e-ready, is the extent or "materiality" of the Bank's response: is the above the most and the best that can be expected, given capacity constraints, or could the Bank do more? This question cannot be answered without a results assessment of the operations listed above, for which it is in most cases too early. What *can* be said based on the above review is that the Bank is largely absent from the regulatory field in telecommunications and the Internet. This is worth noting in light of the suggestion in the last Chapter to the effect that regulation (together with ICT applications in government and the delivery of public services) would seem a logical area for engagement by the Bank.

B. Technical cooperation

4.12 Lending to the public sector for ICT for development is supported by technical assistance activities, which, in the case of national TC, are too numerous to be reviewed in detail. (See Annex 7 on regional TC projects with identifiable ICT components.) The Bank's database indicates that 263 national-level technical cooperation activities valued at some US$100 million have some ICT-related purpose in the four sectors addressed below, i.e., science and technology, education, health, and modernization of the state.[52] However, like many of the loans reviewed below, much of this collection focuses on automation-related objectives. From the database it is concluded that only about thirty projects address "new uses of ICT" such as e-commerce, e-government, the use of technology in the targeting of social programs (for example, through smart cards such as the Brazilian *cartao SUS)*, the use of technology in distance learning, or the creation of virtual networks for learning, knowledge management, or civic participation. In other words, the tenets and objectives of OP-711 are addressed through a minority of TCs only, as in the case of loans (see below).

C. Operations in science and technology, the social sectors, and modernization of the state

4.13 The task of preparing an inventory and classification of Bank action with an ICT component or an ICT for development objective is more difficult than meets the eye. Many operations nowadays provide for the installation of computer hardware and information solutions, but it is difficult, in most cases, to obtain precise data from the available documentation about what exactly is being proposed: the Bank's and

[52] This refers to TCs that are currently in execution (at least 1% disbursed) and that were approved between January 1999 and November 2002.

borrowers' intent as expressed in loan documents approved by the Board is shrouded in ambiguity.

4.14 Based on data from a questionnaire administered to project team leaders in 2000, a study commissioned by SDS/ICT to analyze the ICT components in the 1999 project pipeline concluded that many questions about the nature of the objectives and proposed investments could not be answered, but also found that (i) the sector of modernization of the state absorbs the lion's share of total loan proceeds devoted to ICT across all sectors, and (ii) close to 80% of spending is for equipment, i.e. essentially computers and investments in Ministry-specific, often *ad hoc*, information solutions as opposed to solutions favoring inter-operability of the kind needed for transactional e-government and innovative applications in public service delivery as foreseen under OP-711.[53]

4.15 In other words, as further documented below, the focus tends to be on traditional uses that limit the deployment of computers and information systems to purposes of automation, rather than the concerns of OP-711, i.e., e-government, user interfaces, integrated services, and knowledge-driven applications. OVE's own desk study-based analysis of modernization of the state projects approved between 1991 and 2002 confirms this finding:[54] The label most widely used to refer to the technology component is "informatics," suggesting that the activities under this component fit the traditional bill of seeking automation of processes rather than developing tools for the "reinvention" and modernization of government. Note, however, that in the majority of cases the informatics component is not described in useful detail in loan documents and that it is thus left rather unclear what projects are going to buy for what purposes and how the components in question are going to be implemented.[55]

4.16 The "automation" line of action is particularly pronounced in many of the operations in C&D countries, which as a group receive much less lending for ICT than the A&B countries, despite their greater relative need to catch up (Annexes 8 through 11). The C&D countries, of course, have smaller economies and a lower absorption capacity for Bank loans, and they lag behind the A&B countries in terms of office and process automation. But the danger with the arrangement of investments focused on traditional applications is that this may prevent these countries from positioning themselves for leapfrogging to higher stages of e-government capability through judicious Bank-supported choices.

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[53] K. Balcarcel Cronenbold, *Tecnología de la información y el programa de préstamos del Banco de 1999*, July 2000. In June 2002, SDS/ICT commissioned another study attempting to quantify ICT-related funding; see H. Tanaka, *ICT-Related Funding in the IDB Projects: A Proposal for a Methodology to Measure its Magnitude and Character*. Despite definitional flaws, this study confirmed several of the conclusions of the Balcarcel paper. The "methodology" that it proposes is simple: it consists of recommending that ICT-related funding should be accounted for more systematically in the Bank's project documentation.

[54] "RM" in the Bank's Data Analyzer; 124 loans were analyzed; list available from OVE on request.

[55] OVE's 2002 evaluation of Bank operations in justice reform (RE-xxx) concludes likewise: the Bank's second-most important investment category in the justice sector is for computers and information systems. But the sustainability of this investment is in doubt. The study found that nobody has evaluated the appropriateness and benefits of informatics spending in the portfolio that it reviewed. However, a number of users contacted for the study raised concerns about their ability to optimally use and maintain the systems.

1. Evaluability

4.17 Given the absence of analysis and specificity regarding the ICT component in most loan documents, it should come as no surprise that the evaluability of this component is low. An activity is evaluable if a results framework is specified, i.e., if program goals (outputs and outcomes) are defined in terms of appropriate indicators; baseline data and targets are supplied; milestones or measures of intermediate achievement are clarified; and a monitoring and evaluation system is in place.

4.18 Annex 12[56] summarizes the findings of a review of the extent to which the ICT components of a set of 32 projects in modernization of the state are framed in terms of results. The conclusion is that the framework is specified unevenly and in many cases deficiently. Project *outputs* are the most palpably articulated element of the results framework. *Outcomes* are missing from the specification, as are *monitoring and evaluation* systems. "Hard" *baseline* data are missing, although projects offer partial descriptions of the situation that is to be improved. Where available, *milestones* are framed in general, difficult-to-verify terms. Expressions such as "support," "strengthen," and "facilitate" abound, but they are rarely mapped into explicit *performance indicators*.

4.19 Although not documented in this report, OVE found that this conclusion regarding evaluability also applies to the ICT components of projects in the sectors of science and technology, education, and health—implying that it will not be possible (or will be possible in limited ways only) to assess the results and benefits of these investments over time.

4.20 While this finding is based on a review of the loan documents, it is corroborated by an analysis of the PPMRs for the projects in question. Progress with respect to projects' ICT components is in many instances not even addressed in the PPMRs, or it is addressed in such general terms as to be of little use. This means that the Bank's system for tracking progress (i.e., the PPMRs) does not permit the monitoring of progress in individual projects and in the implementation of OP-711. The direct impact of the *de facto* strategy in ICT for development cannot be evaluated.

2. Projects in science and technology

4.21 Annex 8 lists the seven "science and technology" projects with a verifiable ICT component that are currently in execution, having been approved since the beginning of 1999 (i.e., after the approval of OP-711). The projects' common aim is the improvement of innovative capacity and competitiveness for the knowledge economy. From their declared objectives, they clearly fit the bill of OP-711 with their connectivity components, the development of research capabilities, the financing for technological innovation, and the proposed establishment of technology parks under public-private management, among other aspects. The column "ICT Components" in the Annex suggests that—as gleaned from the loan documents—the extent to which IT investments

[56] Not appended here in order to save space. Available from OVE on request.

benefit bureaucracies as opposed to programs more directly in the service of the projects' objectives is small in the case of this collection of loans.

4.22 A review of the Bank's *science and technology for development strategy* demonstrates that—as one would expect—the projects in Annex 8 are also compatible with key tenets of that document, suggesting that there is justification for the integration of the two policies/strategies as called for under OP-711 (cf. Chapter III).[57] There is also justification for some kind of integrated treatment of OP-711 and *science and technology* on the one hand, and the newly proposed Bank *strategy for competitiveness*.[58] That draft strategy, too, addresses the topic of development and assimilation of new technologies, but it makes only cursory reference to connectivity and ICTs (surprisingly, given the importance thereof for competitiveness) and does not reference OP-711.

4.23 According to the December 2002 PPMRs, the implementation progress of the projects in Annex 8 is "satisfactory" in an overall sense as well as regarding the projects' ICT components, where these are referred to, with the exception of the loan to Uruguay where implementation delays are said to be linked to the downturn in public spending in the context of the country's current economic situation. However, as is well known, PPMRs are not very revealing documents.[59] Substantive independent commentary on the relevance of the design and on implementation progress to-date would require fieldwork-based analysis, which is beyond the scope of this study.

3. Projects in education and health

4.24 Annex 9 lists the eleven education projects with identifiable ICT components that are currently in execution, again as in the above case having been approved since 1999. The question of interest is: to what extent are the ICT components of these projects placed in the service of teacher training, distance education, the wiring of schools, the equipment of multimedia learning centers, and the generation and transmission of curricula and educational content—as opposed to the financing of computers and management information systems for the Ministries of Education? OVE's draft evaluation of basic (primary and secondary) education, which looked at a larger number of projects than the ones listed in Annex 9, concluded that although considered a highly cost-effective method for improving learning, especially among the poorest, there are few projects in the Bank's education portfolio that promote the use of information technologies for learning purposes.[60] The Annex—a database with a selection bias in favor of projects with an ICT component—suggests that in three of the projects IT investments essentially benefit the Ministry, whereas in eight of them ICT is devoted to at least one of the above learning-related functions in addition to buying computers and management systems for the Ministry (Table 4.1). It is not possible to know with precision the share of investment that will go to each of these categories both because the loan documents and their budget

[57] The science and technology strategy can be found in GN-1913-2 of June 29, 2000. It was approved by the Executive Board on October 4, 2000, i.e. after the approval of OP-711.
[58] GN-2243, dated January 14, 2003.
[59] PPMRs were reviewed for all projects accounted for in Annexes 8 – 11. The information contained therein regarding projects' ICT components (the focus of this report) was found to be very limited as indicated in the section on evaluability above. No further reference is therefore made to PPMRs in the remainder of this Chapter.
[60] Draft, December 2002.

tables are not sufficiently explicit and because projects may get reformulated along the way. A careful combing of these sources nevertheless indicates a bias of proposed investments in the direction of buying computers and network hardware/software for the Ministries.

TABLE 4.1

ICT Components of Education Projects

Loan	Computers, Network Hardware, Software	Info Systems for PSM [1]/	ICT for Education	Description of ICT for Education Subcomponent (When Applicable)
REGION 1				
BO0197	X	X	X	Teacher training; organization of technical and technological training curriculum
BR0300	X	X	X	Telecourse; virtual reference center; International Virtual Education Network; teacher training; daily secondary school broadcast over the TV Escola Network
PR0117	X	X		---
UR0132	X	X	X	Use of new technologies for pedagogic purposes; teacher training centers linked through computer networks; incorporation of ICT in the training processes; educational portal
REGION 2				
HO0141	X	X	X	Connect schools with educational satellite broadcasting network (EDUSAT) through the use of satellite dishes, TVs, and VCRs
NI0090	X	X	X	30 distance learning schools (Telesecundaria); alternative instruction tools (audio, video, computers, Internet); interactive radio
NI0144		X		---
REGION 3				
CO0142	X	X		---
JA0059	X	X	X	Interactive mathematics education through radio; integrate IT in the curriculum ("utilize whatever kinds of computer capability schools may find themselves with during the coming years")
PE0170	X	X	X	Introduction of new ICT under the auspices of the EDURED project; International Virtual Education Network; teacher training
TT0023	X	X	X	Curriculum development ("technology education may be integrated with other subjects, or developed as a separate discipline"); articulation of technologically-delivered learning; multi-media learning center in every school; computer laboratories for computer-based learning; "magnet" schools for technology education; teacher training

[1] PMS: Public Sector Management

Source: Annex 9, loan documents.

4.25 These investments may be justified. Management information systems (and geographic information systems) can be important for educational outcomes. On the other hand, some Ministries may have an appetite for new hardware and information solutions that may inappropriately take precedence over investing in technology for learning

purposes.[61] So there are some doubts about the productivity of some of these investments, the rejection or substantiation of which would require in-depth fieldwork-based analysis. Short of such analysis, a criterion by which one might judge the merits of proposed investments in information systems is whether the systems are essential to the reforms to be undertaken under the loans being reviewed. From the loan documents, this (to a greater or lesser extent) is the case in six of the eleven projects in Table 4.1.[62]

4.26 Annex 10 lists the eight health sector projects with identifiable ICT components that have been approved since 1999 and are currently in execution. Clearly, in this case, the bulk of the proposed investments in information technology are for "domestic purposes" in the Ministries of Health, inviting reflections similar to the ones offered in the previous paragraph (Table 4.2). Relatively little use is made of ICT directly for expediting health services and the promotion of equitable access through telemedicine, the use of technology for the purpose of efficient targeting, or the use of technology for epidemiological surveillance as in the case of the "epidemiological shield for Bolivia" (BO-0115) through which a surveillance and information management system capable of enabling rapid public health responses based on real-time data is being developed.

4. Projects in modernization of the state

4.27 Annexes 11a through 11c summarize information on the ICT components of the 32 loans in modernization of the state that display such components, have been approved since 1999 and are currently in execution. A range of activities is being pursued through these components, but—with some exceptions—the nature of what is being funded is as suggested earlier: there is a rather pervasive focus on hardware; there is no discussion (in loan documents) of alternative information solutions or of the lessons drawn from the experience of earlier costly generations of purchases of hardware; and there is no discussion of sustainability aspects, or of how the sizeable new proposed investments are meant to be part of an overall strategy of "digitalization" of the public sector for progressively higher levels of online interaction that, in time, would facilitate active/active G2G, G2B and G2C functionality.

4.28 In addition to supplying computers, most loans provide for the installation of management information systems, for example, "purchase of an integrated, flexible, easily upgradable modular system for the integration and consolidation of administrative, operational and financial processes" (ES-0093) or "implementation of the Information Technology Master Plan" for a pension reform program (BR-0327). Some loans provide for the installation of a geographic information system. Few loans foster e-government (beyond establishing a web presence) as defined earlier in this report and as provided for under OP-711 (Table 4.3). As in the case of education and health, therefore, the ICT component of projects in modernization of the state is rarely geared to delivering services and interfacing with users in innovative, client-oriented ways. The notion of e-government has not yet made its way into the concept of "modernization of the state" as

[61] Members of the education community in the Bank have confirmed that this is the case. The SDS publication *Making Technology Work for Education in Latin America and the Caribbean: Notes on Issues, Policies and Innovations*, December 2001, discusses some of the context.
[62] Condition not fulfilled for: BO-0197, PR-0117, HO-0141, NI-0090, PE-0170.

currently understood by the Bank and many of its borrowers. Its assimilation in the project portfolio accounted for in Annex 11 is modest.

TABLE 4.2
ICT Components of Health Projects

Loan	Computers, Network Hardware, Software	Info Systems for PSM [1]/	ICT for Health Services
REGION 1			
AR0120	X	X	
BO0115	X	X	X
BR0305	X	X	
UR0133	X	X	
REGION 2			
BL0014	X	X	
GU0125	X	X	X
PN0076	X	X	
REGION 3			
PE0146	X	X	

[1]/ PSM: Public Sector Management.

Source: Annex 10, loan documents.

4.29 This is not unexpected, given the observation in the previous Chapter that e-government has only very recently become the subject of analytical work in the Bank, and given the finding in Chapter II that most countries are only beginning to develop e-government applications in an interactive and transactional sense of the term. As in the case of projects in other sectors, however, there remain questions regarding both the ICT solutions that are being put in place in the name of modernization of the state and the Bank's advice to borrowers in the context of these loans. The evidence shows that (i) the funding devoted to ICT is in many cases poorly justified (as mentioned earlier) and (ii) much of it goes to support fragmented solutions, in part perhaps because spending on computers lends itself to the fulfillment of agency-level agendas that may differ from the acknowledged objectives of the projects themselves. The Bank should look into this possibility as it updates and revises OP-711.

4.30 A set of hypotheses may be helpful to this process. In addition to reviewing (in desk-study mode) the projects listed in Annex 11, OVE conducted a rapid field appraisal of three modernization of the state programs in early stages of implementation in Argentina from which preliminary conclusions regarding the kinds of problems that can affect Bank-supported investments in ICT emerged.[63] Because of the limited nature of the investigation, these conclusions are presented as hypotheses to guide a suggested self-evaluation by the Bank of its approach to the design of the ICT components of projects in modernization of the state. The hypotheses are as follows:

[63] AR-0256, AR-0257, and AR-0265.

4.31 First, *borrower awareness of OP-711 is probably low*: In Argentina, authorities were functionally unaware of the Bank's mission in ICT as provided for under OP-711. If this pattern recurs broadly, there can be no synergy between the Bank's guidelines (i.e., OP-711) and any national policies with regard to the role and use of ICTs in public administration.

4.32 Second, *beneficiary expectations may be biased toward equipment rather than modernizing and re-engineering government processes:* Simple process automation and equipment acquisition has a strong constituency in Ministries and Executing Units, with little countervailing pressure by other social actors. Modernizing government, on the other hand, is generally more complicated and fraught with risk. In the Argentina case, the Bank did not always press for the modernization solution and was generally sympathetic to proposals for simple equipment acquisition (see also Table 4.3).

4.33 Third, *Bank-financed programs may not be fully supportive of standard-setting capability*: A growing number of borrowing countries have an official e-government policy actor at the central government level with a regulatory mandate pertaining to the transformation and modernization of public administration. This may include rules regarding the acquisition of information technology equipment and services by the public sector. This was the case in Argentina, but the Bank did not enforce compliance with these rules in the projects that it finances (or work to improve the rules if improvement is needed), thus weakening attempts at harmonization across the public sector and contributing to a pattern of *ad hoc* approaches.

4.34 Fourth, *holistic solutions may be hard to design and implement:* While current equipment and procedures were upgraded in the projects reviewed, systems were not checked for obsolescence in a holistic sense, and the need for restructuring of procedures in the interest of increased public sector efficiency in the longer term went unanalyzed. In other words, in preparing the ICT component of Bank loans, insufficient attention is paid to the characteristics of the current information infrastructure of beneficiary agencies. Apart from opening up the possibility of sub-optimal returns to the investments being made, this is a likely cause of problems during execution.

4.35 Communication problems within and between agencies can lead to an environment in which multiple solutions are developed for the same purpose along parallel tracks. Funds assigned to a specific task may be diverted to more urgent matters or isolated actions that have little to do with the ultimate declared goal of modernizing and increasing government efficiency. The Bank, again, does not necessarily play the integrating role that may be called for and that, as an outside agency, it may be in a position of comparative advantage to fulfill.[64]

[64] As many borrowers recognize, uncoordinated agency-by-agency patterns of *informatización* militate against inter-operability. The loan document for CO-0251 (PR-2646, December 2001) is explicit about this, painting a picture of agencies and public enterprises that operate in isolation as local networks, having modernized their technology on an individual basis, "rather than under … policies promoting integration and standardization." The spread of connectivity and the associated growth in demand for online services and information, however, put a premium on integrated solutions. Hence, the rationale in this case for a project (CO-0251) under which a networked approach

4.36 Fifth, *multiple financing may be a recurrent risk:* Equipment and information solutions are fashionable items to finance and they are indeed being financed by a variety of donors as well as the government budget itself, sometimes leading to multiple financing of one and the same product or of consulting services that have already been rendered before. Coordination is in short supply. The Bank is probably contributing to multiple financing from different sources, sometimes knowingly and sometimes not. In fact, there are instances where the Bank itself finances the same ICT components or sub-components more than once—through different loans to entities in the same country that use the same information platform, say for expediting administrative processes. The Bank (which should be aware of the technology content of projects in its country portfolios) does not necessarily act as a catalyst for the sharing, between different governmental jurisdictions, of software that is freely available within the public sector.

4.37 Sixth, *software may be as much a problem in itself as it is a solution to problems*: Borrowers' experience with software is not uniform, lessons learned tend not to be shared across agencies, and the standards applied for server and workstation operating systems, work station office systems, message systems, and database engines vary widely. A special aspect of the software issue relates to the appropriateness in developing country contexts of open source solutions versus proprietary software and applications. Decisions with regard to both system and application software entail large, multi-year commitments and are often taken in the presence of inadequate information with regard to functionality, upgradability, compatibility and cost. In the projects reviewed, the Bank did not have a knowledge management capability in software adequate to support the borrower in making these decisions.

4.38 Seventh, *Project Teams' IT know-how may be deficient*: In the projects reviewed, the Project Teams did not generally have up-to-date expertise in IT areas. This raises concerns regarding the Bank's technical value added and may account for the fact that a clear description of the purpose of the technologies to be purchased is usually absent from the project documentation.

4.39 Eighth, *supervision and the role of Country Offices may not adequately support the IT components of projects*: In the projects reviewed, there was little technical oversight of the IT components by staff in the Country Office. While there are technical specialists for a variety of thematic areas, IT is not identified as an operational technical specialty with dedicated staff in the Country Offices.

4.40 Ninth, *documentation may be inadequate*: In the projects reviewed, purchases of equipment, software and licenses were ill documented, opening the way for inefficiencies and legacy problems when staff changes occur or institutions are being reorganized.

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guided by standards is to be developed for the institutional strengthening of the District of Bogotá—making this project one of only two programs identified in Table 4.3 as pursuing an advanced form of e-government.

TABLE 4.3
ICT Components of MOS Projects [1/]

Loan	Hardware, Software Applications, Op. Systems	Info Systems, Admin. Applications for PSM[1/]	GIS	E-Government [2/]				E-Commerce
				Web Presence	Interaction	Transaction		
						E-Procurement	Other	
REGION 1								
AR0256	X	X		X				X
AR0257	X	X	X	X	X			
AR0265	X			X				X
BO0159	X	X						
BO0177	X							
BO0180	X	X	X					
BO0186	X	X						
BO0189	X		X					
BO0196	X	X						
BR0327	X	X						
CH0161	X	X						
CH0165	X	X		X	X			
PR0115	X	X						
PR0130	X		X					
UR0122	X	X						
UR0130	X			X	X	X		
REGION 2								
DR0106	X							
ES0093	X	X		X				
ES0115	X							
GU0152	X							
HO0176	X					X		
HO0206	X		X	X				
ME0208	X	X						
NI0081	X	X						
NI0105	X	X						
NI0109	X	X						
NI0111	X	X						
NI0143	X	X				X		
REGION 3								
CO0244	X	X				X		
CO0251	X	X		X	X		X	
EC0197	X		X					
VE0057	X	X		X	X			

[1/] MOS: Modernization of the State; PSM: Public Sector Management; GIS: Geographic Information Systems.

[2/] E-government functional categories: see Chapter II.

Source: Annex 12, loan documents.

4.41 Clearly, the range of situations in which the Bank is called upon to support ICT solutions for the purpose of "modernization of the state" is highly heterogeneous as far as borrowers' e-readiness and institutional characteristics are concerned, and clearly, the appropriateness of the above set of hypotheses varies with this heterogeneity. On the whole, however, it is believed that the hypotheses should prove helpful as a means to lend focus to the effort at self-evaluation in the context of the review and revision of OP-711 that OVE advocates. The hypotheses emerged independently from the review of the ICT components of case studies and the information accounted for in Annex 11, yet they are reminiscent of the problems that (as reported in Chapter II) beset investments in ICT in the public sector in OECD countries. Most importantly, furthermore, they illustrate the real and significant challenges of information failure (Chapter III) that the Bank needs to overcome for a stronger role in ICT.

D. Conclusion

4.42 This Chapter discussed Bank operations of recent vintage related to connectivity and the use of ICT in science and technology projects, modernization of the state, and the delivery of social services. The following conclusions seem in order:

4.43 First, the Bank's engagement in connectivity (i.e., infrastructure and the regulatory environment), while judged to be "relevant," is rather limited, in line with the rule that the Bank will finance investments in this sector only when there are no alternative sources of financing. The declining trend of private investment in the sector and the public good character of connectivity (due to network externalities) would appear to justify a position of openness toward financing opportunities for the Bank. It is suggested that in the context of updating and revising OP-711 a policy stance beyond a "deal by deal" approach be developed regarding this point. A number of issues would need to be accommodated in developing such a stance, including (i) how to go about the objective of contributing toward closing the connectivity gap for both voice and narrowband data transmission, on the one hand, and broadband, on the other, in a situation in which (as shown in Chapter II) universal access programs financed through different types of levies are already in place in many countries; and (ii) what to do about the funding needs of the reform-minded public (non-privatized) incumbents with a universal coverage mandate that do not enjoy access to the capital market.

4.44 Second, and shifting to operational Bank action in the four sectors that were retained for analysis in this Chapter, it is noted that the Bank does not know how much it lends for ICT. In the annexes to this report, an attempt is made to summarize the content of, and budgetary allocations to, the ICT components of 58 projects in four sectors under implementation at the end of 2002 and approved after OP-711 was approved. The proposed investments are found to be poorly justified/specified and the budget tables in loan documents (as well as the budget categories in the Loan Management System) are not detailed enough to enable reliable *ex ante* and *ex post* knowledge of the amounts invested in ICT and of the breakdown of the investments according to meaningful categories.

4.45 In the annexes to this report, a "best estimate" of the cost of the identified ICT components is pieced together from loan documents. Adding the figures for modernization of the state (32 projects) and comparing them with the loan totals, one learns that the ICT components amount to 12% of the latter (US$188 million). The figures, however, are no more than approximations, which is why no analytical use is made of them in the present report. Nevertheless, two conclusions are inescapable: (i) little is known about how 12% of loan proceeds in modernization of the state are spent; and (ii) borrowers borrow large sums for ICT-related expenditure, but exactly how much it is that they borrow from the Bank is not knowable from the data available in the Bank.

4.46 Third, in the sector of modernization of the state and in lending for ICT for the delivery of public services, the information solutions financed by the Bank are crafted on an agency-by-agency basis, with little attention devoted to the enhanced value proposition of working towards integrated information platforms for the public sector.

4.47 Fourth, and in the same vein, rather than fostering standards and standard-setting capability, the Bank finances multiple approaches, at times facilitating the multiple financing of one and the same product. In so doing (possibly in response to borrower pressure) it fails to live up to its responsibility for quality control and misses out on opportunities to help create citizen-oriented government and effectively improve public sector management.

4.48 Fifth, the results obtained through the Bank's efforts in ICT are largely unknown and indeed unknowable at this stage. Field investigations would no doubt permit the identification of successes and failures. In their absence, the evaluability exercise carried out for the present report and summarized in this Chapter indicates that the ICT components of the projects reviewed are not designed or specified such as to permit the tracking of results.

4.49 Sixth, while there is considerable apparent overlap between the tenets of OP-711 and Bank action in connectivity and the field of science and technology where operations are essentially aimed at generating gains in competitiveness as discussed in this Chapter, in the social sectors and in modernization of the state the *de facto* strategy revealed by the projects is not coherent with the objectives of OP-711. The projects in the latter two sectors devote the bulk of ICT resources to traditional uses that take the form of information systems and automation, with an emphasis on hardware. E-government and measures to transform public services as visualized under OP-711 take up little space so far. The evidence suggests that the Bank has begun to shift towards these themes, but it is doing so at a slow pace—as a follower, reacting to developments and demand articulated in borrowing countries.

4.50 Seventh, an item of concern identified in this Chapter is the limited use of ICT in Bank education projects for the purpose of modernizing and spreading teaching and education.

4.51 Eighth, the Chapter identified a lack of synergy between the Bank's treatment of policies and strategies that address different aspects of productivity and competitiveness. The different pillars that make up the framework in Box 2.1 (human capital, an effective

innovation system, regulation, financing, etc.) need to be treated coherently and with a view to eliciting synergy among them. For this reason, this Chapter (in line with OP-711) called for an integrated view in the Bank of what for now are distinct policies/strategies and operational practice for ICT, science and technology, competitiveness, and education. Integration poses the challenge of establishing synergy and communication between "stovepipes," i.e., in this case, the different policies and strategic statements on the books regarding how to foster innovation, productivity, and competitiveness.

V. CONCLUSION AND RECOMMENDATIONS

5.1 This report has shown that information and communication technology can be a powerful resource for economic development and poverty reduction and a key enabler of the Bank's institutional priorities. In most countries in Latin America and beyond, ICT has begun to re-shape society, government, and commerce by improving transparency, participation, productivity, education, and the quality and reach of public services. However, the much invoked "information society" cannot be said to have arrived in most of Latin America and the Caribbean. Teledensity, computer penetration and Internet connectivity have deepened in recent years. But concerns remain about the ability of some countries and groups to take advantage of ICT and the opportunities of the knowledge economy. E-readiness is highly unequal, and the question before the Bank continues to be how best to support borrowers in their efforts to achieve the promises of information age technologies for all.

5.2 The purpose of this concluding Chapter is to answer the four evaluation questions that were identified at the outset and to formulate recommendations designed to strengthen the Bank's work in ICT going forward. The four questions referred to (i) the relevance of OP-711 in light of the developmental challenges posed by the information revolution; (ii) the institutional arrangements made by the Bank to organize its work in relation to these challenges; (iii) the operational response in support of the diffusion and assimilation of ICTs in government and the economy; and (iv) the results generated by this response and by the application of OP-711 more broadly.

5.3 The answer to the first question is that OP-711 and the underlying source material are projecting an appropriate and appropriately ambitious vision of development accelerated by the promises of ICT. However, in framing OP-711 the Bank did not undertake the empirical work regarding the state of connectivity in the Region and the use of technology in public administration and public services that would have been required to generate a benchmark against which to specify targets for action and prioritize specific kinds of interventions. As a result, the OP-711 package turned out strong on vision, but did not connect with the reality in borrowing countries and was not sufficiently selective and prescriptive as a guide to action. A business plan on how to prioritize the directions for action was never developed. After the approval of OP-711, serious institution-wide reflection on the nature of the Bank's comparative advantage in ICT and on what it would take to build comparative advantage where none existed, and to develop a coherent program, did not take place.

5.4 The answer to the second question is that the institutional arrangements provided for under the OP-711 package, the leading edge of which was the creation of the identified focal point in SDS, did not produce the desired result of generating a dynamic and coherent response to the crosscutting challenges of ICT. Bank action remains partial and fragmented. In the case of e-government, for example, six different approaches are being pursued. It is therefore necessary, today, to re-consider the arrangements in place to mainstream attention to ICT for development. The approach of taking on board new

development challenges with new units in charge of them limits buy-in on the part of senior management, while keeping the IT issue at some distance from the Bank's programming dialogue with the countries.

5.5 Because of the highly technical nature of the subject matter, a robust Bank engagement with the IT issue requires a high level of technical expertise in the staff. The evaluation found a broad qualitative consensus among respondents that the Bank does not currently possess the required technical expertise, either at headquarters or in the country offices. The evaluation found that the knowledge and expertise brought to bear are of uneven quality and, on the whole, insufficient for a leading role in the field. If the Bank is to continue efforts in this field, a systematic human resource strategy for IT is required—one that recognizes IT as an operational career stream directly connected to the Bank's developmental mission.

5.6 The answer to the third question is that the Bank's operational response to transform the vision of OP-711 into reality has been rather limited (Table 5.1):

- In information infrastructure, the Bank is appropriately playing a subsidiary role to the private sector, although the downturn in the investment climate for telecommunications and value-added services suggests a role for the Bank when appropriate investment opportunities arise.

- In the regulatory area, the Bank has been active in a very modest fashion, perhaps understandably so in light of the limited in-house expertise and the presence of rather strong competence in regional organizations and certain national telecoms/Internet regulators in Latin America with an acknowledged record of good practice and achievements. However, an evaluation of the appropriateness of the Bank's relative absence from this sector is needed as it could entail costs in terms of the effectiveness of some of the institution's project-level investments.

- In government and public services, ICT represents an important class of investments financed by the Bank. However, much of what is being done is for the traditional purposes of buying hardware and information solutions for public administration, rather than e-government applications, the transformation of public services, and the use of technology to enhance education, health care and other aspects of the standard of living as foreseen under OP-711. Indeed, as explained in this report, there is a lack of coherence between the declared strategy for modernization of the state and the delivery of social services as stipulated under OP-711 and the *de facto* strategy revealed by the content of the investments that are actually being financed.

  The problem is particularly deep-seated in the case of operations in reform of the state. The ICT component of these operations should shift from the current approach of a "modernization paradigm" through computers to a "productivity and transformation paradigm" by means of investments in integrated and progressively higher e-government functionality.

- In regional integration through enhanced connectivity and value-added services (a key priority under OP-711), the Bank has done little in the four years since the Policy was approved, but this may change in the context of IIRSA in which the Bank has recently played a leading role towards the production of a policy paper on a broad range of challenges and investment needs related to connectivity and ICT.

- Finally, the theme of developing national strategies for ICT for development has been taken up with some vigor by SDS/ICT. However, it was found in this report that the issue tends to be treated generically, rather than reflecting in-depth country-level analysis, and that the approach taken is de-linked from country programming.

TABLE 5.1
Action Areas under OP-711 and Bank Compliance

Action Area	Compliance
National strategies ICT for development	SDS/ICT active in this area notably through ENSI/ALDEA approach assessed in Chapter III
Regulatory and policy framework for ICT for development	Little engagement by Bank; some MIF, plus JA-0116, GY-0066
Analyze information infrastructure (II) needs, Region	No engagement other than February 2003 IIRSA report
National II investment planning	No engagement
Lend for II nationally and regionally	Some PRI projects in telecoms, no regional focus, some IIC, MIF
Develop information-producing sector	Fostering limited content production in education projects and state modernization
ICT to enhance public social services	11 education projects, 8 health projects with ICT components 1999-2002
ICT to empower low-income citizens	Part of work on national strategies

Source: Chapters III, IV

5.7 The answer to the fourth question, regarding results, is that we do not really know, because the research underlying this report was not resourced to include fieldwork and because many of the operations initiated in the four years since the approval of OP-711 have not run enough of their course to permit a fully fledged *ex post* evaluation. What the report did find was that the ICT components of the public sector projects that were reviewed are not evaluable inasmuch as results frameworks are not specified and PPMRs do not permit the tracking of progress in the ICT components. The report also found design problems and multiple solutions where integrated, standards-based approaches are called for, implying that there remain questions regarding the appropriateness and effectiveness of at least some of the investments in ICT being sponsored by the Bank.

5.8 For this reason and because of the already mentioned limited operational uptake of the action areas proposed under OP-711 it is concluded that, overall, the Policy has not had the effect of committing the Bank to the challenges and opportunities of ICT for various facets of development as addressed, for example, in the IS. A degree of awareness has been created, because of the activities of SDS/ICT and because the topic is pervasive nowadays wherever one looks. As a pivotal item for competitiveness, the preparation of

borrowing countries for the knowledge economy, and the modernization and reinvention of government and client-oriented public services, however, ICT is off the radar screen in the Bank in a consequent operational sense of the term.

5.9 The following recommendations are designed to facilitate change in the Bank's handling of ICT with a view to overcoming the record of less than satisfactory achievement that is documented in this report:

1. Up-date and revise OP-711, but above all produce a business plan with a monitorable results framework for Bank action. Prioritize the pursuit of productivity gains in the public and the private sector as the key objective and guiding principle.

2. In this context, develop policy guidelines beyond a deal-by-deal approach for lending for connectivity and universal access, and for lending and technical assistance for improvements in regulatory frameworks (licensing, interconnection, regulatory convergence).

3. Transform the institutional/organizational arrangements for ICT for development with a view to enabling a coherent and effective role by the Bank centered on country programming.

4. Strengthen skills and databases in priority areas of ICT for development retained under the up-dated and revised OP-711.

5. Integrate the policies and/or strategy statements that aim to provide guidance to the institution for fostering education, innovation, connectivity, R&D, productivity and competitiveness.

6. In the context of every operation, invest in risk analysis with a view to mending the information failures that are known to threaten the effectiveness of IT investments in government and the private sector.

7. Develop and apply standards for the analysis, justification, budgeting, and the monitoring and evaluation of ICT components in Bank loans.

It is proposed that an inter-departmental Task Force be established to solve key issues towards the new OP-711 to be developed. The Task Force should address: (i) the strategic issues in play and the challenge of organizing the institution and work processes for a cutting-edge, client-oriented role, and (ii) the problems of quality and effectiveness (including transparent budgeting) that affect lending for ICT components in modernization of the state and the delivery of public services.

E-READINESS IN LATIN AMERICA AND THE CARIBBEAN

"E-readiness" is an empirical construct used to assess countries' preparedness to take advantage of the benefits of ICT. Country-level e-readiness assessments by official institutions, research entities, and consulting firms abound and can be downloaded from the Internet.[65] A variety of methods exist, each with its own strengths and weaknesses. For example, e-readiness rankings developed for 60 countries in 2001 by the Economist Intelligence Unit (EIU) / Pyramid Research score e-readiness on the basis of two composite variables: the overall business environment (70 primary indicators) and a set of network access measures.[66] Assessments of this kind can help policy makers and external assistance agencies such as the Bank identify priorities for action. They can help evaluators judge whether specified measures address priority problems.

This Annex reviews the values for selected countries in the Region of the Networked Readiness Index (NRI) 2001-2002, a guide to the state of connectivity and network use developed by Harvard University and the World Economic Forum for 75 countries worldwide.67 The NRI combines variables that measure the extent of network use today, drawn together in a Network Use component index, and variables that measure a country's potential to exploit existing networks and create new ones, drawn together in an Enabling Factors component index.

Network Use is defined by five indicators related to the quantity and quality of ICT use. Enabling Factors is defined by a set of indicators describing the state of Network Access (2 sub-indices combining 14 variables), Network Policy (2 sub-indices, 15 variables), Networked Economy (3 sub-indices, 20 variables), and Networked Society (3 sub-indices, 11 variables). The primary data from which component indices and sub-indices are derived stem from published sources such as ITU statistics and "soft" data derived from the World Economic Forum's Executive Opinion Survey 2001.

Table A.1 provides the NRI for twenty countries in Latin America and the Caribbean (77% of the Bank's borrowing member states) and ranks them on the global scale of Networked Readiness according to Network Use, Enabling Factors, and GDP per capita at purchasing power parity. Since, as mentioned, the NRI has been calculated for 75 countries, it can be seen that Latin America and the Caribbean, starting with Argentina in position 32 and ending with

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[65] www.infodev.org/ereadiness/methodology.htm is a portal to e-readiness assessment methods and country examples. Infodev is the World Bank-sponsored Information for Development Program. See also e-readiness resources at www.developmentgateway.org, the site of the World Bank-inspired Development Gateway, a portal to knowledge and networking in the service of development and poverty reduction. http://www1.worldbank.org/gdln-scripts/programs/kam/kamscript.exe/show_page provides a knowledge assessment and e-readiness matrix capable of calculating an instant multidimensional country-level e-readiness graph. This resource, developed at the World Bank, offers country-level estimates of some 60 variables that assess economic performance, the economic regime, governance, innovation systems, education, and ICT.

[66] The EIU site www.ebusinessforum.com/index.asp?layout=rich_story&doc_id=367 notes that "e-readiness is shorthand for the extent to which a country's business environment is conducive to Internet-based commercial opportunities. It is a concept that spans a wide range of factors, from the sophistication of the telecoms infrastructure to the security of credit-card transactions and the literacy of the population." See also rankings developed by McConnell International at www.mcconnellinternational.com.

[67] Center for International Development (Harvard University) and World Economic Forum, *The Global Information Technology Report 2001-2002: Readiness for a Networked World*, Oxford University Press, 2002 (henceforth referred to as CIDH). This Annex draws on chapter 2 of CIDH.

Honduras in position 72, spans the full range of the lower half of the global scale of networked readiness.[68]

Some caveats are in order: The NRI signals broad trends and is indicative of the relative Networked Readiness of different countries, but it necessarily simplifies complex national realities and should therefore be interpreted with caution. The relative positions of countries ranked near each other should not be taken as axiomatic, since the Index does not finely distinguish between the Networked Readiness of similarly ranked countries.[69] Furthermore, the comparison of very large and very small countries, and the cross-sectional nature of the data, may be problematic.[70] But the index offers breadth and to some extent depth as a research effort and is therefore considered relevant to the analysis of ICT systems and e-readiness attempted here.

The comparison of the *Network Use* and *Enabling Factors* columns in Table A.1 shows that the two indicators are not necessarily strongly correlated. Some countries rank considerably more highly on *Network Use* than on *Enabling Factors* (e.g., Bolivia, Dominican Republic, Paraguay, Peru), implying that they manage to leverage the latter to create *Network Use* to a greater degree than other countries. The opposite is true for Costa Rica, Jamaica, and Panama, which display lower than expected *Network Use* given their relatively favorable ranking for *Enabling Factors* (and given Costa Rica's favorable ranking in terms of income). The finding for Bolivia is influenced by the country's relatively favorable position with respect to public Internet access.[71] The value for Costa Rica is explained by the fact that, despite high overall teledensity, progressive policies toward high-tech investment, and the presence of a high-quality work force, ICT access for average citizens remains relatively substandard, with initial connection fees high and connection speed low. Similarly, in Panama, most Internet and telephony access is centered in Panama City with as yet little effort to deliver last-mile connectivity throughout the country. On the other hand, Panama's information infrastructure, a component of *Enabling Factors,* possesses strong elements: several fiber optic backbones pass along the Panama Canal, and access to first-mile broadband is widely available with prices dropping considerably in 2001.[72]

[68] The absolute values of the NRI range from 6.05 for the US (rank 1) to 2.10 for Nigeria (rank 75). Table A.1 only shows data for Latin America and selected Caribbean countries.
[69] CIDH, p. 12.
[70] Time series will become available as the index is produced annually in the coming years.
[71] As stated in the CIDH Country Annex, people prefer public access points to expensive PCs and telephone lines. Telecommunications markets were opened in Bolivia in late 2001 only as long-standing monopolies on international data transmission, national and international long-distance telephony, and local telephony were broken up. Bolivia is addressing critical national needs for greater economic and educational opportunity with technology, but still confronts a deficient communications infrastructure in a very challenging national topography.
[72] CIDH Country Annex.

TABLE A.1
Networked Readiness Index 2001-2002, 20 Latin American and Caribbean Countries

	Networked Readiness	Global NRI Rank*	LAC Rank for "Network Use"	LAC Rank for "Enabling Factors"	Rank according to GDP (PPP) per capita
Argentina	4.01	32	1	3	1
Chile	4.00	34	2	1	3
Uruguay	3.80	37	3	4	5
Brazil	3.79	38	4	2	7
Mexico	3.58	44	6	6	4
Costa Rica	3.57	45	9	5	2
Trinidad & Tobago	3.52	46	10	7	6
Dominican Republic	3.52	47	5	10	9
Panama	3.42	48	14	8	8
Venezuela	3.41	50	11	11	11
Peru	3.38	52	7	14	12
El Salvador	3.30	55	15	12	13
Jamaica	3.29	56	17	9	16
Colombia	3.29	56	13	13	10
Paraguay	3.15	63	8	17	14
Bolivia	3.04	67	12	18	19
Guatemala	3.00	68	16	15	15
Nicaragua	2.83	69	18	20	20
Ecuador	2.65	71	20	16	17
Honduras	2.64	72	19	19	18

Source: The Global Information Technology Report 2001-2002: Readiness for a Networked World, Center for International Development at Harvard University and World Economic Forum: Oxford University Press, 2002.
* Values for LAC from a ranking of 75 countries worldwide.

TABLE A.2
Country Ranking: E-Readiness Enabling Factors

PANEL A	Sub-Indices		PANEL B	Sub-Indices	
Network Access	*Information Infrastructure*	*Hardware, Software Support*	**Network Policy**	*ICT Policy*	*Business and Econ. Envt.*
CHI	*CHI*	*DOM*	CHI	*CHI*	*TRT*
ARG	*ARG*	*CHI*	UGY	*BRA*	*CHI*
DOM	*UGY*	*BRA*	ARG	*ARG*	*UGY*
BRA	*MEX*	*UGY*	BRA	*SLV*	*CRI*
UGY	*VEN*	*CRI*	SLV	*DOM*	*ARG*
MEX	*BRA*	*ARG*	JAM	*VEN*	*JAM*
VEN	*DOM*	*COL*	TRT	*COL*	*PAN*
PER	*PER*	*MEX*	DOM	*UGY*	*SLV*
PAN	*PAN*	*PAN*	PAN	*JAM*	*BRA*
COL	*SLV*	*PER*	CRI	*PAN*	*DOM*
CRI	*GUA*	*VEN*	VEN	*MEX*	*MEX*
TRT	*TRT*	*TRT*	COL	*CRI*	*PER*
GUA	*COL*	*JAM*	MEX	*TRT*	*COL*
SLV	*ECU*	*ECU*	PER	*GUA*	*VEN*
ECU	*BOL*	*GUA*	GUA	*PER*	*BOL*
JAM	*CRI*	*HND*	BOL	*BOL*	*GUA*
BOL	*JAM*	*SLV*	PGY	*ECU*	*PGY*
NIC	*NIC*	*NIC*	ECU	*PGY*	*NIC*
HND	*PGY*	*BOL*	NIC	*HND*	*ECU*
PGY	*HND*	*PGY*	HND	*NIC*	*HND*

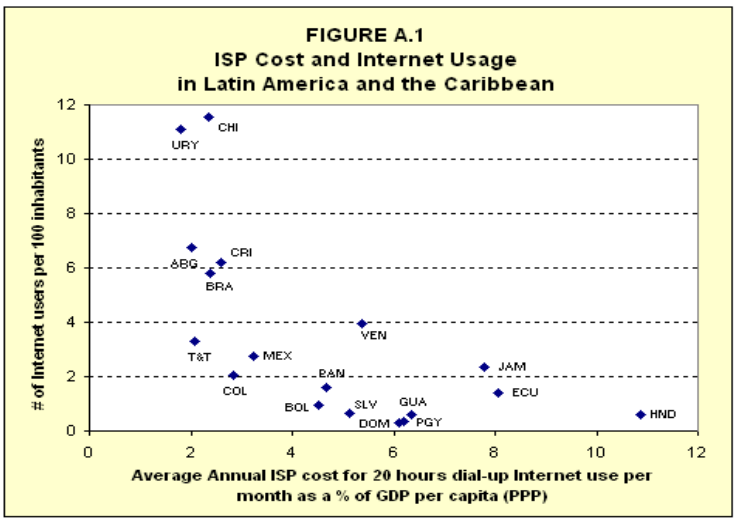
PANEL C	Sub-Indices			PANEL D	Sub-Indices		
Networked Economy	*E-Commerce*	*E-Government*	*General Infrastructure*	**Networked Society**	*Networked Learning*	*ICT Opportunities*	*Social Capital*
BRA	*BRA*	*BRA*	*UGY*	CHI	*CHI*	*CHI*	*TRT*
CHI	*ARG*	*CHI*	*TRT*	CRI	*CRI*	*CRI*	*UGY*
ARG	*CHI*	*MEX*	*JAM*	TRT	*BRA*	*BRA*	*ARG*
UGY	*MEX*	*ARG*	*CHI*	BRA	*ARG*	*PAN*	*CRI*
MEX	*PAN*	*UGY*	*ARG*	ARG	*UGY*	*MEX*	*JAM*
JAM	*UGY*	*JAM*	*MEX*	UGY	*MEX*	*DOM*	*PAN*
TRT	*VEN*	*CRI*	*PAN*	PAN	*TRT*	*TRT*	*CHI*
PAN	*TRT*	*COL*	*PGY*	MEX	*JAM*	*HND*	*MEX*
CRI	*CRI*	*PER*	*CRI*	JAM	*SLV*	*ARG*	*PER*
VEN	*DOM*	*SLV*	*BRA*	VEN	*VEN*	*VEN*	*PGY*
SLV	*COL*	*PAN*	*SLV*	DOM	*COL*	*SLV*	*ECU*
DOM	*JAM*	*DOM*	*VEN*	PER	*DOM*	*GUA*	*VEN*
PER	*PER*	*VEN*	*DOM*	SLV	*PER*	*JAM*	*BOL*
COL	*PGY*	*NIC*	*PER*	COL	*PAN*	*UGY*	*BRA*
PGY	*SLV*	*ECU*	*ECU*	PGY	*ECU*	*COL*	*COL*
ECU	*GUA*	*GUA*	*HND*	ECU	*PGY*	*PGY*	*DOM*
GUA	*NIC*	*TRT*	*COL*	HND	*NIC*	*PER*	*SLV*
HND	*HND*	*PGY*	*GUA*	BOL	*GUA*	*NIC*	*HND*
NIC	*ECU*	*BOL*	*BOL*	GUA	*BOL*	*ECU*	*NIC*
BOL	*BOL*	*HND*	*NIC*	NIC	*HND*	*BOL*	*GUA*

Source: Based on The Global Information Technology Report 2001-2002: Readiness for a Networked World, Center for International Development at Harvard University and World Economic Forum: Oxford University Press, 2002.

Country rankings (from "most advanced" to "least advanced") for the constituent elements of *Enabling Factors* are offered in Table A.2. Among other features, it is seen that in Network Access (panel A), El Salvador, Mexico, and Venezuela display an imbalance between their relatively strong achievements in terms of information infrastructure and the lagging hardware, software, and support sub-index which reflects such data as the number of PCs per 100 inhabitants, the availability of specialized IT services, and the availability of software products fitting local needs. In Network Policy (panel B), Chile and Uruguay, by some standards the most networked countries in the Region, do well in terms of both of the sub-indices and therefore emerge on the top of the list for this indicator. In contrast, Costa Rica and Trinidad and Tobago display an uneven performance. They rank highly in terms of the overall business and economic environment, but relatively poorly in ICT policy, mostly because of their continuing telecom monopolies. As a result, their Network Policy ranking is less favorable than one might expect it to be. Brazil, Colombia and Venezuela, on the other hand, display the opposite pattern: they are shown to be rather effective in terms of ICT policy, but are downgraded for the overall index because of their perceived lower-quality business and economic environment.

In Networked Economy (panel C), Brazil (followed by Chile, Argentina, Mexico and Uruguay) tops the ranking for e-government and e-commerce, with Panama also among the strong performers in the latter field. The measures of e-government include the availability of online government services; the extent of government web sites; and business Internet-based interactions with government. The measures of e-commerce include survey data on B2B and B2C e-commerce transactions, estimated to have exceeded US$ 1 billion in Brazil in 2001; use of Internet-based payments systems; sophistication of online marketing; and other variables. Finally, in Networked Society (panel D), Chile and Costa Rica, followed by Trinidad and Tobago, Brazil, Argentina and Uruguay lead the Region. This indicator is based on sub-indices for e-learning, "ICT opportunities" (really a measure of the size of the IT-skilled workforce), and "social capital" which is proxied by data on inequality of education opportunities and political rights. Central American countries other than Costa Rica trail the Region in this and other sub-indices pertaining to Networked Society.

The last column of Table A.1 suggests that income influences e-readiness, as one would expect, but the correlation is moderate. For example, Bolivia, Paraguay and Peru have a high level of *Network Use* for their ranking on the income scale—an illustration of the fact that connectivity is the consequence of the interplay of many policy variables and national characteristics. Income and the cost of access determine the affordability and (together with other factors) the demand for connectivity. Figure A.1 bears out the expected negative relationship between Internet use and ISP cost—in other words, the cost of Internet access is an obstacle to network use—but the picture demonstrates the presence of "noise" in the data and thus calls for additional considerations in the search for an understanding of the determinants of the use of ICT.



Source: The Global Information Technology Report 2001-2002: Readiness for a Networked World, Center for International Development at Harvard University and World Economic Forum: Oxford University Press, 2002.

Econometric analysis based on a more complete specification identifies the following as having a bearing on Internet use in Latin America: the number of PCs and fixed telephone lines per 100 inhabitants (these are the main access vehicles); the cost of access; GDP per capita; the distribution of income; the share of R&D spending in GDP; and broader country-level determinants such as the ones embodied in the NRI.[73]

The implication of the finding regarding phone lines is that there is a premium on further promoting telecom reform and investment to foster teledensity, cost reduction, and a more far-reaching integration of traditional networks with new communication tools. Regulatory policy should aim to bring tariffs in line with international trends. Special Internet pricing schemes operating through dedicated access numbers available throughout the country can help spread connectivity, as can flat rate local call pricing as practiced in the US. Competition among ISPs does not seem to be a factor in keeping access cost high in Latin America as there are enough of them in most countries (with a variety of business models) to ensure competition today. However, the cost of leased lines and the delivery cost for TCP/IP services is high in many countries because of the monopoly of incumbent operators on international gateways. Interconnection rules can drive up the cost of Internet connectivity when ISPs have to rely on incumbents' local loops to supply services to customers. And bandwidth deficiency can raise cost when it forces local ISPs to purchase expensive international links to reach provider backbones in North America and elsewhere.

[73] Estache, A., M. Manacorda, and T. M. Valletti, *Telecommunication Reforms, Access Regulation, and Internet Adoption in Latin America*, March 2002 at http://econ.worldbank.org/files/13162_wps2802.pdf. On the link between income distribution and the diffusion of the Internet, Estache et al. calculate that a 10% increase in the Gini coefficient halves Internet diffusion in Latin America. This may help explain the spread of Internet use in Uruguay, a country that has not restructured its telecom sector but figures among those with the least unequal distribution of income in the Region.

What can be concluded from all of this? Most importantly, that the goal of an advanced state of e-readiness is not yet attained in most of the Region. In fact, the sequel to CIDH, the Global Information Technology Report 2002-2003, to be published in February 2003, shows Latin America's e-readiness to be slipping on a number of fronts.[74] It is the case that (starting from low bases) much has been achieved in most countries in terms of better connectivity and intensified network use. But large gaps and inequalities remain—within countries (although this was not addressed above), between countries, and between the Region and both the developed world and emerging markets elsewhere. The tables in this Annex identify the "early adopters" of different dimensions of e-readiness and the "laggards," and they provide signals regarding relevant policy circumstances in each case. One of the characteristics of the NRI is that it illustrates the multivariate nature of the challenge of e-readiness, implying a need for action on many fronts to raise a country's position in the global ranking. But the data do suggest priorities, i.e., what countries to focus on if the objective is to reduce e-readiness inequality and what policy variables to select for early gains. The data, therefore, offer helpful clues to those looking for criteria by which to prioritize the Bank's choices in the field of ICT.

[74] INSEAD, World Economic Forum, and Infodev: *The Global Information Technology Report 2002-2003*, Oxford University Press, 2003. Note that comparability between the 2001/2002 and the 2002/2003 data is affected by some methodological changes.

THE WORLD BANK GROUP ICT SECTOR STRATEGY 2001

Growing operational engagement and the launching of important global ICT initiatives since 1995 prompted the World Bank-IFC to evaluate their activities (February 2001) and to come out with a new, consolidated sector strategy (September 2001). The evaluation identified several outstanding and strategic issues (rural and universal access, the need for a holistic approach to information infrastructure issues, and the need for better World Bank Group coordination).[75] It reflected on the apparent paradox of projects that have generally succeeded when measured against their physical and financial objectives but did not bring about measurable improvements in sector outcomes. It recommended that Bank Group objectives in the ICT sector be restated in terms of ultimate results (such as access to information, pricing and quality of service, etc), rather than inputs, and that identified outstanding policy gaps be more firmly taken on board. It also recommended the development of "detailed regional Bank Group [ICT] strategies," a more coherent approach for the Bank Group, and greater attention to the continuous need to upgrade staff skills in this dynamic sector.

The sector strategy notes that ICT offers major opportunities for development and global integration while retaining the identity of traditional societies; increases the economic and social well-being of poor people; empowers individuals and communities; and enhances the effectiveness, efficiency and transparency of the public sector (including the delivery of social services). It spells out the vision for the World Bank Group to be a "catalyst in improving access to ICT and promoting its use for stimulating economic growth, increasing equality and reducing poverty." In pursuit of this vision, the following agenda is proposed:

- Policy and technical assistance: facilitate convergence; develop e-commerce/e-government; expand access beyond the market
- Infrastructure: hard and soft information infrastructure, including Internet and broadband networks; regional solutions
- Applications: sector-based applications, e-government, e-procurement, city to city knowledge networks
- Instruments/vehicles: combine IFC/WB investments; new innovative instruments such as venture capital, capital market facilities, local currency funding; universal access funds; public-private partnerships and cofinancing; small technical assistance grants; special purpose initiatives (IT incubators, e-readiness, etc).

[75] World Bank/OED and OEG, *Information Infrastructure: The World Bank Group's Experience*, The International Finance Corporation and the World Bank, Washington DC, 2001.

SDS/ICT: COMPARISON BETWEEN STRATEGIC OBJECTIVES AND IMPLEMENTED ACTIVITIES (January 1999 – December 2002)

STRATEGIC OBJECTIVE	IMPLEMENTED ACTIVITIES
A) Technical backstopping for ICT projects or project components financed by the Bank (to include the promotion of IT applications in priority sectors and reform of regulatory frameworks)	Support to the implementation of Plan Puebla Panama, with emphasis in the creation of a regulatory framework and fiber optic backbone in the region.
B) Strategic and technical advice to governments on ICT for development	ICT staff participated in Bank's project teams in the following countries: Argentina, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay and Venezuela
C) Preparation of Strategic Analyses of needs, priorities, and opportunities in borrowing countries	a. Support growing interest on the definition of ICT strategies in Argentina, Bolivia, Dominican Republic, Panama and Uruguay (2001) b. Innovation Loan Operations: DR-0149: "Institutional Development for the Information Society in the Dominican Republic" c. Development of the "National Strategies for the Information Society Program (ENSI/ALDEA)" to support requests from countries of the region. Operations have been prepared and are concluded or under execution in Uruguay, Paraguay, Bolivia and the Dominican Republic. New concrete requests have been received from Argentina, Chile and Brazil. d. The "Information and Communication Technology for Development Fund" has the main objective of finance a series of demand, supply and strategic needs analysis in ICT of the borrowing member countries of the Bank.
D) Identification and development of cooperation agreements and co-financing arrangements	a. Development of working relationships with the Secretariat of the Group of Eight on Information Technology for Development, the Interamerican Telecommunications Commission, the Organization of American States, the International Telecommunications Union, World Intellectual Property Organization and European Commission. b. Participation in the launching and is a member of the United Nations Information and Communication Technology Task Force". Member of Latin-American and Caribbean Regional Network of the Task Force. c. Preparation of a Plan of Operations for the "Information and Communication Technology for Development Fund". The Government of Italy approved financing for US$ 3,000,000 for 2002 whit possible replenishment in 2003 for additional US$ 5,000,000, and an Italian Trust Fund for Information and Communication Technology for Development" will be established at the Bank to be managed under technical cooperation guidelines. d. Design of a new financial product with the Multilateral Investment Fund (MIF): ICT Innovation Program for E-Business and SME Development (TC-0201065-RG), a US$ 5,000,000 initiative to be managed by the ICT division.

E) Promotion of linkages between public and private national and regional institutions to support applied research and pilot programs related to utilization of ICTs.	a. Preparation of Technical Cooperations (individual consultants) ATN/IT-7481-RS: Technical Support to Information and Communication Technology Programs and Project Components (Italian Fund); ATN/IT-7480-RS: Strengthening of Electronic Commerce Activities (Italian Fund); ATN/IT-7741-RS: Design of an Information and Communication Technology for Development Fund (Italian Fund) ATN/FF-7676-RG: Expert in Information and Communication Technology (Finnish Trust Fund for Consulting Services) ATN/SI-7850-RS: Development and Consolidation of Content in Information and Communication Technology (Spanish Consulting Fund) for an amount of EUR 59,402. TC-0206008: "Consultancy Services in Information and Communication Technology for Development" (Japan Fund for Consultancy Services) b. Preparation of Technical Cooperations (regional) ATN/IT-7481-RG: Pilot Program for the Diffusion of Information Technologies in Social Programs" (Italian Fund) This Program covers all borrowing member countries of the Bank. Nicaragua, Peru and Uruguay constitute pilot countries. ATN/JF-6528-RG(draft 2001) "Feasibility Study to Replicate the Japanese Model of Digital Communities in the Latin American and Caribbean Regions" (Japan Fund) ATN/NC-7512-RS (TC-0106038-RS) "Information and Communication Technology Training for Women Entrepreneurs in Bolivia and Costa Rica" (Norwegian Technical Cooperation Fund for Consulting Service) TC-0112104: "Telecenters Program for Rural Connectivity" (Fund for Special Operations and TC funds) ATN/SF-7692- Project: TC0110055-BO Institutional Development of Information Society TC0205024-CH E-Commerce Security – Chile TC9911096-PN-E-Commerce Pilot Program – Panama TC0201037-BO - E-Business for SMEs in Bolivia Cyber City/Cyber Community Pilot Project End Publication (Peru) (Japan Special Program)
F) Dissemination and Training	a. ICT staffers assigned to each of the three operational regions. b. Technical Secretariat for the Bank's Strategy Group on “Information and Communication Technology for Development”. Organized the Second Consultative Meeting on Information and Communication Technology for Development scheduled in Washington DC for November 11-12, 2002. Also, organized the first consultative meeting, February 1999. c. Work with the Multilateral Investment Fund and others within the Bank in (i) the definition of a specific cluster on e-commerce (2002) and (ii) the design of support operations for the development of electronic commerce and of information technology small and medium enterprises in Bolivia, Colombia, Chile, Mexico Panama and Peru (2001-2002) d. Follow-up of the Bank's Agenda on Connectivity (Third Summit of the Americas in Quebec) in particular in areas of access, regulation, education, telecenters and democratization. The Bank is member of the Hemispheric Advisory Board of the Institute for Connectivity in the Americas. e. Organization and/or Participation in Conferences: Costa Rica (October 1999), New Orleans (March 2000), Mercosur (July 2000), Nicaragua (September 2000), Jamaica (November 2000), El Salvador (November 2000), Finland (February 2001), Regional (May 2001), Lima, Peru (May 2001); Washington DC (May 2001); Rio de Janeiro, Brazil (June 2001); Nicaragua (June 2001); Genoa, Italy (July 2001); Cartagena,

	Colombia (July 2001); Madrid, Spain (September 2001); Ottawa, Canada (October 2001); Rio de Janeiro, Brazil (November 2001); "GIS Day" and related seminars in Washington DC November 2001); Belgium (November 2001) San Salvador, Salvador (November 2001, June 2002 and September 2002); Washington DC: "EarthData, Turning Spatial Data into Knowledge" (April 2002), "Land Titling Networks in Developing Countries" (May 2002), "E-Government--E-Business--E-Solution" (May 2002) and "Digital Aerial Imagery for Land Resource Management" (June 2002); "Entreprise Latin America Strategic Wireless Conference" Brazil (August 2002), "Entreprise Latin America: E-Commerce Conference" Brazil (September 2002), "First Telecommunications Forum" El Salvador (October 2002), "Forum Internet without Borders" Ecuador (October 2002), Regional Consultative Meeting: Washington DC (November 2002), "Cadastral Applications in the Developing World" Washington DC (November 2002), E-government for Central America, Honduras (November 2002), "GIS day" Washington DC (November 2002) f. Publications: E-Commerce Bulletin; "Venture capital and e-commerce in Latin America"; "Business to Business Marketplaces in the Wood Industry and their Prospective Introduction in Latin America"; "Digital Dialogue and Divide: Promoting E-government for Regional Development"; "E-Marketplaces in Latin America" g. Working papers: "Public Policy in ICT for Development"; "Intellectual Property Rights and Information and Communication Technology: A Challenge for the IDB" ; "ICT in Knowledge Economy"; "Gender and ICT in Latin America". f. Commissioned Studies: "Informal Group on e-commerce", "Action Plan for ITDU 2000-2001" (March 2000); "Information Technology and the Bank's Lending Program, 1999" (July 2000); "Electronic Commerce and Development: Implications for IDB Action" (November 2000); Telecenters for Socioeconomic and Rural Development in Latin America and the Caribbean. Investment Opportunities and Design Recommendations with Special Reference to Central America, (sponsored by the FAO, ITU and the IDB); ICT-Related Funding in the IDB Projects: A proposal for a methodology to measure its magnitude and character (June 2002); "Electronic Government Strategies in the Countries of the Bank's Region 1: A Definition of an Analysis Model and Case Studies" (in execution as of August 2002); Update of the IDB ICT for Development Strategy (OP-711) (in execution as of August 2002), "Evaluation of Regulatory Frameworks related to E-Commerce and E-Government in Mercosur and Central American Countries"; "Basin Priority Sustainable Management" GU0133 Information system to monitor use of land, and risk management, "South Coast Sustainable Development Program" JA0112, Basic Education, Access, and Management Support Program (BEAMS) GY 0063; "Quito Metropolitan District Environmental Health Program" EC-0200. g. Conference Organization: Organized "Seminars on ICT for Development" in Costa Rica and Jamaica to support the countries in their design of national policies and plans; organized "Regional seminar on ICT for Development and integration" in Uruguay and organized "IDB Annual Meeting Seminar on ICT for Development" (March 2000)

TELECOM INVESTMENTS BY CAF, IFC AND THE WORLD BANK (LATIN AMERICA AND THE CARIBBEAN)

The strategy of the Corporación Andina de Fomento in telecommunication is to foster interconnection among member countries.[76] It has made loans to Orbitel S.A. (Colombia, network build-out), Infonet (Venezuela, wireless telephony in rural areas) and Telefonica del Peru (supporting Telefonica's investment plan), among other investments.

The strategy of the World Bank/IFC in ICT is to increase access, broaden reform, increase human capacity for ICT, and foster content and applications. IFC's investments in Latin America include: Nahuelsat in Argentina (manufactures, launches and operates communications satellites); Telecel II in Bolivia (mobile); Convergence (a broadband communications provider in Mexico and Central America); Telemovil (a cellular operator in El Salvador); Mossel (a nation-wide digital GSM cellular network in Jamaica); and Movilnet (a mobile cellular subsidiary of CANTV in Venezuela).[77] The World Bank supports the OECS Telecommunications Reform Project[78] and is active in numerous Latin American and Caribbean countries in projects and initiatives to foster connectivity among disadvantaged groups and promote ICT applications in education, business development, and multi-partner public policy networks.

[76] In 1995 CAF produced the study *Telecomunicaciones e Informáticas Andinas,* which proposed a focus on cross-border interconnection: *La estrategia de la CAF se ha concentrado en apoyar la consolidación de las empresas de telecomunicaciones de sus países accionistas y en respaldar proyectos que contribuyan a la ampliación de sus radios de cobertura mas allá de sus fronteras nacionales, de manera que puedan acceder más eficientemente a los procesos de interconexión regional e internacional (cf. the CAF website).*

[77] http://lnweb18.worldbank.org/ict/projects.nsf/..

[78] http://www4.worldbank.org/sprojects/Project.asp?pid=P035730

IIC INVESTMENTS IN THE TECHNOLOGY SECTOR

Direct investments in technology companies (approval year in parenthesis):

1. Impsat, Argentina (1990). This was a $4.372 million loan and equity investment for the first privatized telecommunications company in Latin America which provides data transmission. The project helped finance the construction, installation and operation of a state of the art satellite data communications network using VSAT remote stations and master hub. The company subsequently expanded to other countries in Latin America. IIC has sold its equity stake and the loan has been fully repaid.

2. Impsat, Colombia (1992). This was a $10 million loan to Impsat, Colombia, similar to the Impsat, Argentina project. The same business model was followed. Services include domestic voice, data and video conferencing transmission through VSAT or dedicated channel technology. Impsat is the market leader in Colombia with 44% of the market share. The loan has been fully repaid.

3. Condicel, Costa Rica (2000). This is a $ 4 million loan to Condicel, which is a consortium of 3 companies (2 Costa Rican and 1 Colombian). Condicel has a concession in Costa Rica to install, lease and operate 15,000 telephone booths throughout the country. The loan is fully disbursed.

Investments in technology companies through Private Equity Funds:

1. Venture Fund/Brazil (1989).

   - Brazil. In 1999, the Fund invested $58.000 in an information technology company producing both hardware and software. This investment has been written off.

2. Regional Fund A (1993).

   - Brazil. In 1999, the Fund made a $10.4 million investment in a company that develops, markets and implements enterprise resource planning software for SME's. The company is seeking a listing in the stock market.
   - Argentina. In 2000, the Fund made a $600.000 investment in a company that provides Internet-based transportation and logistic services in Latin America. The investment is still in the Fund's portfolio and will breakeven this year.

3. Regional Fund B (1995).

   - Panama. In 1998, the Fund made a $3.345 million investment in an Internet service and data services provider. The company has been sold.
   - Costa Rica. In 1996, the Fund made a $3 million investment in a business software company. The company has undergone restructuring.
   - El Salvador. In 1997, the Fund made a $750.000 investment in a technology company. The company has been sold.
   - Panama. In 1997, the Fund made a $1.6 million investment in a technology company that operates a worldwide satellites network for data transmission. The company has undergone restructuring.

4. Private Equity Fund/Brazil (1996).

- Brazil. In 2000, the Fund made a $4.5 million investment in a cable TV company. The company is in the process of being sold.

5. Regional Fund C (1997).

- Regional. In 1999, the Fund made a $1 million investment in an on-line consumer-to-consumer auction community in Latin America. The investment is in the process of being written-off.
- Regional. In 2000, the Fund made a $3.5 million investment in a healthcare portal that services consumers, professionals and healthcare companies in Latin America. This investment is in the process of being written-off.
- Regional. In 1999, the Fund made a $2.25 million investment in an on-line job recruitment network in Latin America. This investment will be written-off.
- Andean region. In 1997, the Fund invested $29.4 million in the leading provider of consumer and business broadband communication services. The investment remains in the Fund's portfolio.
- Regional. In 2001, the Fund invested $2.6 million in a company that integrates Internet systems. The investment is still in the Fund's portfolio.
- Brazil. In 2001, the Fund made a $400.000 investment in a security service provider. The investment remains in the Fund's portfolio.
- Regional. In 2000, the Fund invested $3.1 million investment in an on-line travel agency. The investment will be written-off.
- Regional. In 2000, the Fund made a 23$ investment in a broadband network company operating in Brazil, Mexico and Colombia. The investment remains in the Fund's portfolio.

6. Regional Fund D (1997).

- Brazil. In 2000, the Fund invested $ 8 million in a company that bundled software services. The investment has been written-off.
- Brazil. In 2000, the Fund invested $ 25.6 million in a company providing digital services for buildings in Sao Paolo. The company remains in the Fund's portfolio.
- El Salvador. In 1998, the Fund made a $ 9 million investment in a cable television company. The company remains in the Fund's portfolio.
- Regional. In 1998, the Fund made an investment of $ 5.5 million in a company that delivers digital services for buildings. It operates in Mexico, El Salvador and Honduras. The company is seeking additional investors.

7. Regional Fund E (1997).

- Regional. In 2000, the Fund invested $ 10 million in a company that provides Internet content and connectivity services for physicians, patients and healthcare professionals in Brazil, Argentina and Mexico. The company is in the process of being sold.

8. Private Equity Fund/Mexico (1997).

- Mexico. In 2000, the Fund invested $ 3 million in an Internet-based platform for cash management. The company is in the Fund's portfolio.

- Mexico. In 2001, the Fund invested $ 6.5 million in a company that provides payroll services to companies. The investment is still in the Fund's portfolio.

9. Private Equity Fund/Brazil (1998).

- Brazil. In 1999, the Fund made a $ 970.000 investment in an information technology company located in Minas Gerais. This investment has been written-off.

10. Regional Fund F (1997).

- Brazil. In 1998, the Fund invested $ 3.7 million in a large software company with 300 employees. The investment remains in the Fund's portfolio.
- Brazil. In 1996, the Fund invested $ 3.3 million in a pager company. The company has been sold.

11. Regional Fund G (1998).

- Peru. In 2000, the Fund invested $ 9 million in an Internet company. The company will be sold.

Note: The Funds listed above are all separate entities that received IIC equity investments. The year in parenthesis is the year of IIC's approval.

PORTFOLIO OF MULTILATERAL INVESTMENT FUND PROJECTS[79] WITH IDENTIFIABLE ICT COMPONENTS (January 1999 - November 2002)

PROJECT NUMBER	COUNTRY	BOARD APPROVAL DATE	PROJECT NAME AND OBJECTIVES	EXECUTING AGENCY	PROJECT COMPONENTS	ICT COMPONENTS[80]
REGION 1						
MIF/AT-247 TC-9810476 Maximum Capital $6.3 million (MIF up to $3.0 million)	BRAZIL Disbursed 11-12-02 **56.1%**	2 June 1999	**Equity Investment in the Investment Fund for Emerging Technologies Based Companies in Rio Grande do Sul** Capital appreciation via minority venture capital investments in small enterprises with innovative technology in their products and services	Investment Fund for Emerging Technology Based Companies in Rio Grande do Sul, regulated by Brazil's Securities Commission (CVM)	Development Objectives: ▪ (1) Provide financial mechanism to supplement SEBRAE/RS's small enterprise support program ▪ (2) Provide capital for expansion of small technology based companies	Information technology and telecommunications are eligible sectors
MIF/AT-340 TC-0005044 Maximum Capital $12.0 million (MIF-$3.0 million)	BRAZIL Disbursed 11-12-02 **8.9%**	15 December 2000	**Equity Investment in the Santa Catarina Investment Fund for Technology Based Start-Ups** Capital appreciation via temporary, minority stake equity and quasi-equity investments in technology start-ups	Santa Catarina Investment Fund for Technology Based Start-Ups (SCTec)	Development Objectives: ▪ (1) Help grow the economy of Santa Catarina and be its principal source of venture capital ▪ (2) Help expand small, technology-based enterprises	**No specific budget data** 53% of enterprises in portfolio are software companies; also, telecommunications, hardware, internet
MIF/AT-412 TC-0009012 Maximum Capital $15.0 million (MIF - $6.0 million) Approved: $0.8 million	BRAZIL Disbursed 11-12-02 **10.0%**	16 May 2001	**Northeast Brazil Small Business Fund** Promote growth of innovative small enterprises (SEs) by providing access to capital financing, strengthening business skills, and modernizing management	Banco do Nordeste and Banco Pactual	(1) Establish venture capital fund aimed at innovative and technological SEs (2) Supply business training (3) Stimulate new business initiatives	**$15.0 million (max)** Venture Capital fund's strategy focuses on investment opportunities in high-growth technology clusters including software
MIF/AT 413 TC-0101064 Total: $1.5 million (MIF - $0.9 million)	BRAZIL Disbursed 11-12-02 **34.8%**	27 June 2001	**Information Technology Program "Rio Informático"** Improve business models for IT centers; train and provide technical assistance to local entrepreneurs and microenterprises, and low-income population, particularly young adults	Viva Rio in association with the Comitê para Democratização da Informática (CDI)	(1) Strengthening of existing centers ($0.5 million) (2) Implementation of new IT service centers ($0.3 million) (3) Training partnerships with IT companies (4) Institutional strengthening of Viva Rio and CDI ($0.2 million)	**$0.9 million** Provides new equipment and software for IT centers, training for the trainers, and the development of an internet portal.
MIF/AT-439 TC-0007028 Up to $3.2 million (MIF -$1.6 million)	BRAZIL Disbursed 11-12-02 **10.0%**	10 October 2001	**Support for the Development of New Agricultural Technology Based Enterprises and Transfer of Technology** Help make new technological services and products available to agricultural producers for improved growth in the agribusiness sector	Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA)	(1) Instruments for incubation system (2) Creation of pilot projects for starting new enterprises (3) Coordination and monitoring	**$1.9 million** Incubation system, pilot projects, and training seminars.
MIF/AT-408 TC-0012072 Total: $1.9 million (MIF - $1.0 million)	URUGUAY Disbursed 11-12-02 **16.9%**	16 May 2001	**Information Technology Company Start Up Program** Boost growth in the information and telecommunication technology sector by promoting business start-ups via incubation system to reduce risks	Laboratorio Tecnológico del Uruguay (LATU)	(1) National start-up competition (2) Training in business plan preparation (3) Incubator implementation and support (4) Publicity and dissemination	**$1.3 million** Incubator activities, upgrade of computer equipment, and acquisition of information and communication resources.
MIF/AT-409 TC-9910056 Total: $1.6 million (MIF - $0.9 million)	URUGUAY Disbursed 11-12-02 **10.0%**	16 May 2001	**Business Development Program for the Software Industry** Help increase the competitiveness of small software-producing businesses in the global market: training in quality and cost control, strengthen management, support regulatory, tax, and financial framework	Uruguayan Software Association	(1) Quality: efforts to introduce quality standards for software production and management (2) Strengthen business management: training (3) Standards component: design tax mechanisms, identify financial schemes to promote fluidity in innovation process in the sector	**$68,000** Hardware and software acquisitions and development of a website.

[79] These include projects in execution with one or more percent of loan disbursed on November 12, 2002.
[80] ICT costs listed here are approximations appearing in the consolidated budget or in the description of project components in loan documents. Budgeting of ICT components tends not to be very detailed and standards of budgeting vary. In most cases, these costs exclude consulting services and training.

REGION 2						
MIF/AT-304 TC-9901043 Total: $1.5 million (MIF - $0.9 million)	COSTA RICA Disbursed 11-12-02 **20.1%**	10 November 1999	**Project to Develop Suppliers for Multinational High-Tech Enterprises** Help increase national added value in the production of Multinational High-Tech Enterprises and SME competitiveness; improve capacity of SMEs	Fundación Centro Alta Tecnología	(1) Pilot Supplier Development Program (2) Integrated information system (3) Establish a National Office for Supplier Development	**$0.1 million** Information system on offer and demand specifically targeting high-tech multinational companies and SMEs. Necessary equipment, software and Internet access.
MIF/AT-417 TC-9806110 Total: $1.9 million (MIF - $1.2 million)	PANAMA Disbursed 11-12-02 **27.6%**	27 June 2001	**Support for the Panama Technology Business Accelerator** Promote technology based entrepreneurship via formation and accelerated growth of new business ventures especially in information and communication technology (ICT)	City of Knowledge Foundation	(1) Structuring of PTBA and staff development (2) Business management – marketing counseling and training services (3) Innovation development (4) Private sector outreach	**$0.7 million** High speed connectivity, hardware and software, IT consultants on international technology and knowledge transfer, and computer equipment for innovation centers.
REGION 3						
MIF/AT-380 TC-0003033 Total: $3.0 million (MIF -$1.5 million)	COLOMBIA Disbursed 11-12-02 **10.0%**	6 December 2000	**Program for Exporter Information on the Internet** Improve, expand, and disseminate content of the Intelexport system and to promote exports of nontraditional products	Proexport Colombia	(1) Redesign and improve the Intelexport system (2) Supply continuous data on exporters (3) Disseminate system among exporters and importers (4) Extend benefits to other countries in the region	**$0.3 million** Diagnosis of information infrastructure needs, creation of "ventanilla única virtual", computer equipment, development of electronic transactions' system and training workshops.
MIF/AT-388 TC-0007041 Total: $0.6 million (MIF - $0.4 million)	ECUADOR Disbursed 11-12-02 **43.2%**	30 March 2001	**E-Commerce Pilot Project for Small Scale Artisanal and Agricultural Producer Groups** Enhance the marketing of craft and agricultural products of small-scale grass roots producer groups and organizations: pilot program for new commercial tools; strengthen entrepreneurial capacity	Fondo Ecuatoriano Populorum Progressio	(1) Pilot program for introducing an e-commerce platform (2) Advisory support for business management and improvements in product quality and presentation	**$0.3 million** Training workshops, creation of a technology toolbox, and necessary computer equipment.
MIF/AT-348 TC-0005056 Total: $1.7 million (MIF - $1.0 million)	PERU Disbursed 11-12-02 **47.6%**	9 August 2000	**Interactive Distance Learning System for Technology Education** Help improve quality of human resources in technical areas, to boost productivity and instill new practices and technologies via virtual campus for distance technology	Instituto Tecnológico Superior	(1) Development of new professional training programs (2) Develop continuing training system for professionals and technicians (3) Institutional strengthening	**$0.9 million** Software development, required communication resources, training materials, connectivity and computer equipment.

PORTFOLIO OF REGIONAL TECHNICAL COOPERATION ACTIVITIES[81] WITH IDENTIFIABLE ICT COMPONENTS (January 1999 - November 2002)

PROJECT NUMBER	BOARD APPROVAL DATE	PROJECT NAME AND MAIN OBJECTIVES	EXECUTING AGENCY	SPECIFIC PROJECT ACTIVITIES	ICT COMPONENTS[82]
MIF/AT-226 TC-9805245 $1.0 million (MIF - $0.6)	13 January 1999 Disbursed 11-12-02 **51.7%**	**Project for Electronic Marketing of Handicrafts** Promote the export competitiveness of handicraft producers' organizations: transfer technology, market information, strengthen capacity of organizations	Asociación para la Promoción del Comercio Equitativo de Centroamérica, México y el Caribe (CRECER)	(1) Technology transfer (2) Development of marketing and business management capabilities: electronic business information system (3) New product development and design	▪ **$0.1 million** ▪ Computer equipment, development of web page, digital imaging resources, database creation
AT-1202 TC-9811022 $0.5 million IDB	12 November 1999 Disbursed 11-12-02 **99.4 %**	**International Virtual Education Network for the Enhancement of Science and Mathematics Learning (Plan of Operations)** Ensure that the multinational IVEN initiative improves the quality and effectiveness of science and mathematics teaching	IDB, through SDS/EDU	(1) Provide consultant services to coordinate the work of cross-country activities (2) Help build up a clearinghouse of international experience, multi media materials, and web-sites	▪ **$0.3 million** ▪ Info technology services
MIF/AT-420 TC-0011006 $23.8 million (MIF - $10.0)	18 July 2001 Disbursed 11-12-02 **5.0%**	**Youth Employment: Technologies in the Workplace Program** Improve the employability of disadvantaged youth, ages 16-29, via information technology skills	International Youth Foundation as co-financing institution, and up to 40 NGOs from the region	(1) Challenge grants to support projects that establish partnerships (2) Learning and dissemination to document lessons learned and promote best practices	▪ **$ 18.8 million** ▪ Grants to support projs that provide employment training in info technology, especially targeting the youth
AT-1235 TC-0012067 $0.5 million (IDB-$0.3)	6 September 2001 Disbursed 11-12-02 **52.3 %**	**Aplicaciones de Internet para el Aprendizaje Educativo (Plan de Operaciones)** Contribute to improvement of academic achievement (primary and secondary schools) in science and mathematics via information technology	Inter-American Development Bank	(1) Integration of the Internet into the curriculum (2) Dissemination activities (3) Program evaluation	▪ **$0.4 million** ▪ Integration of new technologies in curriculum ▪ Adapt and teach material, equipment, & provide connectivity

[81] These include projects in execution with one or more percent of loan disbursed on November 12, 2002..

[82] ICT costs listed here are approximations appearing in the consolidated budget or in the description of project components in loan documents. Budgeting of ICT components tends not to be very detailed and standards of budgeting vary. In most cases, these costs exclude consulting services and training.

PORTFOLIO OF SCIENCE AND TECHNOLOGY PROJECTS[83] WITH IDENTIFIABLE ICT COMPONENTS (January 1999 - November 2002)

PROJECT NUMBER	BOARD APPROVAL DATE	PROJECT NAME AND OBJECTIVES	EXECUTING AGENCY	PROJECT COMPONENTS	ICT COMPONENTS[84]
REGION 1					
AR-0171 $280.0 million (IDB-$140.0/ AR-$140.0)	22 September 1999 Disbursed 11-12-02 **25.0%**	**Technological Modernization Program (TMP II)** ▪ Help make it possible for enterprises – primarily SMEs (small and medium- sized) – to initiate, import, alter or adapt technologies to increase efficiency and competitiveness via credit and noncredit co-financing instruments	Secretariat of Science and Technology (SECyT), Ministry of Culture and Education (MCE)	▪ Promotion of innovation ($110.0 million) ▪ Strategic development of research and development capabilities ($125.0 million) ▪ Support institutional consolidation of scientific and technological institutions ($6.0 million)	▪ Non-reimbursable contributions for innovation projects including "technological activities involving information" ▪ Ensure that researchers have the appropriate infrastructure and access to information services needed to carry on their work effectively
CH-0160 $200.0 million (IDB-$100.0/ CH-$100.0)	29 November 2000 Disbursed 11-12-02 **23.2%**	**Technology Development and Innovation Program** ▪ Help increase competitiveness of Chilean economy by supporting technological innovation and development and transfer to entrepreneurial sectors (small and medium-sized)	Ministry of Economy	▪ Prospective technological studies subprogram ($2.0 million) ▪ ICT subprogram ($60.0 million) ▪ Technological development in the forestry, agriculture, and aquaculture sectors subprogram ($50.0 million) ▪ Environmental management in the productive sector subprogram ($36.0 million) ▪ Promoting quality to improve competitiveness subprogram ($28.0 million) ▪ Support for human capital development (budget included in other components)	▪ **Over $60.0 million** ▪ Strengthening the Technical Secretariat of the Government Committee on New ICT **($2.3 million**) ▪ Support for the use of ICT in enterprises **($7.5 million)** ▪ Strengthening and development of the ICT sector capacity (incubation, technology transfer, R&D financing, training of mgt) **($45.8 million**) ▪ Virtual Online Enterprise System **($4.4 million)** ▪ Expansion of info and dissemination infrastructure for env mgt in the prod sector
UR-0110 $50.0 million (IDB-$30.0/ UR-$20.0)	13 December 2000 Disbursed 11-12-02 **4.4%**	**Technology Development Program** ▪ Help mobilize country's innovative capacity and competitiveness of SMEs via new technologies in production, management, distribution, and science and technology	Ministry of Education and Culture (MEC)	▪ Support innovation and boost competitiveness of companies ($25.8 million) ▪ Science and technology development and application ($12.2 million) ▪ Institutional strengthening ($4.0 million)	▪ Support companies to develop info services & technologies and/or the use of computer communications networks to support innovative processes ▪ Promote technological mgt centers, business incubators, and technology councils ▪ Promotion of basic research in info sciences and telecommunications ▪ Equipment and software for S&T services ▪ Strengthen S&T institutions (strengthen info systems, produce new databases)
REGION 2					
GU-0135 $13.9 million (IDB-$10.7/ GU-$3.2)	13 October 1999 Disbursed 11-12-02 **1.8%**	**Program of Support for Technological Innovation** ▪ Enhance the productivity and competitiveness of SMEs via funding for innovation, extension and information service, consolidating policy framework	National Science and Technology Council	▪ Financing for technological innovation ($6.2 million) ▪ Technology Information Service ($3.0 million) ▪ Strengthening the enabling framework to foster innovation ($2.9 million)	▪ **Over $9.2 million** ▪ Creation of a tech extension services network **($2.4 million)** ▪ Tech Info Node for SMEs **($0.3 million)** ▪ Community Info and Tech Centers **($0.3 million)** ▪ Tech Resource Centers with computers and access to the Internet ▪ Promotion of tech innovation or modernization projects in SMEs **($6.2 million)**
NI-0147 $9.5 million (IDB-$6.8/ NI-$2.7)	18 June 2001 Disbursed 11-12-02 **5.4%**	**Project to Support Technological Innovation in Nicaragua** ▪ Lay the foundations for a framework of action that facilitates technology transfer and innovation in SMEs	Ministry of Development, Industry and Trade	▪ Pilot scheme to remove obstacles to supply and demand: matching grants and financial outsourcing ($4.7 million) ▪ Strengthen national innovation system (NIS) ($3.8 million)	▪ **Over $5.5 million** ▪ Establishment of Technology Facilitation Centers (training activities, access to info services, the Internet, content development) **($0.9 million)** ▪ Coordination of the Standardization Measures Info System ▪ Promotion of technology innovation projects in SMEs **($4.6 million)**

[83] These include projects in execution with one or more percent of loan disbursed on November 12, 2002.
[84] ICT costs listed here are approximations appearing in the consolidated budget or in the description of project components in loan documents. Budgeting of ICT components tends not to be very detailed and standards of budgeting vary. In most cases, these costs exclude consulting services and training.

PN-0134 $5.3 million (IDB-$3.3/ PN-$2.0)	26 October 2000 Disbursed 11-12-02 **30.9%**	**Project to Support the Implementation of a Science, Technology, and Innovation Center of Excellence in Panama** ▪ Strengthen organizational structure of the City of Knowledge Foundation (CK)	City of Knowledge Foundation	▪ Organizational strengthening and monitoring and evaluation ($0.5 million) ▪ Marketing: promotion and diffusion ($1.2 million) ▪ Upgrading of IT ($1.1 million)	▪ **$1.2 million** ▪Upgrading of IT (high-tech "intelligent" building) **($1.2 million)**
REGION 3					
VE-0112 $200.0 million (IDB-$100.0/ VE-$100.0)	17 November 1999 Disbursed 11-12-02 **18.8%**	**Second Science and Technology Program** ▪ Strengthen the national innovation system	National Science and Technology Research Council (CONICIT)	▪ Financing for R&D ($40.0 million) ▪ Training for science and technology research ($50.0 million) ▪ Strengthen R&D centers and technology services ($20.0 million) ▪ Promotion of innovation ($40.0 million) ▪ Dissemination ($10.0 million) ▪ Information system ($8.0 million) ▪ Institutional strengthening ($12.0 million)	▪ **Over $24.0 million** ▪ Info services: financing of info projects & networks, tools to facilitate access, use and discussion of info **($8.0 million)** ▪ Strengthen sector technological centers **($4.0 million)** ▪ Procurement of equipment to support interconnection (computers, Internet access) in emerging academic inst ▪ Technical support and software for info networks at postgraduate programs ▪ Training to support technological development in SMEs **($6.0 million)** ▪ Innovation projects in companies **($6.0 million)**

PORTFOLIO OF EDUCATION PROJECTS[85] WITH IDENTIFIABLE ICT COMPONENTS (January 1999 – November 2002)

PROJECT NUMBER	BOARD APPROVAL DATE	PROJECT NAME AND OBJECTIVES	EXECUTING AGENCY	PROJECT COMPONENTS	ICT COMPONENTS[86]
REGION 1					
BO-0197 $7.5 million (IDB-$6.0/ BO-$1.5)	26 October 2001 Disbursed 11-12-02 **5.5%**	**Program to Strengthen Technical and Technological Training** ▪ Design a SFTT (technical and technological training system) aimed at strengthening quality forma and alternative education relevant to the workplace	Ministry of Education, Culture, and Sports	▪ Formulating an SFTT policy ($1.4 million) ▪ Implementing innovative projects for policy making ($3.2 million) ▪ Support for technical training policy ($1.7 million)	▪ Teacher training ▪ Structure and organization of technical and technological training curriculum ▪ Developing STFF info system ▪ Computer equip, databases, software, Internet connection
BR-0300 $500.0 million (IDB-$250.0/ BR-$250.0)	23 November 1999 Disbursed 11-12-02 **5.6%**	**Improvement and Expansion for Secondary Education "Escola Jovem"** ▪ Promote reform and expansion by improving quality and coverage to increase equity and social and economic development: reach more school-age children, reduce repeaters and dropouts, performance achievement tests	Department of Secondary and Technical Education, Ministry of Education (SEMTEC/MEC)	▪ Financing investment projects at the state level (Phase I: $450.0 million) ▪ National policies and programs (Phase I: $37.5 million)	▪ **Over $14.5 million** ▪ Strengthen info systems, procurement of equip **($3.2 million)** ▪ Telecourse **($9.5 million**) ▪ Virtual Reference Center for teachers **($0.3 million)** ▪ International Virtual Education Network (IVEN): online, video, and computer technologies **($1.5 million)** ▪ Teacher training in the curricular use of new technologies ▪ Producing daily secondary school broadcast over TV Escola
PR-0117 $44.0 million (IDB-$40.0/ PR-$4.0)	5 July 2000 Disbursed 11-12-02 **19.7%**	**Program to Strengthen Basic Education Reform** ▪ Improve quality and equity of basic education to reduce poverty and contribute to social and economic development	Ministry of Education and Culture (MEC)	▪ Activities targeting primary schools ($18.8 million) ▪ Improvement of initial teacher training ($1.8 million) ▪ Infrastructure and equipment for expansion ($13.7 million) ▪ Strategic support for MEC operations ($4.6 million)	▪ **$3.4 million** ▪ National Education Evaluation System: equipment, consultants, information systems and statistics **($3.4 million)**
UR-0132 $107.0 million (IDB-$75.0/ UR-$32.0)	14 November 2001 Disbursed 11-12-02 **6.1%**	**Secondary Education Modernization Teacher Training Program** ▪ Attain universal coverage in the first cycle of secondary education (CB – basic cycle), completing the nine years of compulsory schooling ▪ Revamp the second cycle of secondary education (SCEM) via institutional and curricular reform	National Public Education Administration (ANEP)	▪ Consolidation of the CB, plus targeting dropouts ($43.0 million) ▪ Reform academic and technical options ($29.8 million) ▪ Strengthen and consolidate teacher training system ($7.5 million) ▪ Improvement of information processes and systems to enhance education system ($10.0 million)	▪ **$58.7 million** ▪ 60 informatics classrooms, computer network (managerial, academic, and administrative), educational portal, interconnections, website, equipment, teacher training via e-mail and teleconferencing, monitoring and budgetary systems ▪ improvements in info processes and systems to enhance systemic efficiency and mgt
REGION 2					
HO-0141 $29.6 million (IDB-$23.0/ NDF-$6.5/ HO-$0.1)	6 December 2000 Disbursed 11-12-02 **5.2%**	**National Education Reform Program (Third-Level Education and Secondary Education** Improve the educational administration model and increase the coverage of third-level basic education in rural areas: administrative capacity, access, improve teaching practices, strengthen Education Ministry, assess alternative models	Ministry of Education	Components: ▪ Reform of third-level basic education in rural areas ($25.4 million) ▪ Institutional strengthening for education reform ($2.3 million)	▪ Connect BECs with EDUSAT network through 580 satellite dishes and 1,000 TV & VCR sets ▪ Develop an integrated Management Info System with the Ministry of Education
NI-0090 $10.4 million (IDB-$9.4/ NI-$1.0)	5 May 1999 Disbursed 11-12-02 **24.3%**	**Preparation for the Education Reform Program** ▪ Establish a basis for reform of secondary education system as part of policy to promote quality and equity in education	Ministry of Education, Culture and Sports (MECD)	▪ Secondary education reform ($1.1million) ▪ Alternative educational technologies ($5.3 million) ▪ Preschool education ($0.8 million) ▪ Contributions to Supplementary Social Fund ($1.2 million)	▪ **Over $5.3 million** ▪ MECD info system ▪ Telesecundaria: 30 distance learning schools **($3.3 million)** ▪ Alternative instruction tools: audio, video, TVs, computers, Internet **($1.0 million)** ▪ Interactive radio for distance education **($1.0 million)**

[85] These include projects in execution with one or more percent of loan disbursed on November 12, 2002.
[86] ICT costs listed here are approximations appearing in the consolidated budget or in the description of project components in loan documents. Budgeting of ICT components tends not to be very detailed and standards of budgeting vary. In most cases, these costs exclude consulting services and training.

NI-0144 $4.8 million (IDB-$3.8/NI-$1.0)	13 December 2000 Disbursed 11-12-02 **20.5%**	**Modernization and Accreditation of the Tertiary Education Project** ▪ Begin the modernization process of the tertiary education system – public and private	Ministry of Finance and Public Credit (MHCP)	▪ Evaluation process of tertiary education ($1.1 million) ▪ Program for improving the articulation of the tertiary education with the productive sector and with the secondary and technical education ($1.0 million) ▪ Institutional strengthening to generate an efficient & modern university management ($1.2 million)	▪ **$0.3 million** (circa) ▪ Reference in first component to design and create a national university statistics system
REGION 3					
CO-0142 $76.0 million (IDB-$36.0/ CO-$40.0)	22 September 1999 Disbursed 11-12-02 **17.9%**	**New School System Program: Reform of Education Management and Participation** ▪ Initiate reforms to strengthen decentralized independent management, improve efficiency and social equity in resources allocation:	National Ministry of Education (MEN)	▪ Education management in departments, municipalities and schools ($18.2 million) ▪ Incentives to improve education management ($30.0 million) ▪ Information for education management and quality ($14.0 million) ▪ Communication and social mobilization ($5.8 million) ▪ Monitoring and evaluation ($2.5 million)	▪ **$17.0 million** ▪ Info for education mgt **($8.5 million)**: national "highway", network, website, computer equipment, applications, interconnections for horizontal lower level government cooperation ▪ System equipment for Ministry **($2.0 million)** ▪ Development of innovative experiences in school management **($3.0 million)** ▪ Information system **($2.0 million)** ▪ International virtual education network **($1.5 million)**
JA-0059 $39.5 million (IDB-$31.5/ JA-$8.0)	6 September 2000 Disbursed 11-12-02 **1.9%**	**Primary Education Support Project (PESP)** ▪ Contribute to improved performance, efficiency, and equity of the primary education system	Ministry of Education and Culture (MOEC)	▪ Quality assurance ($10.0 million) ▪ Institutional development ($9.3 million) ▪ Civil works ($10.5 million)	▪ **$6.9 million** ▪ Construct integrated educational management information system; establish detailed inventory and school maintenance data base **($4.9 million)** ▪ Use of ICT to develop educational models **($2.0 million)**
PE-0170 $200.0 million (IDB-$120.0/ PE-$80.0)	19 January 2000 Disbursed 11-12-02 **3.8%**	**Program to Improve the Quality of Secondary Education** ▪ Improve quality and increase educational system's relevance and linkage to labor market	Ministry of Education (MED)	▪ Institutional strengthening ($9.9 million) ▪ Improving educational quality ($126.4 million) ▪ Support implementing new school level ($32.3 million) ▪ Pilot project for technical professional training ($6.9 million)	▪ **$51.2 million** ▪ Education IT: 3,000 computer systems and software (servers, networks, facilities, equipment) in 300 schools; teacher training; Expansion of EDURED program and experimentation with the International Virtual Schools Network (IVEN) project **($18.1 million)** ▪ High school technology models **($5.3 million)** ▪ Television and video units **($2.3 million)** ▪ Educational innovations **($3.4 million)** ▪ Info system for the MED **($22.0 million)**
TT-0023 $150.0 million (IDB-$105.0/ TT-$45.0)	26 May 1999 Disbursed 11-12-02 **7.8%**	**Secondary Education Modernization Program** ▪ Support Ministry to reform and expand the secondary sub sector	Ministry of Education (MOE)	▪ Improved education equity and quality ($32.2 million) ▪ Reshifting, rehabilitation and upgrading of school infrastructure ($67.6 million) ▪ Institutional strengthening ($7.5 million) ▪ Studies and measures for improved sector performance ($1.5 million)	▪ **$24.0 million** ▪ Multi-media learning centers, computer laboratories **($20.0 million)** ▪ Educational Management Information System (circa **$4.0 million**) ▪ Curricular development ▪ Teacher training ▪IT Training for MOE managers

PORTFOLIO OF HEALTH SECTOR PROJECTS[87] WITH IDENTIFIABLE ICT COMPONENTS (January 1999 - November 2002)

PROJECT NUMBER	BOARD APPROVAL DATE	PROJECT NAME AND OBJECTIVES	EXECUTING AGENCY	PROJECT COMPONENTS	ICT COMPONENTS[88]
REGION 1					
AR-0120 $167.0 million (IDB-$100.0/ AR-$67.0)	11 August 1999 Disbursed 11-12-02 **10.2%**	**Primary Health Care Services Reform** ▪ Make more efficient and equitable health-care delivery, introducing new health care approaches	Ministry of Health and Welfare	▪ National component ($22.3 million): training, adapting Ministry structure, prepare provincial projects ▪ Primary health care reform in Salta ($35.8 million) ▪ Primary health care reform in La Pampa and Cordoba ($101.5 million)	▪ **$16.3 million** ▪ Hardware, software, consulting **($4.7 million)** ▪ Public information strategy **($1.6 million)** ▪ Distance education **($3.3 million)** ▪ Primary Health Care Information System **($1.7 million)** ▪ Primary Health Care training **($5.0 million)**
BO-0115 $53.7 million (IDB-$45.0/ BO-$8.7)	10 February 1999 Disbursed 11-12-02 **21.2%**	**Bolivian Epidemiological Shield and Support for Health Sector Reform** ▪ Creation of Epidemiological Shield and support to health sector reform	Ministry of Health and Social Insurance	▪ Bolivian epidemiological shield ($40.5 million): Chagas control, prevention, and treatment; National Surveillance System ▪ Support for health sector reform ($5.8 million): studies, initiatives in family care model	▪ **$11.4 million** ▪ National epidemiological information system
BR-0305 $370.0 million (IDB-$185.0/ BR-$185.0)	27 October 1999 Disbursed 11-12-02 **26.5%**	**Project for the Professionalization of Nursing Personnel** ▪ Improve quality of outpatient and inpatient care	Ministry of Health	▪ Schooling and professionalization of nursing personnel ($307.4 million) ▪ Institutional strengthening of agencies that regulate technical human resources training ($21.6 million)	▪ **$4.3 million** ▪ Information system with market trends, and qualitative/ quantitative data on the offer of technical professionals **($2.8 million)** ▪ Equipment for professionalization of nursing personnel **($1.5 million)**
UR-0133 $75.0 million (IDB $75.0)	19 September 2001 Disbursed 11-12-02 **40.5%**	**Health Sector Reform Program** ▪ Ensure continuity of gradual process of reform: unify, integrate, systematize disperse body of regulations	Office of Budget and Planning	▪ Enhance regulatory framework ▪ Strengthen private healthcare delivery subsystem ▪ Strengthen public delivery subsystem ▪ Technical strengthening of Ministry	▪ **No budget specified** but systems are included in project
REGION 2					
BL-0014 $18.1 million (IDB-$9.8/ Others-$8.3)	18 October 2000 Disbursed 11-12-02 **7.9%**	**Health Sector Reform Program** ▪ Raise the health status of population by improving the efficiency, equity, and quality of services	Ministry of Health and Public Service	▪ Sector restructuring ▪ Services rationalization and improvement ▪ Support to the National Health Insurance Fund (NHIF)	▪ **$0.2 million** ▪ Information technology tools (budget not identifiable) ▪ Management control systems (budget not identifiable) ▪ Equipment
GU-0125 $66.1 million (IDB-$55.4/ GU-$10.7)	17 November 1999 Disbursed 11-12-02 **2.6%**	**Health Services Enhancement Program II**	Ministry of Public Health and Assistance	▪ Strengthen Ministry ▪ Increase coverage and quality of basic services ▪ Strengthen insurance system ▪ Increase productivity and hospital quality in seven hospitals	▪ **$5.0 million (circa)** ▪ Information systems to support human resources management reform; management information system for the Ministry; information system for epidemics oversight
PN-0076 $50.0 million (IDB-$35.0/ PN-$15.0)	26 September 2001 Disbursed 11-12-02 **2.8%**	**Multiphase Program for Institutional Transformation of the Health Sector, Phase I** ▪ Improve health and quality of life via institutional transformations	Ministry of Health	▪ Institutional transformation of MINSA as governing & regulatory body ($6.5 million) ▪ Innovations in primary care services ($24.8 million) ▪ Management of health service delivery	▪ **$1.4 million** ▪ Equipment ▪ Support management modernization in hospital services and ministry administration reform
REGION 3					
PE-0146 $125.0 million (IDB-$87.0/ PE-$35.0)	13 October 1999 Disbursed 11-12-02 **5.0%**	**Health Sector Development Program – Maternal and Child Health Care Coverage** ▪ Support modernization and reform in health care system	Ministry of Health	▪ Improve personal and public health care services ($98.3 million) ▪ Develop policy instruments ($2.6 million) ▪ Institutional modernization ($4.9 million) ▪ Public administration ($2.7 million)	▪ **$4.9 million** Information systems to support institutional modernization.

[87] These include projects in execution with one or more percent of loan disbursed on November 12, 2002.
[88] ICT costs listed here are approximations appearing in the consolidated budget or in the description of project components in loan documents. Budgeting of ICT components tends not to be very detailed and standards of budgeting vary. In most cases, these costs exclude consulting services and training.

PORTFOLIO OF MODERNIZATION OF THE STATE PROJECTS[89] WITH IDENTIFIABLE ICT COMPONENTS
REGION 1
(January 1999 – November 2002)

PROJECT NUMBER	BOARD APPROVAL DATE	PROJECT NAME AND OBJECTIVES	EXECUTING AGENCY	PROJECT COMPONENTS	ICT COMPONENTS[90]
AR-0256 $8.0 million (IDB-$5.0/ AR-$3.0) TC Loan	6 October 1999 Disbursed 11-12-02 **1.60%**	**Program of Institutional Strengthening for Foreign Trade Policy** ▪ Strengthen SSCE capacity for analyzing, formulating, administering, and evaluating the instruments of external trade policy ▪ Support linkages between the SSCE and the private sector and provincial government bodies responsible for foreign trade policy	External Trade Subsecretariat (SSCE) of the Secretariat of Industry, Trade, and Mining	▪ Institutional strengthening of the SSCE ($2.8 million) ▪ Coordinate trade policy ($3.2 million) ▪ Management and Administration ($0.6 million)	▪ **$4.1 million** ▪ Evaluation methodologies, early warning systems, new organizational and information systems technologies ▪ Creation of web site for SSCE, publication of database on the web site, electronic processing of commercial procedures ▪ E-commerce as a trading promotion tool
AR-0257 $430.0 million (IDB-$215.0/ AR-$215.0)	6 December 2000 Disbursed 11-12-02 **13.9%**	**Support for Modernizing the Cordoba Provincial Government** ▪ Improve Cordoba's financial and administrative management capacity to lay groundwork for sustainable fiscal balance	The Government of the Province of Cordoba	▪ Modernization of provincial tax administration ▪ Achieve higher quality of public spending ▪ Greater transparency in fiscal and administrative management ▪ Restructure government institutions ▪ Support public policies in social sectors ▪ Strengthen environmental management ▪ Efficiency of legislative management ▪ Integration of government branches	▪ **$43.4 million** for hardware ▪ Management of information technology and equipment; 20,000 work posts connected to network of government branches and agencies ▪ Public infrastructure management: computerization and definition of planning support system; information systems on hydrology/hydro-geology ▪ Geographic Info Systems ▪ Budget publication in the Internet ▪ Info systems to improve adm and law-making processes ▪ Citizen info and service centers ▪ Education info system
AR-0265 $15.0 million (IDB-$7.5/ AR-$7.5)	22 November 2000 Disbursed 11-12-02 **5.0%**	**Institutional Strengthening of the Ministry of Foreign Relations and International Trade** ▪ Medium-term trade promotion policy in place ▪ Greater technical capacity to participate in international trade negotiations ▪ Greater analytical capacity to propose and implement long-term strategies	Ministry of Foreign Relations, International Trade	▪ Foreign trade promotion strategy ($5.1 million) ▪ Strengthening of the Ministry's institutional capacity for international trade negotiations ($3.7 million) ▪ Development of a strategic policy analysis and management program ($3.2 million)	▪ **$2.0 million** ▪ International trade sub-system (updated web site) ▪ Subsystem for identifying potential exports, functioning via web site ▪ Subsystem for exchange of information with provincial governments (web site) ▪ Subsystem for communication with diplomats (web site) ▪ E-commerce training
BO-0159 $6.3 million (IDB-$5.0/ BO-$1.3)	26 April 2000 Disbursed 11-12-02 **52.7%**	**Bolivian Customs Reform and Modernization Project** ▪ Implement, administer, enforce Customs Act ▪ Set up computer system for Customs operations ▪ Strengthen the goods-valuation area ▪ Support establishment of Ethics Office in the ANB (Bolivian Customs Administration)	Bolivian Customs Administration	▪ Customs Tribunal System ($0.3 million) ▪ Compliance Control ($0.5 million) ▪ Computer system ($3.4 million) ▪ Goods valuation ($0.6 million) ▪ Ethics Office ($0.4 million)	▪ **$3.4 million** ▪ Project organization, training, development and implementation, pilot project implementation, operations feedback, fine-tuning of system, system transfer to ANB, operation
BO-0177 $3.0 million (IDB-$2.7/ BO-$0.3) TC Loan	30 June 1999 Disbursed 11-12-02 **10.7%**	**Program for Civil Society and Access to Justice** ▪ Projects with civil society: strengthen and expand services of justice; train and educate ▪ Technical assistance: training for project design and management skills	Ministry of Justice and Human Rights	▪ Civil society projects ($2.3 million) ▪ Technical assistance ($0.2 million)	▪ **$10,000** ▪ Design an information, statistics and control system for management of the program and its projects.

[89] These include projects in execution with one or more percent of loan disbursed on November 12, 2002.
[90] ICT costs listed here are approximations appearing in the consolidated budget or in the description of project components in loan documents. Budgeting of ICT components tends not to be very detailed and standards of budgeting vary. In most cases, these costs exclude consulting services and training.

BO-0180 $100.5 million (IDB-$87.3/ BO-$13.2) Multi-phase	12 March 2001 Disbursed 11-12-02 **4.0%**	**Local Development and Fiscal Accountability Program** ▪ Support Bolivia's policy for increased municipal management efficiency and improve the quality of local government services	Ministry of Finance via National Regional Development Fund and National Fund for Productive Social Investment	▪ Municipal investments ($40.0 million) ▪ Municipal institutional strengthening ($11.0 million) ▪ Program administration and supervision ($3.1 million)	▪ **$9.3 million (circa)** ▪ Implementation of information and internal management control systems, human resource management systems ▪ Real estate registry using GIS technology
BO-0186 $4.0 million (IDB-$3.2/ BO-$0.8) TC Loan	17 November 1999 Disbursed 11-12-02 **38.4%**	**Program of Institutional Strengthening for the Servicio Nacional de Impuestos Internos** ▪ Formulate and implement corporate strategy and planning ▪ Strengthen operational management ▪ Introduce modern tax audit strategy ▪ Reinforce institutional capacity in the area of information technology	Internal Revenue Service	▪ Organizational development ($1.5 million) ▪ Support for auditing ($1.3 million) ▪ Information technology ($0.5 million)	▪ **$0.5 million** ▪ Reinforce the internal revenue service's capacity in the area of information systems management and development.
BO-0189 $9.3 million (IDB-$7.4/ BO-$1.9) TC Loan	1 December 1999 Disbursed 11-12-02 **97.7%**	**Program to Support the Year 2000 National Population and Housing Census** ▪ Provide INE with human, material and financial resources to perform on schedule and with quality ▪ Update country's statistical maps and establish sampling frame for future household surveys	National Statistics Institute	▪ Pre-census stage ($3. 9 million) ▪ Census stage ($3.7 million) ▪ Post-census phase ($1.5 million)	▪ **$2.6 million** ▪ Upgrade the country's statistical maps using GIS (Geographic Information Systems) technology ▪ Data processing ▪ Post-census activities requiring information technology other than described here
BO-0196 $25.0 million (IDB-$20.0/ BO-$5.0)	24 October 2001 Disbursed 11-12-02 **13.2%**	**Modernization of Municipal Financial Administration** ▪ Strengthen national and sub-national financial administration by implementing the integrated administrative system (SIGMA)	Treasury Ministry	▪ Development and implementation of SIGMA in 91 municipalities by the end of 2005 ($16.9 million) ▪ Consolidation of SIGMA in the general accounting directorate: new permanent staff	▪ **$16.0 million** ▪ Hardware ($11.0 million) ▪ Consulting for information technology (circa $5.0 million)
BR-0327 $114.0 million (IDB-$57.0/ BR-$57.0)	12 September 2001 Disbursed 11-12-02 **5.2%**	**Support for Modernization of Pension System Management (PROPREV) – First Phase** ▪ National Social Security Institute, greater efficiency, effectiveness, and transparency in management and administration of General Pension Scheme (RGPS) ▪ Strengthen Pension Secretariat, expand its capacity for providing technical assistance; assist municipalities to formulate reform proposals	Ministry of Pensions and Social Welfare (MPAS)	▪ Modernization of RGPS Administration ($93.6 million) ▪ Development of Public Sector Pension Schemes ($5.8 million) ▪ Program coordination and administration ($3.2 million)	▪ **$36.8 million** ▪ Computer equipment, network hardware, information systems redesign and consulting services ▪ Control mechanisms to support the integrated execution of activities relating to revenue inflows, controls, administrative and legal dispute resolution, and recognition of benefits
CH-0161 $500.0 million (IDB-$300.0/ CH-$200.0)	22 November 2000 Disbursed 11-12-02 **22.1%**	**Program for Improvement of the Efficiency and Management of Regional Investment** ▪ Channel investment resources to promote socioeconomic development ▪ Develop regional governments' capabilities for planning ▪ Strengthen and rationalize the use of investment financing instruments at the regional level. ▪ Support decentralization deepening	Undersecretariat of Regional and Administrative Development (Ministry of the Interior)	▪ Investment ($410.4 million): education, health, sanitation, rural roads, urban paving, rural electrification, rural telephony, flood protection, infrastructure for fishing coves; recreation and sports infrastructure, fire control; urban renewal, public safety ▪ Institutional strengthening ($9.7 million): central and regional governments, technical assistance, equipment for planning and coordination, administrative capacity ▪ Studies to deepen decentralization ($2.0 million): political, administrative and financial, decentralization, citizen participation, land management	▪ **$6.4 million** ▪ At central level, strengthen the Regional Management Info System (SIGRE), an electronic management tool that sets parameters for monitoring and evaluation of regional public administration ▪ At regional level, consultancies, equipment and materials for design and implementation of a system for monitoring and evaluation of regional government administration
CH-0165 $14.5 million (IDB-$8.7/CH- $5.8) Innovation Loan	7 December 2000 Disbursed 11-12-02 **17.2%**	**Program for Strengtening Partnership Between Civil Society and the State** ▪ Foster conditions conducive to more active citizen participation in the design and execution of activities that will enhance the common welfare of Chileans	Ministry of the Interior	▪ Strengthening civil society ($3.8 million) ▪ Citizen participation in public policies and programs ($2.7 million) ▪ Promoting volunteerism ($5.0 million) ▪ Communication strategy ($1.0 million)	▪ **$1.4 million** ▪ Development of a citizen's gateway, the "Portal Ciudadano," over the Internet (assessment of the status of Internet connectivity in Chile, portal design and implementation) ▪ Consolidate various government databases into a single registry of civil society organizations that can be offered over a web site ▪ Institutional design of info systems, including required technological applications and software for administering system ▪ Update or create a web site to facilitate access to govt info

PR-0115 $8.7 million (IDB-$6.0/ PR-$2.7) TC Loan	5 July 2000 Disbursed 11-12-02 **8.5%**	**Fiscal Management Strengthening and Modernization Program** ▪ Framework of rules and regulations ▪ Organizational structures ▪ Procedures, management control systems ▪ Training ▪ Increase coverage of inspection functions ▪ Broaden the active taxpayer base ▪ Integrate information systems	The Ministry of Finance	▪ Strengthening national tax administration ($3.0 million) ▪ Strengthening customs administration ($1.4 million) ▪ Strengthening of financial management ($1.9 million) ▪ Management and administration ($0.4 million)	▪ **$3.4 million** ▪ Tax Administration: Re-engineer existing information subsystems and develop new information modules, resulting in an integrated, streamlined and modern tax info system; Training of staff in the use of tax info systems ▪ Customs Administration: Creation of a technical library (web pages and intranet); expansion of the SOFIA informatics system to every customs unit; support courses in the area of computing ▪ Financial Mgt: support for developing a national communications network with regional govts; development of info technology applications complementary to the central IFMS for dissemination to regional govts; updating of informatics infrastructure
PR-0130 $11.8 million (IDB-$9.2/ PR-$2.6) TC Loan	20 December 2000 Disbursed 11-12-02 **32.9%**	**Program of Support for the 2002 National Population and Housing Census** ▪ Finance human and physical resources and supply funding for efficient census taking, of quality, on schedule ▪ Strengthen management and operational capacity of DGEEC	Statistics, Surveys, and Census Directorate of the Technical Planning Secretariat, Office of the President of Paraguay	▪ Preparatory (pre-enumeration) stage ($5.5 million) ▪ Enumeration ($3.0 million) ▪ Post-enumeration stage ($0.8 million) ▪ DGEEC institutional strengthening ($0.1 million)	▪ **$2.5 million** ▪ Geographic Info System ▪ Processing of returns (capture of census results on magnetic media, computerized data processing to produce tabulations, running of data validation and consistency programs) ▪ Census evaluation and revised population estimates ▪ Release of census results in diskettes, CDs, and web pages
UR-0122 $8.8 million (IDB-$6.1/ UR-$2.6)	15 November 2000 Disbursed 11-12-02 **5.0%**	**Program for Strengthening the Judicial System** ▪ Improve the quality and productivity of administrative services ▪ Strengthen management and streamline non-core administrative tasks ▪ Reduce time to process judicial cases	Supreme Court	▪ Reorganization and strengthening of administrative procedures in the judicial branch ($1.5 million) ▪ Strengthening management of the Supreme Court ($0.9 million) ▪ Improving court services ($4.1 million)	▪ **$1.1 million** ▪ Design and installation of a new computerized administrative case mgt system, strengthening of Info Tech Division, and purchase of computer hardware for DGSA and DPP ▪ Improve Info Systems used in the Supreme Court (criminal cases, judgment preparation, jurisprudence, etc) ▪ Finish computer models of required applications, prepare technical specification for computer hardware solutions, software applications and connectivity necessary for their installation, linking together central offices
UR-0130 $150.0 million UR-0145[91] (TC) $3.6 million	8 August 2001 Disbursed 11-12-02 **73.4%** **18.4%**	**Public Administration Modernization Program** ▪ Make revenue collection more efficient by optimizing structures and establishing incentives ▪ Improve efficiency, efficacy and quality of public expenditure ▪ Reduce the cost to the private sector and citizens to of central government intervention ▪ Modernization of human resources management ▪ Make government intervention more transparent	Planning and Budget Office	▪ Better management of public resources ▪ Enhance competitiveness (State and enterprise) ▪ Better quality public services (State and citizen) ▪ Improved human resource management	▪ **$1.3 million** from the technical cooperation UR-0145 ▪ Design of new purchasing information system (e-procurement) ▪ Design of Portal and Online components ▪ Interagency coordination and integration through procedures' re-engineering

[91] In the case of the UR-0130/0145 project, in order to calculate the percentage of budget resources allocated to the ICT component, we only took into consideration the total amount of the UR-0145 in adding total project budgets, since the ICT component is part of this operation and not included in UR-0130.

PORTFOLIO OF MODERNIZATION OF THE STATE PROJECTS[92] WITH IDENTIFIABLE ICT COMPONENTS
REGION 2
(January 1999 - November 2002)

PROJECT NUMBER	BOARD APPROVAL DATE	PROJECT NAME AND OBJECTIVES	EXECUTING AGENCY	PROJECT COMPONENTS	ICT COMPONENTS[93]
DR-0106 $28.0 million (IDB-$22.3/ DR $5.7)	18 July 2000 Disbursed 11-12-02 **14.1%**	**Modernizing the National Congress and Office of the Comptroller General** ▪ Strengthen democratic governance in the DR	National Congress via Joint Commission on Modernization[94]	▪ National Congress: consulting, training, systems and equipment of information technology ($21.5 million) ▪ Legal framework, institutional development, government control ($2.4 million)	▪ **$3.3 million** (circa) ▪ Information technology development, procurement, development, operation of information technology systems and support infrastructure ▪ Installation, operation of the necessary information technology systems
ES-0093 $4.4 million (IDB - $3.5/ ES-$0.9) TC Loan	22 September 1999 Disbursed 11-12-02 **5.0%**	**Mobilization and Strengthening of the Legislative Assembly** ▪ Make the Legislative Assembly more efficient, effective and transparent with respect to the functions of legislation, political supervision and representation assigned to it by the Constitution	Legislative Assembly of El Salvador	▪ Strengthening of the Legislature ($1.6 million) ▪ Administrative Strengthening ($0.9 million) ▪ Information Technology ($2.0 million) – see next column	▪ **$2.0 million** ▪ Design five-year master plan; adopt legislative information system
ES-0115 $10.0 million (IDB - $6.8/ ES -$3.2) TC Loan	3 March 1999 Disbursed 11-12-02 **5.0%**	**Program in Support of the Financial Sector in El Salvador** ▪ Contribute to the stability and solvency of El Salvador's financial system by strengthening the supervisory agencies in the financial sector.	Presidential Commission for Modernization of the Public Sector (CPMSP)	▪ Implementation of planning and control system ($0.3 million) ▪ Human resource management ($0.5 million) ▪ Implementation of international accounting principles in financial sector ($0.3 million) ▪ Strengthening Financial System Superintendency ($1.8 million) ▪ Securities Exchange Superintendency ($0.4 million) ▪ Superintendency of Pensions ($0.5 million) ▪ Training for judges and commercial arbitrators ($0.2 million) ▪ Set up Deposit Insurance Institute ($0.4 million)	▪ **$4.2 million** ▪ Strengthening management of the technological platform: information systems & standardization of hardware, operational systems, base software ▪ Improve coherence and compatibility of systems ▪ Modernize data capture and processing, reports
GU-0152 $6.3 million (IDB - $5.0/ GU - $1.3)	25 January 2001 Disbursed 11-12-02 **5.1%**	**Program to Support Foreign Trade** ▪ To strengthen management of trade sector in order to improve Guatemala's access conditions for goods and services in foreign markets.	Ministry of the Economy, through the Vice Ministry of Integration and Foreign Commerce (VMCE)	▪ Strengthening of the technical capacity of VMCE ($3.1 million) ▪ Strengthening of inter-government coordination mechanisms and consultation mechanisms with the private sector ($0.5 million) ▪ Strengthening of the negotiation capacity in the area of foreign trade ($0.8 million)	**$1.5 million** (circa) ▪ Development of new integrated technologies of trade information and communications ▪ Electronic access to information sources with external data bases and trade publications
HO-0176 $21.4 (IDB - $14.6 HO-$6.8) TC Loan	28 June 2000 Disbursed 11-12-02 **8.3%**	**Program for Efficiency and Transparency in Government Procurement** ▪ Program for efficiency and transparency in government procurement to promote sustainable efficiency and transparency in government procurement	Presidential Commission on the Modernization of the State (CPME)	▪ Procurement inspection ($11.5 million) ▪ Support for procurement management ($5.6 million) ▪ National procurement training system ($1.4 million) ▪ National procurement system ($2.0 million for the MIF) ▪ Executing unit ($2.0 million)	▪ **$2.0 million** (circa) ▪ Establishment of government procurement information system, data base adapted to local needs, training system ▪ Obtain computer equipment; installation

[92] These include projects in execution with one or more percent of loan disbursed on November 12, 2002.
[93] ICT costs listed here are approximations appearing in the consolidated budget or in the description of project components in loan documents. Budgeting of ICT components tends not to be very detailed and standards of budgeting vary. In most cases, these costs exclude consulting services and training.

HO-0206 $8.2 million (IDB-$3.0/ HO-$0.6/ Others-$4.6) TC Loan	6 June 2001 Disbursed 11-12-02 **77.1%**	**Census 2001: Sixteenth National Population Census and Fifth Housing Census** ▪ Support in the realization of the national census, and strengthening of the institutional capability of the Instituto Nacional de Estadísticas ▪ Provide resources to carry out census activities ▪ Strengthen INE to conduct surveys during the intercensal period ▪ Publish and disseminate result of Census 2001	National Statistics Office (INE)	▪ Enumeration ($6.7 million) ▪ Post-enumeration stage ($0.6 million) ▪ Publication and dissemination of results ($0.1 million) ▪ Institutional strengthening of INE ($0.2 million)	▪ **$0.4 million** ▪ Data analysis workshop, use of SPSS, CSPRO/IMPS **($51,200**) ▪ Data entry salaries **($0.2 million)** ▪ Workshop on data debugging and validation **($14,500)** ▪ Install a Web page and network, update Geographic Information System **(**circa **$90,000)** ▪ Server & communications (**$30,000**) ▪ Demographic analysis **($22,600)**
ME-0208[95] $ 1,200.0 million (IDB-$800.0/ ME-$400.0)	20 October 1999 Disbursed 11-12-02 **68.5%**	**State and Municipal Strengthening Program** To support the process of decentralization in Mexico by increasing the autonomy of local governments in the allocation of resources and management of public funds and improving the financial management capacity of local governments.	Ministry of Finance and Public Credit	▪ Introduce reforms in national policy affecting federal resources transfers to sub-national units as well introduce reforms in the financial markets providing credit to local governments ($400.0 million) ▪ Incentives for the adoption of best practices in administrative and financial management by sub-national units ($791.0 million credit line)	▪ **$4.0 million (circa)** ▪ Modernization information systems
NI-0081 $15.0 million (IDB-$12.0/ NI-$3.0)	28 February 2001 Disbursed 11-12-02 **1.0%**	**Program to Strengthen the Judiciary and Improve Access to Justice** ▪ Increase access to and improve quality and availability of justice services ▪ Support the process of judicial reform, modernization, and strengthening underway	Supreme Court of Justice	▪ Judicial access and user services ($8.3 million) ▪ Strengthening judicial management ($3.6 million) ▪ Human resources and communication ($1.3 million)	▪ **$1.9 million** ▪ Design and installation of a new computerized management system
NI-0105 $12.5 million (IDB-$10.0/ NI-$2.5)	23 November 1999 Disbursed 11-12-02 **25.4%**	**Tributary Administration** ▪ Support the strengthening and modernization of the Administrations of Tax and Customs Services Revenue	Ministry of Treasury and Public Credit	▪ Organizational development and human resources administration ▪ Inspection support ▪ Information technology ▪ Infrastructure	▪ **$3.0 million** ▪ Transit control systems ▪ Systems integration ▪ Communication systems ▪ Specialized information applications ▪ ICT equipment
NI-0109 $2.4 million (IDB-$2.1/ NI-$0.3)	24 February 1999 Disbursed 11-12-02 **71.1%**	**Program to Strengthen the Technical Secretariat of the Office of the President** ▪ Support the integration of social and economic policy, monitoring and evaluation of impacts of poverty reduction	Technical Secretariat of the Office of the President	▪ Institutional strengthening ▪ Special studies ▪ Impact evaluation ▪ General expenditures	▪ **$0.2 million** ▪ Mgt Info System (SIG) for SETEC ▪ Computer equipment and software to provide personnel with equipment they require to automate their technical and administrative management activities"
NI-0111 $6.3 million (IDB-$5.7/ NI-$0.6)	31 May 2000 Disbursed 11-12-02 **20.1%**	**Modernization Program for the Municipality of Managua** ▪ Service planning, tax and financial administration, environmental management ▪ Transparency in allocation of public expenses ▪ Solid waste collection service and expansion	Municipality of Managua	▪ Institutional modernization ($1.9 million) ▪ Participatory projects to improve municipal services ($3.5 million)	▪ **$0.5 million** ▪ Implement General Information System Plan ▪ Common informational database, linkages ▪ Software
NI-0143 $22.5 million (IDB-$18.0/ NI-$4.5)	27 September 2000 Disbursed 11-12-02 **10.1%**	**Program for Efficiency and Transparency in Government Procurement** ▪ Support greater efficiency and transparency in the State system of purchases and contracting	Technical Secretariat of the Presidency	▪ Projects inspection service ▪ Administrative support to seven state entities and to the general directorate of State procurement ▪ Development and capacity building for purchases and procurement	▪ **$0.5 million** ▪ Equipment and adaptation of data systems

[95] The total amount of this project has been excluded from calculations of the percentage of budget resources allocated to the ICT component, due to the project including sector adjustment loans thus disproportionately reducing the weight of the ICT component allocation.

PORTFOLIO OF MODERNIZATION OF THE STATE PROJECTS[96] WITH IDENTIFIABLE ICT COMPONENTS
REGION 3
(January 1999 – November 2002)

PROJECT NUMBER	BOARD APPROVAL DATE	PROJECT NAME AND OBJECTIVES	EXECUTING AGENCY	PROJECT COMPONENTS	ICT COMPONENTS[97][98]
CO-0244 $42.0 million (IDB-$23.0/ CO-$19.0)	22 March 2000 Disbursed 11-12-02 **19.7%**	**Strengthening the Offices of the Comptroller General and the Auditor General** ▪ Help improve governance in Colombia by strengthening the national system of fiscal control, with a focus on these two agencies (Comptroller and Auditor)	Offices of the Comptroller General and the Auditor General	▪ Institutional & Management Strengthening ($25.8 million) ▪ Strengthening CRG (Office of the Comptroller General) mission ($3.5 million) ▪ Strengthening of National Fiscal Control System ($8.2 million) ▪ Strengthening of AGR (Office of the Auditor General) ($1.6 million)	▪ **Over $9.5 million** ▪ Electronic Document Mgt System (SIGED) ▪ Resource Mgt Info System (SIAR) ▪ State Contracting Info System (SICE) ▪ Legal Info System (SINOR) ▪ Regional [Fiscal Control] Info System (SIT) ▪ National Citizens' Info Network ▪ System of info & tech strengthening in support of fiscal mgt monitoring ▪ Information center and computer infrastructure
CO-0251 $26.7 million (IDB-$16.0/ CO-$10.7)	9 January 2002 Disbursed 11-12-02 **3.1%**	**Institutional Strengthening for the District of Bogotá** ▪ Provide institutional strengthening for more transparent and efficient use of resources and delivery of municipal services	Mayoralty Office for the District of Bogotá, acting through its General Secretariat	▪ Strengthening of management at the district/central level ($10.0 million) ▪ Strengthening of management at the local level ($4.8 million) ▪ Modernization of services to the public ($9.6 million)	▪ **Over $4.6 million** ▪ Strengthening info systems, technology, data bases, computer platform ▪ Provide software tools over the Internet ▪ Reactivation of "Comisión Distrital de Sistemas" ▪ Establishing tech standard; supervising info tech and telecommunications projects ▪ Client service centers; system for monitoring public adm; interconnections among 20 local municipalities and district agencies ▪ Specialized Public Service Center for the District (CADE) to be restructured, info systems, equip ▪ Smart Building: install voice and data communication networks, provide Internet-district Intranet access services ▪ Virtual Service Systems: expand public services through Internet and call centers, create a CADE web page, create a Highway Info Center
EC-0197 $19.0 million (IDB-$12.5/ EC-$6.5)	13 December 2000 Disbursed 11-12-02 **49.6%**	**Support for the Population and Housing Census and Strengthening of the National Statistics System** ▪ Support the Government of Ecuador in conducting the 6th Population Census and the 5th Housing Census, through INEC, and to develop the National Statistics System to improve the quality and reliability of its products	National Statistics and Censuses Institute	▪ Provide INEC with resources to conduct census efficiently with required level of quality ▪ Ensure highly-reliable data and content for national and international users in the public and private sectors ▪ Ensure the use of modern technology for map updating, data processing, and dissemination ▪ Develop an Integrated Household Survey System (IHSS) for data on living conditions, income, expenditures and promote use of system ▪ Strengthen system of short-term indicators ▪ Institutional strengthening of INEC	▪ **$3.0 million** (circa) ▪ Computer infrastructure, data network, telecommunications infra-structure with the four regional offices ▪ Electronic data processing ▪ Dissemination of census data through the Internet, CD-ROMs ▪ Geographic information system ▪ Development of applications for the geo-referencing information system

[96] These include projects in execution with one or more percent of loan disbursed on November 12, 2002.

[2] ICT costs listed here are approximations appearing in the consolidated budget or in the description of project components in loan documents. Budgeting of ICT components tends not to be very detailed and standards of budgeting vary. In most cases, these costs exclude consulting services and training.

VE-0057 $132.0 million (IDB-$75.0/ VE-$57.0)	14 November 2001 Disbursed 11-12-02 **1.6%**	**Support Reform Criminal Justice System** ▪ More efficient, precise and just criminal investigation and prosecution system ▪ Greater participation and trust in the criminal justice system by society ▪ Reduce violence, improve living conditions, increase the rates of rehabilitation and social integration of the formerly incarcerated	Ministry of Justice	▪ Modernization of the Ministry: training, uncrowding of system, info technology (see next column), social communication ▪ Modernization of technical staff of the judicial police: inst strengthening, training, info technology, physical infrastructure upgrading ▪ Modernization of the penitentiary system: institutional and administrative strengthening, penitentiary info system, prisoner support	▪ **$30.7 million** ▪ IT modernization of Ministerio Público **($13.7 million**): extend MP's info platform to al local offices, interconnect all offices (e-mail, Internet, IP telephony), expand and implement case tracking & control system, free-access modules to respond to main info demands of citizens ▪ IT modernization of Judicial Police Force Technical Corps **($8.4 million)**: interconnect offices and headquarters, IP telephony, e-mail, videoconferencing, automated fingerprint identification system ▪ Penitentiary Info System **(S8.4 million)** ▪ Increased IT use by prosecutors; 4 computers per prosecutor by project end; three centers for monitoring and control systems ▪ Increased use of IT by police functionaries; full staffs (100%) and all headquarter interconnected