

INSTRUMENTS FOR FINANCING THE INFORMATION SOCIETY: A FRAMEWORK FOR POLICY-MAKING



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Summary

Abstract	5
I. Introduction	7
II. Economic characteristics of the information society	9
III. Instruments for financing the information society	15
IV. Strategy for developing the information society and financing policy	21
V. Criteria for a financing policy.....	25
VI. Conclusions	27
Annex	29
)	

Abstract

The development of the information society calls for national strategies that will enable countries to make full use of the sources and instruments available for financing digital development. Formulating and implementing such strategies requires a comprehensive vision and plans of action that set out clear priorities based on the criteria of efficiency, transparency, social solidarity and public-private agreements.

This document looks at one of the crucial tools for implementing strategies for the development of the information society: financial instruments. The analysis highlights the wide variety of sources and alternative uses of resources and places them in a framework oriented towards policy-making. These considerations are put forward in the context of the Declaration of the World Summit on the Information Society, which established a Digital Solidarity Agenda.

The structure of the document is as follows: (i) introduction; (ii) identification of the economic features of the information society, with emphasis on the developing countries; (iii) identification of agents and instruments for financing the information society, including international financing alternatives and the criteria on which international cooperation should be based; (iv) discussion of the relationship between digital development strategies and financing policy, highlighting the multiplicity of uses to which such financing can be put; (v) presentation of the criteria that should guide public financing policy, which are indispensable for allocating resources efficiently and ensuring due accountability; and (vi) conclusions.

I. INTRODUCTION

The purpose of this document is to present the financial instruments available for the development of the information society, to highlight the wide variety of sources and the options for their use, and to place them in a frame of reference oriented towards policy-making.¹ This is done in the context of the provisions of the Declaration of Principles of the World Summit on the Information Society, which established a “Digital Solidarity Agenda” explicitly providing that: “The Digital Solidarity Agenda aims at putting in place the conditions for mobilizing human, financial and technological resources for inclusion of all men and women in the emerging Information Society. Close national, regional and international cooperation among all stakeholders in the implementation of this Agenda is vital. To overcome the digital divide, we need to use more efficiently existing approaches and mechanisms and fully explore new ones, in order to provide financing for the development of infrastructure, equipment, capacity building and content, which are essential for participation in the Information Society”.²

In particular, it was proposed at the Summit that all countries and international organizations should act to create conditions conducive to increasing the availability and effective mobilization of resources for financing development as elaborated in the Monterrey Consensus.

There are many channels for making the transition to an information society, and there are a number of instruments that can be used to progress towards universal availability by increasing access to information and communication technologies (ICT) and participation by all of the region’s men and women. This endeavour calls for national strategies developed on a basis of consensus, appropriately designed and implemented public policies and strong private-sector initiative. In many countries, the financing needed to face this challenge cannot come from local efforts alone; an important role must also be played by foreign direct investment, credit and international financial support and technical cooperation, especially to support public projects or companies in order to make progress towards universal access.

¹ This document is not based on an exhaustive inventory of instruments used in the countries of the region and the rest of the world, nor does it express any opinions concerning the instruments used by particular countries.

² “Digital Solidarity Agenda”, Plan of Action (WSIS-03/GENEVA/DOC/5-E), Geneva, 12 December 2003, section D, paragraph 27.

This document proposes that the development of the information society requires national strategies that can make full use of the different sources and instruments available for financing digital development. This, in turn, requires vision and plans of action with clear priorities based on the criteria of efficiency, transparency and social solidarity and on public-private agreements. The most important priorities for the region are access; use in the public sector; development of human capital for ICT; innovation, science and technology; and ICT use in the private sector.

Cooperation between developed countries and multilateral agencies, on the one hand, and the regions most in need, on the other, is essential for carrying out high-impact programmes in strategic areas. It is also essential, however, to strengthen the coordination and implementation capacities of developing-country governments. International cooperation will encourage the development of endogenous capacities so that the countries can share in the benefits and the promise of the information society. International cooperation should not consist of copying what is done in other countries, but of analysing those practices from the point of view of the country that is receiving the cooperation.

The structure of this document is as follows: the second section reviews some economic characteristics of the information society, focusing on the developing countries. The third section reviews the agents and instruments for financing the information society, including international financing options, and presents the criteria on which international cooperation should be based. Fourth, there is a discussion of the relationship between the digital development strategy and the financing policy, with emphasis on the multiple uses of the latter. Fifth, the criteria on which a public financing policy should be based are set out, since they are indispensable for ensuring efficient resource allocation and proper accountability. The last section presents some conclusions.

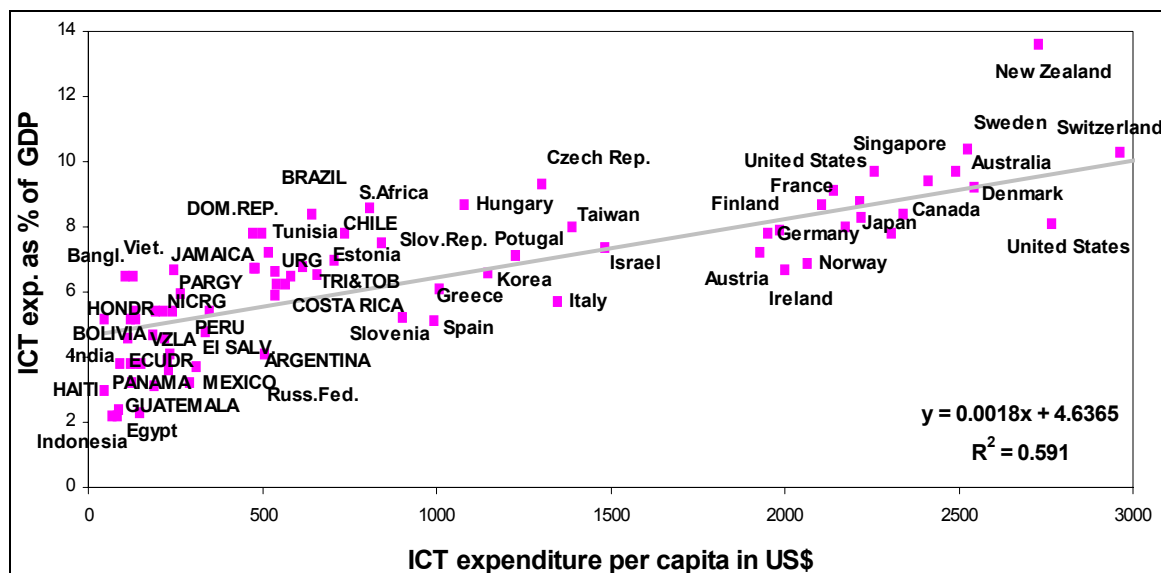
II.ECONOMIC CHARACTERISTICS OF THE INFORMATION SOCIETY

Progress towards the information society should be based on the emergence of a society that is a “people-centered, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life, premised on the purposes and principles of the Charter of the United Nations and respecting fully and upholding the Universal Declaration of Human Rights.”³ Accordingly, digital networks, goods and services that facilitate access to and use of information and communication should be potentially accessible to all.

Developing countries assign high priority to the development and dissemination of information technologies. As shown in figure 1, national ICT expenditure as a percentage of GDP is close to or higher than the world average (8.4% in Brazil and 7.8% in Chile and the Dominican Republic). In absolute terms, however, there is a huge gap in relation to the developed countries. The Latin American and Caribbean countries spend about US\$ 400 per capita per year, whereas annual per capita expenditure in most of the developed countries is between US\$ 2,000 and US\$ 3,000.

³ “Our Common Vision of the Information Society”, Declaration of Principles (WSIS-03/GENEVA/DOC/4-E), Geneva, 12 December 2003, section A1.

FIGURE 1:
ICT EXPENDITURE IN 2001
(Dollars and percentages of GDP)



Source: World Bank, *World Development Indicators*, Washington, D.C., 2002. Sample of 82 countries.

This gap between countries in terms of per capita ICT expenditure is mostly due to the poverty and unequal income distribution observed in developing countries. This, in turn, results in the gap—which in some countries is widening—between digital wealth and digital poverty. Only households in the last income decile (that is, those with the most resources) have access to the *full basket* of information society goods and services (television, cable television, fixed-line telephones, cellular telephones, computers with broadband Internet access). Another population group (between 20% and 40%, depending on the country) has access to a *partial basket* consisting mainly of television and cellular telephones and, to a lesser extent, computers and cable television, but without the means to pay for fixed-line telephones or Internet. Lastly, at least half the population (the percentage is over 70% in some countries) has access to television but does not have individual access to cellular telephones or computers, much less Internet access.

School networks for computer and Internet access and the networks available in telecentres and information centres have mitigated this problem by establishing mechanisms for community Internet access; they are, however, precarious and insufficient and in no way eliminate the domestic digital divide found in each country.

From the above, it appears that the “easy” phase of expansion of the information society may have been completed in Latin America and the Caribbean. The region’s high levels of poverty and unemployment, together with its highly unequal income distribution, may significantly slow down the spread of the use of digital technologies and networks, especially the Internet, unless the pace of technological change continues to reduce ICT costs rapidly and unless the conditions of the regulatory environment (for example, allowing the rapid entry of more efficient technologies) encourage market expansion.

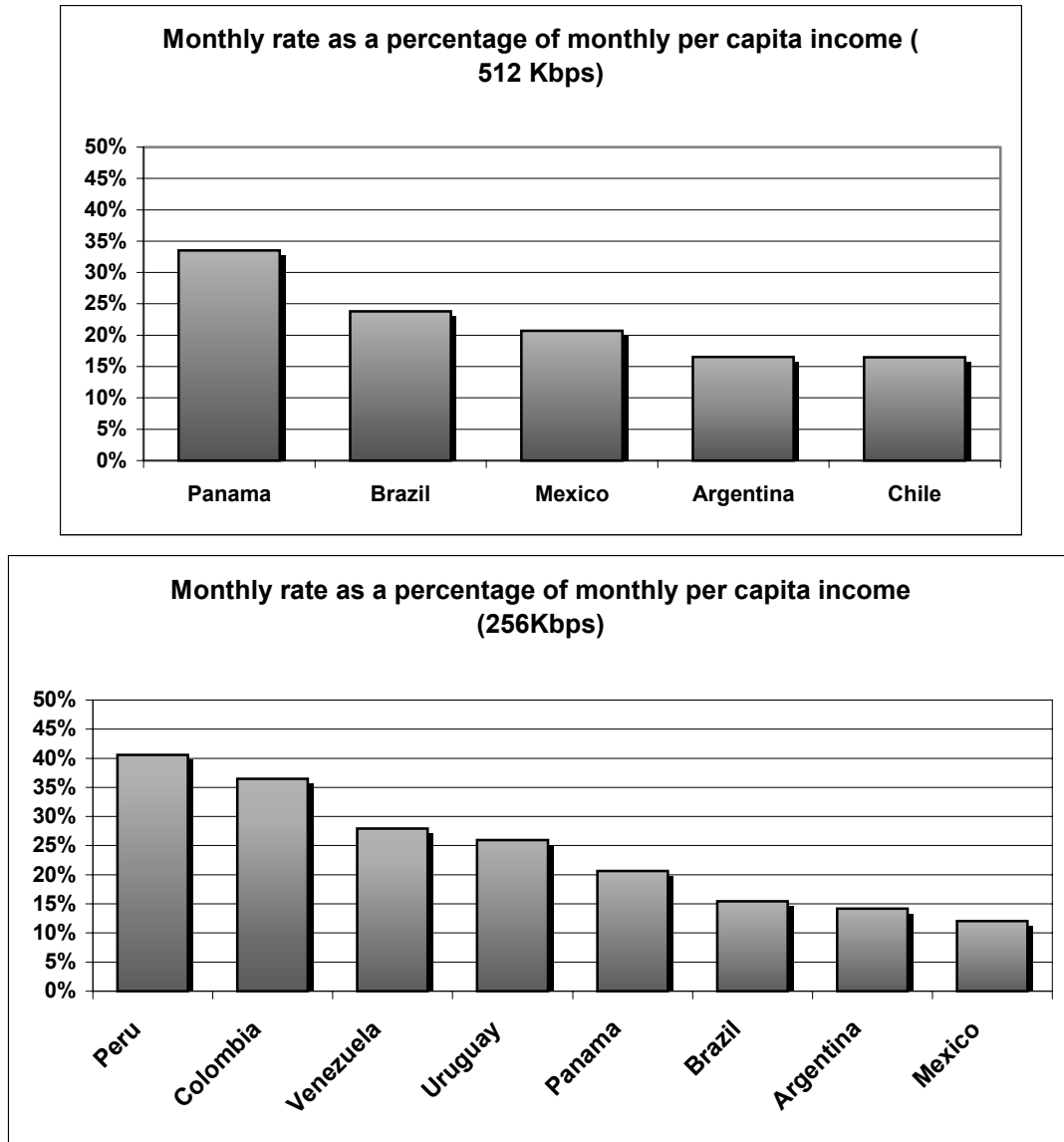
There are two factors that could influence the dynamics of this scenario:

a) On the supply side, the trend towards lower ICT prices could facilitate access in the same way that it has for durable consumer goods, both those that have been in widespread use for decades (television) and more recent ones (cellular telephones and computers). Hardware

prices are tending to decline, but more slowly than expected. Meanwhile, software prices have not declined at the same speed; indeed, increased compliance with intellectual property rights—a process that is occurring throughout the region— may raise the price of the software basket, which makes the issue of free (non-proprietary) software increasingly relevant. Lastly, connection costs are excessively high for middle- and low-income consumers. Figure 2 shows the high percentage of per capita disposable income required in various countries of the region in order to have access to an Internet connection of reasonable speed. Although these costs are tending to fall, this is also occurring more slowly than was expected.⁴

⁴ The experience of a number of countries shows that, although the prices of ICT goods could be lower, in many markets companies engage in market discrimination practices. They do not lower the prices of the equipment and software they sell because, if they do so to capture new low-income consumers, they lose sales at higher unit prices to their higher-income consumers.

FIGURE 2:
MONTHLY RATES CHARGED FOR BROADBAND INTERNET ACCESS AS A PERCENTAGE OF MONTHLY PER CAPITA DISPOSABLE INCOME



Source: Author's calculations based on information from the leading service providers. Calculations based on data in local currency at current prices

b) On the demand side, the dynamics and distribution of *per capita* income determine purchasing power. At present, the region's economies are expanding, although progress in reducing unemployment and poverty is lagging behind. A sustained high growth rate over the long term, accompanied by suitable social policies, would have a positive impact on purchasing power.

From a public perspective,⁵ there are four significant factors that affect the rate of growth of the information society.

(a) **Reduction of access costs:** Access to the information society depends to a significant extent on economies of scale and the externalities of the telecommunications infrastructure network, in relation to both the purchase price of the equipment and the cost of network access.⁶ The more people are connected, the greater the social and individual benefits and the more rapidly connection costs diminish. Poverty, unequal income distribution and the existence of regions with significant access problems make it difficult to create a “critical mass” of consumers and users of digital technologies and networks. This problem has been partly overcome in the case of mobile telephones, but not in the case of the Internet. In this context, there are two courses of action for the developing countries. One is the adaptation of regulatory frameworks, including the protection and strengthening of competition, to incorporate new technologies and reduce access costs. The other is to expand community Internet access.

(b) **Rapid growth in the public sector:** The new digital technologies and networks have a profound impact on the State, for two reasons. On the one hand, public services make intensive use of large-scale information production, storage and distribution. On the other, the State is the only institution that affects the daily life of all institutions, companies and individuals in a country. For this reason, digitization of the State not only improves its efficiency and transparency and strengthens its capacity to allocate resources efficiently, but also generates multiplier effects that encourage investments in new technologies and knowledge. This shows that one of the best policies available is to promote the intensive use of digital technologies and networks by the three branches of government (executive, legislative and judicial) at the central, regional and local levels.

c) **Speed of adaptation of institutions** to the requirements of the information society. The development of digital networks and technologies sets off policy and regulatory changes because economic institutions have to adapt to new generations of digitized goods and services. The most significant changes include:

- i) The digitization of information flows and communication processes in the economy, in politics and in the daily life of users involves the construction of a legal and regulatory framework that makes digital interactions more secure.
- ii) The digitization of information requires the emergence of a new approach to intellectual property rights, where a balance must be struck between incentives for creativity and society’s interest in maximizing the dissemination of knowledge and information.
- iii) Technological convergence and the global emergence of Internet protocol (IP) networks require a change in the regulatory paradigms for telecommunications.

⁵ Of course, mention should also be made of the fact that entrepreneurial growth, based on the interaction of companies in the context of innovation systems, is the foundation for much of the scientific and technological progress of the information society. In view of its importance, this issue should be considered separately.

⁶ The Internet and telecommunications are affected by network externalities, meaning that their usefulness to each user depends on the total number of users of the network (as in the case of telephones, faxes, electronic mail, Internet access and virtual private networks (VPN)). For the companies providing the digital goods and services, the key is to take advantage of economies of scale by increasing demand, which involves reaching a “critical mass” that triggers an autonomous market dynamic that does not depend only on supply. This also implies that the more standards are disseminated, the greater the economies of scale and network externalities.

- iv) The development of common standards is crucial for taking advantage of economies of scale.

(d) Capacity to mobilize public, social and private resources for the development of the information society. Digital networks, goods and services may take the form of public goods (Internet, public-sector electronic portals, publicly financed information centres and telecentres), club goods (electronic data interchange (EDI) networks, access to Internet service providers (ISPs) or private Internet services) or private goods (computers, cellular telephones). All these goods have different characteristics in terms of rivalry and exclusion, which are determined mainly by a combination of technological protection measures (encryption) and enforcement of intellectual property rights.⁷ Information society goods are thus produced in markets, by the public sector, or in cooperation between the public and private sectors. Corporations, institutions, associations and individuals in all sectors and regions of an economy may participate and join forces to build a network society and a network economy.

This means that the development of the information society could be organized as a decentralized process in which all agents and institutions of the modern economy participate. In this framework, the State would play an important role as facilitator and coordinator. This would be a process of accumulation of physical, social and knowledge capital determined by free or regulated markets (i.e., telecommunications) that are more fragmented than concentrated, as well as by the production of digitized public goods provided by the private sector, non-governmental organizations (one example is the software that made the emergence of the Internet possible) or, in most cases, by the public sector.

⁷ A good or service is excludable (non-excludable) if it possible (impossible) to preclude an individual from consuming that good or service. Rivalry is related to whether one individual's consumption of a good precludes consumption by other individuals. The marginal cost of a non-rivalrous good is zero. A pure private good is one that is fully excludable and rivalrous. A pure public good is one that is fully non-rivalrous and non-excludable.

III. INSTRUMENTS FOR FINANCING THE INFORMATION SOCIETY

Companies, households and governments are consuming and investing in more and more digitized goods and services. This involves the mobilization of a growing volume of economic resources, which come from a number of sources, as shown in the following table. Four types of financing sources are distinguished: (i) private spending directed specifically to ICT, operating without public intervention but respecting more general rules, such as the protection of competition or the supervision of the financial system; (ii) private spending spurred by public signals but not involving State resources; (iii) public spending, including direct State operations and subsidy or support initiatives using public resources; and (iv) spending financed by international sources.

There are three methodological issues to consider:

- (i) The type of financing should reflect factors such as the structure of the industry or niche in question and the stage of development of the technology in a particular area. Different areas of the industry —such as telecommunications, consumer informatics and electronics, software and content— require different levels of capital intensity, investment recovery periods or research and development efforts, meaning that in each case some instruments will be more efficient than others.⁸ The type of financing will also be affected by the stage of development of each technology, in particular

⁸ For example, when the aim is to take advantage of network economies and telecommunication externalities, priority will be given to instruments such as universal access funds and cross-subsidies between different user categories. Mass production and the diversification typical of consumer informatics and electronics can be financed using conventional instruments for the purchase of durable consumer goods, while part of the content industry, such as open (non-subscription) television, is financed by market mechanisms linked to advertising. The difficulties of financing the Internet through advertising are one example of the variables and relationships that require much more empirical analysis, particularly in the region.

whether the technology is at an early or advanced stage or whether the strategy of the companies involved is based more on innovation or on imitation.⁹

- (ii) The conditions of the environment (openness, growth rate, and institutional framework) and the size and degree of development of the economy of the country in question are also crucial factors. Without neglecting the potential of regional or subregional agreements to generate economies of scale, these variables will have a clear impact on the type of financing that will be most efficient in each case.
- (iii) Financing alone is not sufficient to deal with all the challenges that arise in the transition to an information society. Each financing instrument must be associated with mechanisms that maximize the efficiency of these new technologies, which must be positioned within a development strategy.

⁹ For example, venture capital plays a major role at the initial and expansionary stages of a technology's development, and becomes less significant as the technology matures.

TABLE 1
FINANCING SOURCES AND INSTRUMENTS

Main Agent	Area	Instrument	
1. PRIVATE (subject to bank supervision and competition policy)	Prices	Protection of competition, standards, consumer rights Consumer credit	
	Credit	Working capital credit	
		Investment credit	
	Capital markets	Venture capital	
		Investment funds	
	Foreign investment	Promotion and attraction of FDI	
	Financial regulation	Support for venture capital and seed capital funds	
		Centrally allocated credit and guarantee funds	
	2. REGULATED OR FOSTERED BY THE STATE (subject to public regulation and incentives)	Regulation of rates and charges	Price-setting for access and public charges
			Disaggregation of networks
Mandatory contribution with or without public subsidy		Universal access funds	
		Training funds	
Public incentives		Technology funds	
		Lower tariffs on imported digital goods	
		Lower tax on income generated by software	
3. PUBLIC (public-sector consumption and investment spending)	Public spending and investment	Tax incentives for research and development (R&D)	
		Accelerated depreciation for ICT investments	
		Tax exemptions for training	
		ICT expenditure in social programmes	
		Direct spending: public purchases	
		Technology funds for R&D	
		Grants for training and education	
	Science and technology funds		
	Public investment in infrastructure		
	Public enterprises	Investment policy	
4. INTERNATIONAL (does not include FDI)	Multilateral agencies	Credit	
		Grant for cooperation	
	Official development assistance	Grants	
New initiatives	To be explored		

Source: **elaboración propia**

Each source and group of instruments is described in greater detail below.

Autonomous private spending. In this case, market prices are the main signal guiding the spending and investment decisions taken by consumers and enterprises. Financial instruments include all types of private credit for consumption and investment, leasing operations, private

investment funds, venture capital funds and foreign direct investment and credit from foreign private financial entities.

Private spending regulated or fostered by the State, which operates on the basis of three types of instruments:

a) Financial market regulations such as guarantee funds to cover information asymmetries; credit reserves or centrally allocated credit with special rates, maturities and guarantees; and regulations that encourage the creation of venture capital funds.

b) Rate regulations and regulatory provisions on the rates and fees charged to the public, disaggregation of networks, radio frequency licences, etc. All of these are regulatory instruments to compensate for market failures in the area of telecommunications.¹⁰

c) Mandatory contributions from private ICT enterprises for:

Universal access funds, financed by between 1% and 5% of the income of telecommunications operators (see annex table).¹¹

Sectoral technology funds financed from private contributions but regulated by the State; they are used to increase investment in infrastructure for science and technology and for research and development (see annex).

Generic training funds, financed from private contributions, to pay for professional training. Some of these resources are used for professional ICT training.

Public spending by central, regional and local governments and public enterprises. This source includes the following forms of financing:

a) Public incentives for private investment and spending

- i) Reduced or zero tariffs for imports of information technology goods and equipment.¹²
- ii) Elimination of double taxation in relation to income tax on the royalties of companies that export and import software, which can be implemented through unilateral actions or agreements to avoid double taxation.
- iii) Tax incentives for private spending on research and development, which may be generic or specific for ICT-related economic activities.
- iv) Tax incentives for human resources training, either horizontal or sectoral.
- v) Tax incentives by means of accelerated depreciation to encourage private investment in ICT.

¹⁰ From the standpoint of conventional microeconomics, in addition to problems of information asymmetries, two other types of market failure can be identified in telecommunications markets: (i) network and public good externalities and (ii) increasing returns to scale and decreasing marginal costs, which result in markets that are not perfectly competitive. In addition to these problems of Pareto efficiency, there are the problems of deviation from the ideals of distributive equity, which require special treatment.

¹¹ The operations and effectiveness of these funds and of the ones mentioned in the subsequent point are just beginning to be analysed.

¹² This was the APEC agreement implemented in Mexico, Peru and Chile.

b) Public spending and investment

- i) Government procurement of digital goods and services and spending on social programmers. The public activities associated with the management of procedures, taxes and systems of education, health and pensions, among others, directly or indirectly involve spending and investment in ICT. Also, the digitization of school or public service networks is an additional (and usually complementary) function of universal access funds. In this case, the demand comes from the State and is usually decentralized, but is economically very significant for extending access, increasing efficiency and transparency in the public sector and generating more demand for ICT goods and services.
- ii) Credit from the public banking system for the creation or expansion of operations and for investments in fixed capital or in research and development by the private sector, financed by budgetary means (see annex table)
- iii) Generic science and technology funds, financed from the budget, which allocate resources to projects or programmers for strengthening the science and technology infrastructure through competition, bidding or project evaluation (see annex table).
- iv) Explicit investment in public information technology infrastructure. Investments to create or provide public-sector access to broadband, voice networks and data on IP technology, which connects all government localities, both defense and civil. This investment may increase the efficiency of public administration, generating positive externalities for the economy and society.
- v) *ICT investments by State-owned enterprises*, which may generate positive externalities for the economy and society.

Multilateral agencies make an important contribution to the international financing of public and private ICT programmers, especially for developing countries. The basic components of such financing are as follows:

a) Credit and grants from multilateral agencies such as IDB and the World Bank.¹³

b) Grants from organizations that provide official development assistance (ODA) for specific projects and programmers with a demonstrative impact.

c) New initiatives that have not been sufficiently explored but that arise within the framework of the World Summit on the Information Society and are based on the Millennium Declaration and the outcome of the International Conference on Financing for Development (Monterrey, Mexico, 2002). An effort should be made to explore new initiatives for providing financial support for the development of programmers geared to reducing the digital divide or using ICTs to strengthen programmes designed to reduce hunger and social inequality.¹⁴ The Technical Group's proposals to the United Nations include taxes on financial transactions and on trade in weapons. In addition, there are other proposals at different stages of implementation, including new debt swap modalities that explicitly incorporate investments associated with the information society (as mentioned in the Plan of Action of the World Summit on the Information

¹³ The role of multilateral agencies is not only to provide financing. These organizations can help to review strategies and programmes that countries have implemented or are implementing, especially in cases where there are problems of coordination, efficiency and effectiveness when multiple programmes are under way.

¹⁴ One such programme is the initiative launched in 2004 by the presidents of Brazil, Chile, Spain and France with support from the United Nations Secretary-General.

Society) or specific taxes.¹⁵ Almost all the countries in the region have implemented an instrument for achieving digital solidarity between actual and potential ICT users: universal access funds. Given the global nature of digital goods and services and the transnational structure of the major ICT providers, a similar model could be considered at the international level in order to finance access to hardware, software and telecommunications for those population groups that are excluded from the global information society. Additional international financing for digital development should meet the following conditions:

- (i) The aid should be used to set up stable and predictable programmes, since the interruption of assistance flows reduces their effectiveness.
- (ii) Administrative expenses should be minimized. To this end, full use should be made of existing bilateral and multilateral channels for the disbursement of funds, so as to avoid creating new bureaucracies.
- (iii) The aid should preferably be provided in the form of grants, since many developing countries have embarked on fiscal adjustment programmes in order to deal with public debt and reduce inflationary pressures, in an effort to create the basic macroeconomic conditions for growth.
- (iv) The resources obtained should be managed in a transparent manner in order to ensure accountability in their use. Since many mechanisms involve decisive and coordinated policy action, transparency and accountability are very important for maintaining strong domestic political support over the long term; this represents a huge challenge for many countries of the region.

¹⁵ Experiences and ideas that have emerged on issues such as environmental protection or combating diseases such as HIV/AIDS can also be used.

IV. STRATEGY FOR DEVELOPING THE INFORMATION SOCIETY AND FINANCING POLICY

Any public policy for financing the information society must be based on a strategy structured around at least five basic areas: access; use in the public sector; human capital development; innovation, science and technology; and use in the private sector, especially in small businesses and micro enterprises. Table 2 presents a preliminary outline for linking the above-mentioned sources of financing with potential uses or purposes; it must be filled out meticulously, once the relevant empirical research work has been carried out.

Each of these broad objectives is described below in greater detail.

Universal access: All countries aspire to a modern and secure telecommunications infrastructure with maximum coverage. In view of the presence of public goods (such as airwaves), natural monopolies (telecommunications), network externalities, technical change and technological convergence, it is indispensable to have an ICT infrastructure policy, with a corresponding regulatory framework and rules for direct and indirect subsidies, in order to incorporate new technologies into existing services to promote growing access at reasonable cost.¹⁶ The architecture and objectives vary from one country to another; in some, progress towards broadband connectivity is a priority objective, while in others, cellular telephone service and community Internet access take precedence.

¹⁶ This is true not only of countries that have privatized communications, but also of those that have done so only partially (such as Uruguay and Costa Rica) or not at all (such as Cuba).

**TABLE 2:
SOURCES AND USES: AREAS OF DIGITAL DEVELOPMENT IN NEED OF FUNDING**

Agent	Access	Use in the public sector	Human capital development	Innovation, science and technology	Use in the private sector
Private spending	ISPs and services (excluding fixed and mobile telephony)	Development of e-government using private grants	ICT education and training financed with private resources	R&D+i carried out with private funds from sources internal or external to the company	ISPs and services used by companies to increase their digitization
Private spending prompted by public actions (except subsidies)	- Rates charged for public access to cellular and fixed telephone services and price ratio between the two -Desegregation of networks		- Training based on mandatory contributions	-Investment using venture capital funds -Investment using technology funds via mandatory contributions	
Public spending (including subsidies)	-Social programmes - Infrastructure	-Public-sector digital networks -Integrated information infrastructure -Development of applications	-Scholarships and teacher training	Spending on R&D+i financed with fiscal and tax incentives - Science and technology infrastructure	Expenditure on ICT equipment and training using tax and fiscal incentives -Public procurement of electronic goods
International	-Social programmes -Infrastructure	-Increased efficiency and effectiveness of e-government based on international cooperation	-Programmes for using ICTs for education and training with international support	-Support for venture capital funds, incubators, seed capital	-Programme to disseminate ICTs in micro- and small enterprises

Source:

Use in the public sector: Firms and consumers interact with the State on a daily basis as suppliers, taxpayers, recipients of social services (education, health care, pensions) and, in general, as citizens. In all these functions, if the State uses digital networks, it will not only be more efficient and transparent, but will also encourage private investment in digital technologies. E-government is a public policy tool that facilitates the dissemination of new technologies.

Human capital development: The degree to which new ICTs are used depends on the speed with which they are mastered not only by children and young people, but also by adults, especially in countries where population growth rates are falling. Investment in digital literacy, digital public libraries, ICT-based school and university education, e-learning or digital distance education, education networks and Internet training are priorities for any digital development strategy. Special attention should be paid to training the labour force as well as ICT technicians and professionals.

Innovation, science and technology: The countries should implement public policies designed to create an ICT knowledge base or develop innovative applications. This will enable them to become not only ICT users, but also producers of goods or services that incorporate

endogenous knowledge without eroding the conditions for long-term competitiveness. In addition, they should develop technological solutions that take the region's specific features into account and can therefore meet specific demands. The availability of suitable technological solutions can help to increase access to and use of ICTs and to strengthen their impact. The importance attached to this type of policy in practice will be reflected by the amount of public resources used for these purposes.

Use in the private sector: It is essential to promote the large-scale use of digital techniques in companies, especially micro enterprises and small businesses.

These factors and the greater or lesser degree of private initiative determine the particular path taken by the development of the information society. For example, India's software exports have soared thanks to the training of world-class ICT professionals. However, the spread of access to telephones and the Internet is still relatively limited. On the other hand, Chile, which is not noted for having developed an ICT industry, has achieved the widest access to telephone and Internet services in the Latin American region, together with a significant level of e-government. These diverse strategic paths will result in public financing policies with different priorities.

V. CRITERIA FOR A FINANCING POLICY

Any digital development strategy must of necessity consider the multiple sources of financing described in the foregoing sections. This is crucial for ensuring the additionality of public policies, avoiding duplication within the public sector and between the public, private and social sectors. In this regard, action plans with priorities based on criteria of efficiency, transparency, solidarity, public-private agreements and, whenever possible, broad international cooperation, are fundamental.

Integrated strategies and priority-oriented action plans: Digital development strategies should encompass all the actions needed to further disseminate the use and creation of digital technologies, services and content. At the same time, given scarce public and private resources, these strategies should take the form of action plans that emphasize those initiatives that have the greatest impact and multiplier effects, especially in the areas of access, public services, human capital, innovation and business development. One of the most challenging aspects of defining strategies for financing is priority setting based on an objective quantification of financial, economic and social benefits.

Solidarity: This criterion is essential because inequalities in terms of income, productivity and territorial development have resulted in the digital divide that now exists and is bound to widen in the future, unless policies for financing ICT expenditure and investment are implemented, particularly for vulnerable social sectors, less developed areas and micro enterprises and small firms.

Efficiency: This is important because the budgetary and financial resources to be allocated are scarce. The aim should be to raise the productivity of public ICT expenditure by ensuring effective public coordination that is subject to assessments that serve to adjust and correct the initiatives undertaken. Efficiency should be the guiding principle for public efforts in the area of digital development. This requires *subsidiary* and *complementarily* between government agencies.

Transparency: Lack of transparency is a perennial problem found in public expenditure. Systematic efforts to implement budget accountability in the area of ICTs have recently been introduced in the region. These efforts should be extended to tax exemptions and quasi-fiscal practices (i.e., radio frequency licences, guarantees to private investors, and so forth). The aim should be to make an explicit fiscal effort to promote ICTs; this will be crucial for furthering

public-private agreements based on fiscal covenants for digital development. To this end, systems of ICT indicators should be developed in order to evaluate the impact of the relevant public policies. The human and financial resources required for the implementation of such a system are clearly beyond the reach of the least developed countries.

Public-private agreements that include civil society are indispensable not only for ensuring the political legitimacy of national digital development efforts, but also for elaborating strategies and action plans for the mobilization of all the resources available to society.

International cooperation and agreements. This is a critical dimension of digital development strategies. On the one hand, in the case of multilateral agencies, cooperation should permit the development of ICT programmes with strong multiplier effects or the strengthening of inter-agency coordination of the public effort to promote ICTs. On the other hand, *horizontal cooperation* among the countries of a region is an important tool, especially for promoting joint programmes of research and development and innovation, education and training, development of common standards for ensuring mutual compatibility between networks, and so forth.

VI. CONCLUSIONS

The efficient mobilization of the sources of financing available for digital development calls for a comprehensive vision that encompasses activities that can be carried out autonomously by the private, public and social sectors, but also activities that must necessarily involve interaction between two or more of these sectors, which requires significant and persistent institutional efforts. Since digital technologies are essentially generic, no single institution can coordinate all the dimensions of a digital development strategy by itself. Thus, the challenge is to ensure coordination and consistency between initiatives, and this calls for institutional learning capacity. International best practices can and should be used as a reference in a context of rapid technological change. The point of departure is the formulation of—and the achievement of consensus on— digital development strategies within each country and even at the level of regions, such as Latin America and the Caribbean.

These strategies require financing policies based on the comprehensive use of all existing instruments, the development of new ones and the establishment of an appropriate environment so that the dynamism of markets will ensure the growing mobilization of private resources for the information society. At the same time, wherever market or coordination failures occur, public policies will be needed to provide an appropriate regulatory framework (as in the case of telecommunications) or to subsidize private ICT investment, either directly or indirectly, while still ensuring the so called “additionally” of incentives.

The State can be a facilitator and catalyst for the information society. In most developing countries, it must develop nationwide public networks—even if they are privately provided—, implement social policies and be more efficient and transparent, thereby reducing transaction costs for citizens and enterprises. Digital technologies are powerful tools that enhance the public sector’s role as an agent of development, leading the rest of the economy and society to make more and better investments in ICTs. By providing services through one-stop shops or promoting mass digital-literacy programmes, the State can create conditions that will lead businesses and households to invest and to coordinate their efforts to help develop an information society.

It is in this context that efforts should be made to promote financing and international cooperation for digital development. Cooperation should be established through stable and predictable programmes, using bilateral and multilateral channels. Resources should be managed with transparency to ensure accountability in their use.

Building an information society entails strengthening creative capacity and the distribution and consumption of information by the whole population. Since it is a cross-cutting issue, many institutions and services are involved, generally with little transparency in terms of the sources used or available. Where resources are scarce, it is useful to promote the coordination of initiatives between the public and private sectors, as well as within the public sector. Strengthening this capacity for coordination is one of the key aims to which multilateral agencies can contribute. In other words, international cooperation can support measures ranging from the development of strategies to the capacity for coordinating public-private action for digital development and the strengthening of instruments for evaluating the results of resource allocation, while recognizing each country's social and cultural diversity and the diversity of its telecommunications infrastructure

ANNEX

**EXAMPLES OF PUBLIC ACTION FOR FINANCING ICTS
(DEVELOPMENT BANKS, SECTORAL FUNDS AND SCIENCE AND TECHNOLOGY FUNDS)**

ARGENTINA	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Public development banks	Banco Provincia de Buenos Aires (BAPRO)	R&D	BAPRO
Telecommunications funds	Fondo Fiduciario del Servicio Universal (FFSU)	Access	The funds for this service are administered by the Trust Fund.
Science and technology funds	Fondo Tecnológico Argentino (FONTAR)	R&D, training	National Agency for the Promotion of Science and Technology (ANPCYT)
	Fondo para la Investigación Científica y Tecnológica (FONCYT)	R&D, training	
BOLIVIA	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Telecommunications funds	Fondo de access y servicio universal (FASU)	Access	Superintendencia de Telecomunicaciones (SITTEL)
BRAZIL	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Public development banks	Banco do Desenvolvimento Econômico do Estado de Santa Catarina (BADESC)	R&D	BADESC
	Banco do Desenvolvimento de Minas Gerais (BDMG)	R&D	BDMG
	Banco Nacional do Desenvolvimento Econômico e Social	R&D, access	BNDES
	Financiadora de Estudos e Projetos	R&D, training, coordination	FINEP
	Banco do Nordeste	R&D	Banco do Nordeste
	Fondo para el Desarrollo Tecnológico de las Comunicaciones (FUNTTEL)	R&D, training	Ministry of Communications
Telecommunications funds	Fondo de Universalización de Servicios de Telecomunicaciones (FUST)	Access	
	Fondo sectorial para la tecnología de la información	R&D	Ministry of Science and Technology
Science and technology funds	Fondo para la Infraestructura (CT-INFRA)	Access	
National programmes	Fondo Verde-Amarillo (FVA)	Coordination	
	Programmes of the Ministry of Science and Technology	R&D, training, coordination	Ministry of Science and Technology

Instruments for financing the information society: a framework for policy-making

Continuation Table examples

CHILE	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Public development banks	Corporación de Fomento de la Producción (CORFO)	R&D, training	CORFO
Telecommunications funds	Fondo de Desarrollo de las Telecomunicaciones (FDT)	Access	Consejo de Desarrollo de las Telecomunicaciones (Ministries of the Economy, Finance and Planning)
Science and technology funds	Fondo Nacional de Desarrollo Científico y Tecnológico (FONDECYT)	R&D	National Commission for Scientific and Technological Research CONICYT
	Fondo de Fomento del Desarrollo Científico y Tecnológico (FONDEF)	R&D	
COLOMBIA	INSTITUTION	PURPOSE OF PROGRAMES	ADMINISTERED BY
Public development banks	Banco de Comercio Exterior de Colombia (BANCOLDEX)	R&D, training	BANCOLDEX
Telecommunications funds	Fondo de Comunicaciones	Access	Ministry of Communications.
National programmes	Line of credit BANCOLDEX-IFI COLCIENCIAS	R&D, training	Instituto Colombiano para el Desarrollo de la Ciencia y la Tecnología (COLCIENCIAS)
COSTA RICA	INSTITUTION	PURPOSE OF PROGRAMES	ADMINISTERED BY
Public development banks	Banco Nacional de Costa Rica (BNCR)	R&D	BNCR
Telecommunications funds	Fondo del Servicio Universal de las Telecomunicaciones (FOSUTEL)	Access	Project execution entrusted to IICE (Instituto Costarricense de Electricidad).
ECUADOR	INSTITUTION	PURPOSE OF PROGRAMES	ADMINISTERED BY
Public development banks	Corporación Financiera Nacional (CFN) National Finance Corporation	R&D, training	CFN
Telecommunications funds	Fondo para el Desarrollo de las Telecomunicaciones en las Áreas Rurales y Urbano Marginales (FODETEL).	Access	Consejo Nacional de Telecomunicaciones (CONATEL)
EL SALVADOR	INSTITUTION	PURPOSE OF PROGRAMES	ADMINISTERED BY
Public development banks	Banco Multisectorial de Inversiones (BMI)	R&D	BMI
Telecommunications funds	Fondo de Inversión en Electricidad y Telefonía (FINET)	n.a.	(FISDL) Social Investment Fund for Local Development and Ministry of the Economy.

Instruments for financing the information society: a framework for policy-making

GUATEMALA	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Telecommunications funds	Fondo para el Desarrollo de las Telecomunicaciones (FODETEL).	Access	Agencia Nacional de Telecomunicaciones (ANTEL)
Science and technology funds	Fondo Nacional de Ciencia y Tecnología (FONACYT)	R&D, training	National Council for Science and Technology (CONCYT).
HONDURAS	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Telecommunications funds	Fondo Social para Desarrollo de las Telecomunicaciones	Access	Superintendencia de Telecomunicaciones (SIT)
MEXICO	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Science and technology funds	Fondos CONACYT	R&D, training	CONACYT
Telecommunications funds	Fondo de Cobertura Social de Telecomunicaciones (FCST)	Access	Comisión Nacional de Telecomunicaciones (CONACYT) Secretariat for Telecommunications
National programs	Programes of the Consejo Nacional de Ciencia y Tecnología (CONACYT)	R&D, training	CONACYT
NICARAGUA	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Telecommunications funds	Fondo de Inversión de las Telecomunicaciones (FITEL).	Access	Secretariat of Communications and Transport (SCT).
PANAMA	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Science and technology funds	Fondo de Modernización Tecnológica Empresarial (FOMOTEC)	R&D, training	National Secretariat for Science, Technology and Politics (SENACYT)
Telecommunications funds	Fondo de Desarrollo de las Telecomunicaciones	Access	ARESEP and Ministry of Planning and Economic Policy
PARAGUAY	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Telecommunications funds	Fondo de Servicios Universales.	Access	Comisión Nacional de Telecomunicaciones. Ministry of the Economy and Finance.
PERU	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
National programmes	IT projects for handling genomic information within the Peruvian Genome Programme	R&D, training	National Council for Science and Technology (CONCYTEC)
Telecommunications funds	Fondo de Inversión en Telecomunicaciones (FITEL)	Access	Comisión Nacional de Telecomunicaciones (CONATEL)
DOMINICAN REPUBLIC	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Telecommunications funds	(FDT) Fondo de Desarrollo de las Telecomunicaciones	Access	Dominican Telecommunications Institute (INDOTEL) and FDT

Instruments for financing the information society: a framework for policy-making

VENEZUELA	INSTITUTION	PURPOSE OF PROGRAMMES	ADMINISTERED BY
Telecommunications funds	Fondo de Servicio Universal de Telecomunicaciones	Access	Consejo Nacional de Telecomunicaciones (CONATEL)
National programmes	Technological development programmes for strengthening and coordinating national science and technology initiatives	R&D, training	Ministry of Science and Technology– National Council for Scientific and Technological Research (MCT-CONICIT)