

Mechanisms for financing the Information Society from a Global Public Goods perspective

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Introduction: Information societies from a global public goods perspective

One of the reasons that the subject of global public goods (GPGs) has come to the fore is in response to a crucial question – How can the flow of financial resources for different demands in the international community be increased in a context of declining financial resources for development from international cooperation? Although the concept of GPGs has been used widely by economists,¹ concern about them and their relation with international cooperation grew out of a study published by Kaul and Stern (1999). Since this publication, a series of academic and policy documents have been produced which seek to call attention to the potential gains of collective action on the part of the international community to tackle different common problems whose externalities go beyond the action of individual states.

In spite of the enthusiasm generated by this new perspective, and efforts by the international community and academic centres to make this concept operative, as yet there has been no clear articulation as to how this concept can contribute to solving the problem of the additionality of international cooperation resources² and the under-provision of many GPGs. However, the setting up of different discussion forums like the “International working group on global public goods”, which is sponsored by the Swedish and French governments, and also specific international agreements to provide some GPGs, has been an important step towards reaching policy decisions on the international level.

Similar efforts are being made to establish and finance the information society. The first phase of the World Summit on the Information Society has prompted talks geared to obtaining an international commitment and a plan of action which will allow the benefits of the information society to be extended worldwide. This discussion partly centres on the financial mechanisms needed to meet these challenges, but it also extends to other questions such as the governance of the Internet, the relation between information technologies and development, international solidarity mechanisms to favour countries that are disadvantaged in the digital divide, and the setting of concrete goals in this sector for 2015.

The definition of a GPG has emerged as part of the concern felt by the international community when faced with a determinate problem (a *global public evil*). But definition is only part of the process of providing these goods since it is necessary to have a complex group of negotiations and agreements at the global, regional and even local levels to make up a “system for providing GPGs” (Sagasti and Bezanson 2001). The political process which leads to setting this up has far-reaching implications when it comes to the financing mechanisms that are most suitable for providing the good.

¹ Although Samuelson gave a definition of this concept in 1954 based on the principles of non-rivalry in consumption and non-exclusion from benefits, David Hume had previously coined the idea of “common good” (in 1793), and other classical economists like Adam Smith, David Ricardo and David Malthus had stressed concerted action to provide goods that would benefit the community as a whole.

² Part of the problem lies in the fact that the concept of a public good itself is not clear, it has led to confusion, and almost any activity could be considered a public good and be financed by the international community. For example, Sachs (2001) said that during the Cold War the United States and her allies provided the public good of containment, and invested billions of dollars to stop the spread of Communism. Camdessus (1999) said that the international monetary system could be seen as a global public good in the sense that everybody is affected by it. Another example is the case of Banca Etica (2001), which considered that “the means to preserve conditions of development that was globally sustainable for each individual and his or her community should be considered as global public goods, regardless of the source which produces them, and the scope of their effects must be local, national or global.”

The main objective of this study is to present financing strategies for information societies using the GPG conceptual framework. To this end, we will evaluate the utilisation of different combinations of specific financial mechanisms which could facilitate a widening of the flows of resources for developing the information society in the countries of the South.

In the first section we briefly present the conceptual framework and the structure of a system for providing GPGs. In section II we apply this conceptual framework to the specific case of the information society, indicating what the elements that make it up are, and showing how different ways of conceiving this good can influence the financial mechanisms available for providing it. In section III we explore financing strategies for providing the good, and we propose and evaluate some specific financial mechanisms, indicating the criteria that govern how these mechanisms can be set in motion and serve as a foundation for concrete agreements in the international community in the years ahead. We also deal with the threats and opportunities that have a bearing on their being put into practice. Lastly, in our conclusions and recommendations, we set out the possible next steps towards achieving suitable levels of financing for the information society, and what agreements it would be viable to promote in the framework of the WSIS.

I. Conceptual framework: The structure of an ideal system for providing global public goods

The concept of public goods is associated with three interrelated characteristics. First, that they produce significant externalities, second, that there is non-rivalry in consumption and they are not to any great degree exclusive as regards the benefits, and third, that they generate opportunities to improve the welfare of the agents involved through collective action. However, this concept is not only defined in an abstract way,³ since social and cultural preferences – which are expressed through public opinion and political will – determine which public goods will be offered, and the trade-off which the society in question will be disposed to make. When it comes to GPGs – or international public goods to include regional public goods – these options are managed in an ambit which goes beyond nation states, but which does not necessarily conflict with them.⁴

It is clear that there is a long time lapse and complex negotiations will have to take place from the time that international public opinion becomes aware of a specific problem to the time when a global public good is defined, and an even longer period before that good is provided. This process requires a great effort in collective action, and the result is strongly influenced by public opinion and policy decisions that are taken at the international level, which involve national governments, private corporations and organizations in civil society.

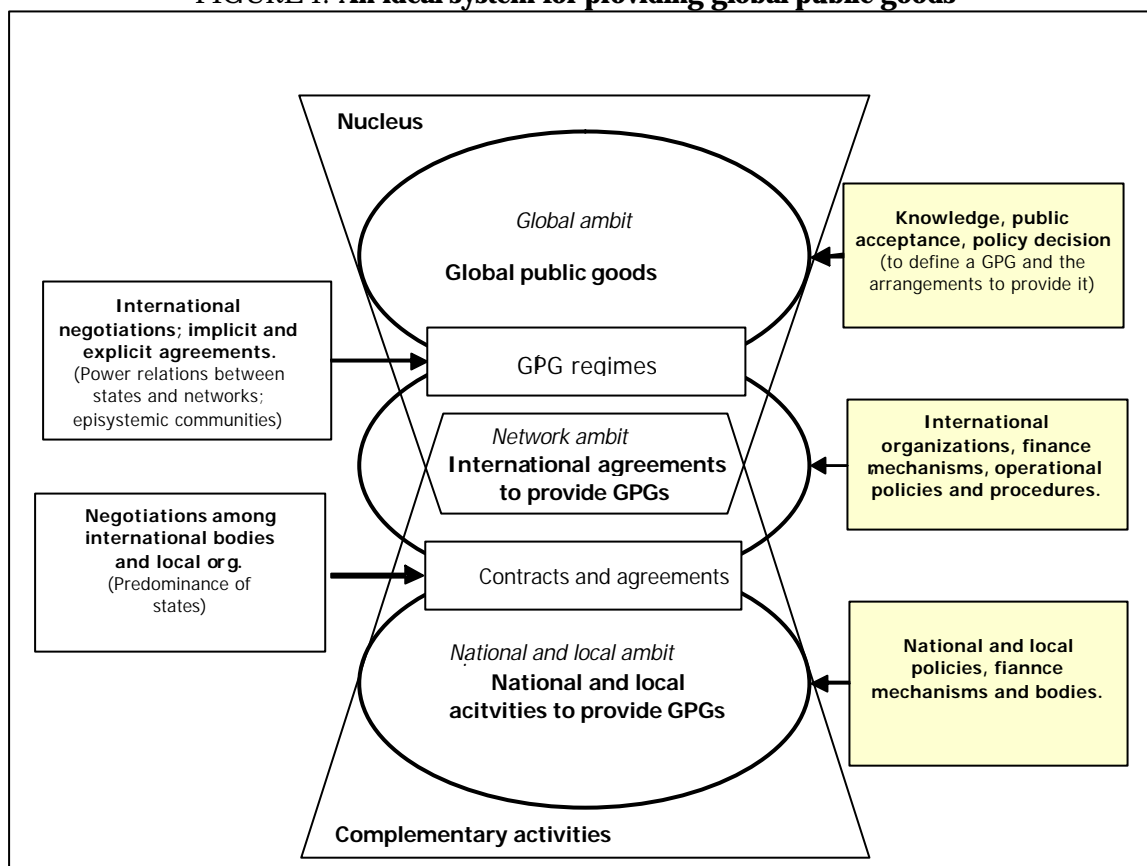
Sagasti and Bezanson (2001) use an ideal system for the provision of international public goods, and they propose a way of integrating the concept of GPGs, the decision-making processes of different agents involved in providing goods, and the financial implications. The objective of this system is to recognise the different elements which go to make up a

³ Ver Eecke (1999) has found problems in the conceptual definition of public goods, and has identified around 13 possible definitions in the academic literature on this subject.

⁴ In the concept of the fractured global order (Sagasti and Alcalde 1999), there are fissures between states and also fissures inside the states themselves, but there are also forces which put the actors involved in contact with each other, such as international civil society, transnational enterprises, regional associations, etc. In this context the GPGs do not only fall within the sphere of states, they are a focus where pressures from many agents meet and converge.

GPG, and to distinguish those which constitute its *nucleus* from those which are *complementary activities* (Figure 1).⁵

FIGURE 1. An ideal system for providing global public goods



The main question that this ideal system allows us to answer is how the different elements for providing the GPG interact. These elements form a continuum from the global ambit through to the national/local ambit. In the fractured global order **the global ambit** (to do with the global patrimony of humanity and the results of global policies and knowledge) becomes confused with and interacts with the **networks ambit** (to do with institutional arrangements at the international level, implicit and explicit, private or public), and with the **local ambit** (made up of national governments, private firms and civil society). In this continuum the elements for providing GPGs interact.

? *Global ambit: Knowledge, public acceptance and policy decision.* The declaration that something is a public good depends firstly on *knowledge* about the characteristics and effects (impact, consequences, scope), on the degree of *public acceptance* which is applying pressure for it to be provided, and on the *policy decision* needed to get the international community to make a commitment to concerted action. To declare that something is a

GPG without taking all these elements into account would be merely to engage in rhetoric.

⁵ When considering an ideal system, subjects like asymmetric knowledge, power relations, the capacity to acquire benefits, etc., are left to one side. They are considered at a later stage of the analysis.

- ? *From the global to networks: PGP regimes.* Regimes have been described as ‘arrangements that have to do with specific areas of international relations that are characterised as having complex inter-dependence’ (Haas 1980, 1982). In the case of GPGs, this means framework agreements as the product of international negotiations which structure the relations between agents for the provision of the good, which do not necessarily end with treaties or documents of international law but which can be implicit rules of interaction.
- ? *Networks ambit: International organizations, financial mechanisms, policies and operational procedures.* This has to do with institutions that are in charge of interpreting, administering, monitoring, bringing about, and evaluating the provision of GPGs, in accordance with the terms laid down in the regimes. These have a series of financial instruments that support the nucleus and the complementary activities involved in providing the GPGs, and they are regulated with a series of working rules and policies.
- ? *From networks to the local ambit: Contracts and agreements.* The networks ambit and the local ambit are linked through mechanisms which delimit the procedures, responsibilities and rights of the different local actors (usually states) involved in providing the GPG.
- ? *Local ambit: Activities of national and local bodies to provide the GPGs.* Providing GPGs involves a series of components which come into being in the local ambit, and very often with domestic resources. This is a most important element because it means that if there is no congruence between local activities and global policies there might be inadequate provision of the GPG.

The system that is designed to provide a GPG must incorporate these elements and must seek coherence in the mechanisms so that they are coordinated with each other, since they form a continuum which ranges from the global ambit to the local/national ambit. However, it is necessary to know at what point on this continuum the nucleus of the GPG is located. The answer to this question determines what kinds of organizations and programmes should be involved in the activities that belong to this *nucleus*, and, even more important, how the provision of the GPG should be financed. In the next section we will seek to answer this question for the specific case of the information society.

II. The information society: “Deconstructing” global public goods

1. The information society as a GPG: Why is this new concept applicable?

Concern about the fissures that the development of the information society has caused in some countries and in some population groups within countries – and in a wider sense the gap in capacities to generate knowledge – has gone through different stages as regards motivations and main themes. In the period from 1996 to 2000, concern centred on the policies and regulatory frameworks in the telecommunications sector, but since then the debate has evolved towards the potential uses of information and communications technology (ICT) to vanquish poverty, to provide basic social services, and to improve the competitiveness of the private sector (Gastón Zongo 2004). The main challenges in this process have included the reform of the telecommunications sector to increase private investment, the design of policies to promote universal access to these technologies, and the generation of domestic capacities to take advantage of the potential of the information society which is emerging.

This situation is an indication of how public opinion about GPGs is formed, and how new elements are included to constantly build up and re-define the definition of the information society itself. In this sense the GPG is nourished by the many aspirations that come into play in the stage prior to the taking of policy decisions to define it and the design of the mechanisms to provide it. In Box 1 it can be seen that different actors have different perspectives on the information society, on the benefits that it generates and on its characteristics. These range from holistic visions – like in the case of the WSIS declarations, which include the subject of sustainable development and the need to put the main emphasis on the welfare of humanity as a whole – to more specific definitions in which the ICTs are considered as means for transmitting information, for creating and using knowledge, and for promoting changes in the ways that society and production are structured.

Box 1. **Values and aspirations behind the information society**

Civil society declaration in the WSIS. “We hereby commit ourselves to the construction of information and communication societies that are centred on people and are inclusive and equitable. Societies in which all men and women can freely create, utilise, share and disseminate information and knowledge, and also accede to these so that individuals, communities and peoples will be empowered to improve their quality of life and realise their full potential (...) Societies which pursue the objectives of sustainable development, democracy and gender equality, so as to bring about a world that is more peaceful, just, egalitarian, and therefore sustainable, based on the principles enshrined in the United Nations Charter and in the Universal Declaration of Human Rights,” (Plenary session of the WSIS, December 2003).

Report from the European Union high-level experts group for the information society. “This is the society which is currently emerging, and in it low-cost information and storage and information technologies are in general use. The spread of information and the use of data is accompanied by organisational, institutional, commercial, social and legal innovations which will bring about fundamental changes in life in the world of work and also in society in general.” (Nassimberri 1998: 154).

Bávaro Declaration. The information society is an economic and social system in which knowledge and information constitute basic sources of welfare and progress, and it is an opportunity for our countries and societies if we understand that its development, both globally and locally, requires a strengthening of basic principles such as respect for human rights in the wider context of fundamental rights, democracy, environmental protection, fostering peace, the right to be able to develop, basic freedoms, economic progress and social equity. (Latin American and Caribbean Regional Conference, 2003).

Besides the aspirations that are encapsulated in the concept of the information society, from the global public goods perspective it exhibits the following characteristics:

- ? *The information society produces a lot of externalities.* The diffusion of ICTs means that knowledge can be transmitted at low cost, and this generates benefits for the population in general (including in the fight against poverty, territorial integration, improving the quality of life, and saving costs in the production of goods). However, exclusion from the information society gives rise to negative externalities which deepen the inequalities that already exist. These inequalities are in the possibility of access to ICTs and the capacity to use these ICTs (if we put the emphasis on the aptitudes

necessary to use the new systems). These gulfs can be called the access gap and the knowledge gap respectively. In general, the indicators show that both gaps run deeper than just economic inequalities, which is worrying because they are the raw material of the new scheme of production that is emerging (Table 1).

TABLE 1. **Economic disparity, the access gap and the knowledge gap**

Indicators (2003 or last year available)	Values and ratios		
	(A) OECD countries	(B) Low income countries	Ratio (A)/(B)
Economic disparities			
Gross national product <i>per capita</i>*	29,578.0	461.0	64.2
Gross capital formation <i>per capita</i>*	6,730.3	101.7	66.2
Commerce <i>per capita</i> (Imp. + Exp.) *	13,030.9	190.6	68.4
Access gap			
Personal computers per 1,000	473.0	7.0	67.5
Mobile telephones per 1,000	650.0	13.0	50.0
Secure internet servers	206,710.0	370.0	558.6
Knowledge gap			
Scientific publications per 100,000	72.9	0.8	88.8
Applications for patents per 100,000	75.4	0.4	197.2
Exports of high technology <i>per capita</i> *	831.6	1.3	645.5

Notes: * In 1995 dollars

Source: Adapted from Sagasti 2004. The indicators are World Development Indicators 2004.

? *The information society is based on a high degree of non-rivalry in consumption and non-exclusion as regards the benefits.* Suppose that the whole population of the world had total access to the information society, then an individual's consumption would not alter other people's consumption, and all the members would be able to share the benefits. This is a possibility since technological progress has led to greater capacity to include new users (as has happened with the increase in the capacity of processors or broad band servers) and the utilisation of new means to be able to accede to the information society.⁶ However, the access gap means that a sizeable proportion of the world's population does not have access to these benefits (due to lack of infrastructure, and to lack of capacities to process and accede to information). On the other hand it could be argued that some of the benefits of the emerging information society could be shared with that part of the world's population that is not directly participating in it, and this would be in the form of lower production costs, public knowledge being generated, gains in productivity, etc. In each of these cases, the conditions of a public good are to a large extent met, and the scale could be global, regional or national. The Internet, for example, has both of these characteristics on a global level (Johnson and Accuosto 2004).

⁶ Part of the explanation can be found in the economies of scale that apply with this kind of infrastructure. It is capital intensive and is installed in many layers and dense networks known as *backbones* which allow the capacities of transmission from a centre to peripheral points to be diffused. In the centre the cost tends to be much lower, and there can be a problem of over-capacity which is not easily transmitted to distant locations.

- ? *The information society generates opportunities to improve the welfare of agents through collective action.* The potential advantages offered by the information society have been recognised by different countries, and regional programmes have been launched that are designed with solidarity and giving economic support to include the greatest possible number of people.⁷ These focuses suggest that the information society could be better developed through the collective efforts of different actors. Furthermore, technologies which serve to sustain the information society are amenable to convergence and “catching up”⁸ when there is progressive investment in infrastructure. The great paradox is that the means and technologies to make this possible are already known, but for a variety of reasons – in infrastructure investment, for example, provision for higher income sectors is given priority for reasons of economic profitability – this is not being put into practice intensively enough to bring about the integration of some regions into the system (Information and Communication Technologies Task Force, 2004a).

As we said in the section on the conceptual framework, a GPG cannot be defined only by taking into account the characteristics of non-exclusion and non-rivalry and the existence of externalities. The definition must also include the elements which go to make up the system by which that good is provided, and this permits a better analysis of the financial strategies involved.

2. Components of the system to provide a GPG

Numerous lines of action for information societies have been identified in the WSIS Declaration of Principles (WSIS 2003), and these lie on a continuum from the global ambit to the national/local ambit. In Table 2 these elements are grouped into three categories.

- (i) *Stakeholders* or actors, who, in accordance with their level of influence, are in the networks ambit (international and regional cooperation) or in the local/national ambit (national governments, means of communication, civil society organizations). In the global ambit the pertinence of a global authority to regulate fundamental aspects of the governance of Internet is being discussed.
- (ii) *The infrastructure and means of access* to the systems and technologies that make communication and the flow of information possible, which may be in the global ambit, as is the case with standards and protocols, or at the local/national level, as in the case of local networks and personal computers.
- (iii) *The capacities, content and applications* that are related to the local ambit, like culture, the development of the population’s aptitudes for access, the generation of the content and applications to improve public administration, and the provision of social services, etc., or in the global ambit, like the discussion of ethical dimensions of the information society.

⁷ For example, the effort to coordinate European Union policies has paved the way for the development of the *E-Europe* initiative (http://www.europa.eu.int/information_society/index_es.htm). Likewise, Latin America and the European Union have been linked in the @LIS Programme (Alliance for the Information Society), which seeks to create cooperation and connections for developing the information society, to create the first Latin American network for research and education (CLARA), and to establish direct interconnection between this and the European network GÉANT.

⁸ Carsten and Kenny (2003), using different indicators, calculated the dynamic of different technological innovations (television, telephones, Internet), and they show how developing countries have been able to adopt Internet faster than previous innovations.

TABLE 2. **Guidelines of the WSIS Declaration of Principles and the components of a GPG**

Guidelines of the Declaration of Principles	Components of a GPG
1. Role of governments and of all stakeholders in promoting ICTs for development	<i>Stakeholders</i> or actors
2. Information and communication infrastructure	Infrastructure and means of access
3. Access to information and knowledge	Infrastructure and means of access
4. The creation of capacity	Capacities, content and applications
5. The creation of confidence and security in the utilisation of ICTs	Capacities, content and applications
6. Empowering environment	Capacities, content and applications
7. Applications of ICTs	Capacities, content and applications
8. Diversity in cultural identity, language and local content	Capacities, content and applications
9. Means of communication	Stakeholders or actors
10. Ethical dimensions of the information society	Capacities, content and applications
11. International and regional cooperation	Stakeholders or actors

Source: WSIS 2003, WSIS 2004

The WSIS Declaration of Principles (WSIS 2004) shows the wide range of subjects that there are in this GPG and the ambit in which they are manifested. Although a series of institutions, regimes, norms and standards to make up a system to provide the good called “the information society” are emerging and/or being consolidated, it is still unclear how the system will eventually be structured. Thus the components of the ideal system for the provision of a public good contain a series of questions and challenges, and these will be outlined below.

2.1. *The global ambit: Knowledge, public consciousness and policy decision*

As was mentioned above, public consciousness about the benefits of an information society and the progress of the so-called “digital revolution” – and the negative consequences of the access and knowledge gaps – is being expressed more and more by public authorities, civil society, the private sector and international bodies. So the WSIS is an opportunity to take policy decisions about which aspects of the information society should have priority as regards attention from the international community, what institutions will be in charge of providing this public good, what concrete agreements will be made to finance the various activities needed to produce the good, and what will be the role in these activities of the governments of developed and developing countries, civil society and the private sector.

The main challenges have to do with policy decisions which are discussed and taken in the context of the WSIS and beyond. This means resolving some central problems about the design and orientation of the regimes that will serve as a framework for the information society. For example, will it be national governments that set up institutions to regulate the Internet or to make a commitment to global standards like the Millennium Goals? Or will agreements emerge from arrangements between enterprises in an industry to converge towards some particular standards? What effective participation will civil society have in this process? The discussion is generally framed in terms of what criteria, values and

principles should prevail when it comes to designing the governance of the Internet and, in a wider sense, of the knowledge society itself.

2.2. *Regimes (international arrangements) in the information society*

As the information society has expanded so regimes have been developed, and again the WSIS is a window of opportunity to create the agreements and institutions which will pave the way to setting up a global framework to impose norms and regulate activity in this area. We can observe that the efforts made by the stakeholders are directly related to the spheres of influence of each of the actors in the process. The main challenge – which is not limited only to what can be decided in the WSIS – is to make the regimes that emerge the product of debate and consensus, to make them reflect the many interests and rights in play, and to ensure that they do not cater exclusively to the interests of corporations and governments in the industrialised countries.

The regimes which emerge from these interactions, and also discussion about a system of governance for the Internet that is currently taking place in the ambit of a task force on Internet governance, will mould the kinds of institutions that emerge in the future and the strategies that will be used to finance them.⁹

This kind of discussion is very similar to the debates about standards for integration in the area of physical infrastructure (strategies for multi-modal transport to the provincial areas of a region), energy infrastructure (the integration of networks for international commerce in energy), and communications infrastructure (standards for connections with local networks for long distance calls). In each of these cases the result has emerged after a long process of negotiation, and the implications are felt in every kind of industry and market from electronic commerce to digital music.

2.3. *The networks ambit: International organizations, financial mechanisms, operational policies and procedures*

The international organizations, financial mechanisms and operational policies and procedures will reflect agreements about the regimes. The standards and norms for interconnection, regulation and utilisation would create and develop institutions and modes of production for adopting the standards, and also procedures and would guarantee that they will be adhered to.

The multilateral banks and international organizations of the United Nations, for example, have adopted, and reinforced through financing and technical cooperation, a growing trend towards the use of market mechanisms to construct telecommunications infrastructure. In this context, the appearance of regulatory institutions in the telecommunications sector has,

⁹ These debates suggest that the regimes for the information society are under construction, and that they depend on the interaction of the stakeholders' interests. In the case of Internet, the ICANN is under pressure not to just represent corporative interests based on the unilateral vision of the United States government about how the industry should develop. There is a danger that after the organization becomes an independent body in 2006 it may continue with the same logic (The Economist, *Controlling the Internet: World v Web*, November 20 2004). Other important actors are proposing that standards be integrated without the intervention of the countries in the setting of regulations, as in the case of the recent agreement (October 2003) between IBM and Microsoft to implement their own standards (known as WS Splat, which means coordination to put into operation specifications of Web Services Architecture). In this case the relative size of both these giants in the software and PC industries excludes the interests of other actors (especially of users) in the development of the industry (Vierboom 2004). The design of these standards could contribute to impeding efforts to adopt free software by using the power of the market to impose *de facto* protocols.

on the national level, opened the way for mechanisms of privatisation and concessions by creating financial mechanisms such as syndicated loans and guarantees, and also schemes to hedge against the risks for private investment (ITU 2003; ITU 2004).

In the area of ICT it is clear that the agreements about regimes that emerge contribute to reinforcing current trends in the adoption and use of technologies in the information society. In spite of this, action on the part of the international community could contribute to generating financial mechanisms and institutions which would promote solidarity among nations to attain world objectives in fields like connectivity, for example. Likewise, mechanisms to channel financial resources into the development of suitable technologies at reasonable cost, or programmes to create capacities to bring about greater inclusion in the information society for disadvantaged population sectors, could be given priority.

2.4. *Contracts and agreements*

Contracts and agreements serve as a framework for the activity of national and local bodies in providing the “information society” good. In the area of new technologies, the general trend has been to allow competition to stimulate private investment. The latest annual report of the International Telecommunication Union (ITU 2004) says that while 40% of basic services (fixed line telephones, and data transmission lines) is provided in monopoly situations and 60% is open competition, when it comes to new technologies (local cordless networks, mobile telephony, cable television, internet providers) there is competition in more than 85% of the market.

If we break this down by regions, however, we can see differences in these trends. While in Europe more than 80% of the countries have competition in these segments, the markets in the Arab states, for example, are mainly monopolistic. These differences, which depend on contracts and agreements to provide a determinate good that are adopted at the local and regional level, will ultimately have an influence on the provision of the public good at the global level.

When it comes to the contracts and agreements that connect the networks ambit to the local ambit, the main challenge is how to ensure that the commitments taken on by governments in the networks ambit can be implemented. Very often the many and varied commitments assumed by governments on the national level do not have suitable financial mechanisms, nor do they bring about concrete changes in national priorities or reflect the composition of the public budget (Sagasti, Prada and Espinoza, 2004).

Just as regimes have an impact on the conduct of actors at the international level, so agreements and contracts have an impact on the local/national level. One example that is continually cited is the impact of the adoption of free software on the part of the State and the impact this has on the conduct of agents at the national/local level to adopt free software as well.

2.5. *The local/national ambit: Activities of national and local bodies to provide the information society GPG*

To a large extent activities to provide GPGs take place in the local/national ambit, and this is particularly true when it comes to the information society. There are three main subjects involved, (i) *Strategies to provide infrastructure for communications and information transmission*, which may be provided publicly, privately or in a mixed system, and may be subsidised or covered by the users, under a monopoly or in competition, etc, (ii) the *role of education in generating*

capacities in the population so that people can take advantage of the wealth of information and knowledge, such as national universal access programmes,¹⁰ specific positive discrimination programmes for population sectors with reduced access or for minorities, the incorporation of local content, the development of research programmes to establish a critical mass of experts in systems, ICTs, etc., and (iii) *strategies for adapting national activities to international standards*, such as the decision about free or proprietary software, the regulation of intellectual property rights, etc.¹¹

Each of these subjects has been foreseen in the WSIS lines of action. Based on a global public goods perspective, different decisions and stages must be borne in mind when defining what a GPG is, what activities would make up its nucleus, and what activities would be complementary. Having described an ideal system for providing the GPG, in the section below we tackle the question of where the nucleus of the PGP is located on the continuum of the idealised system of provision.

3. Activities of the GPG nucleus, information societies and complementary activities

In Figure 2 we present the components of the ideal system for providing the “information society” GPG, and activities on the continuum of the global ambit to the local/national ambit are shown. It is possible to define the activities of the GPG nucleus in two ways (expressed by the two areas shaded green in Figure 2). As was said above, depending on the system proposed, the range of the GPG nucleus will have an impact on the mechanisms that are used to finance its provision.

Option 1: The nucleus of the GPG is defined from the global ambit to the networks ambit. In this case the activities of the nucleus are defined from the characteristics that are exclusively of public good: externalities, non-rivalry, non-exclusion, and the gains that come from collective action. What is considered, for example, is the flow of information that is generated and transmitted on the Internet, the proposals and agreements for standardising information technologies, the regimes for the governance of Internet, the design of the enforcement mechanisms, the design of the mechanisms to improve security in information technologies, etc. Likewise, we could consider – if it keeps developing – the infrastructure which has scope that is strictly global, and the rules that govern it (the use of electromagnetic space, the incorporation of new technologies to expand the cover of information technologies to a global level, such as *stratellites*).

Option 2: The nucleus of the GPG also involves the local ambit. Concern about the question of inclusion in the information society, and worry about the gaps in access to

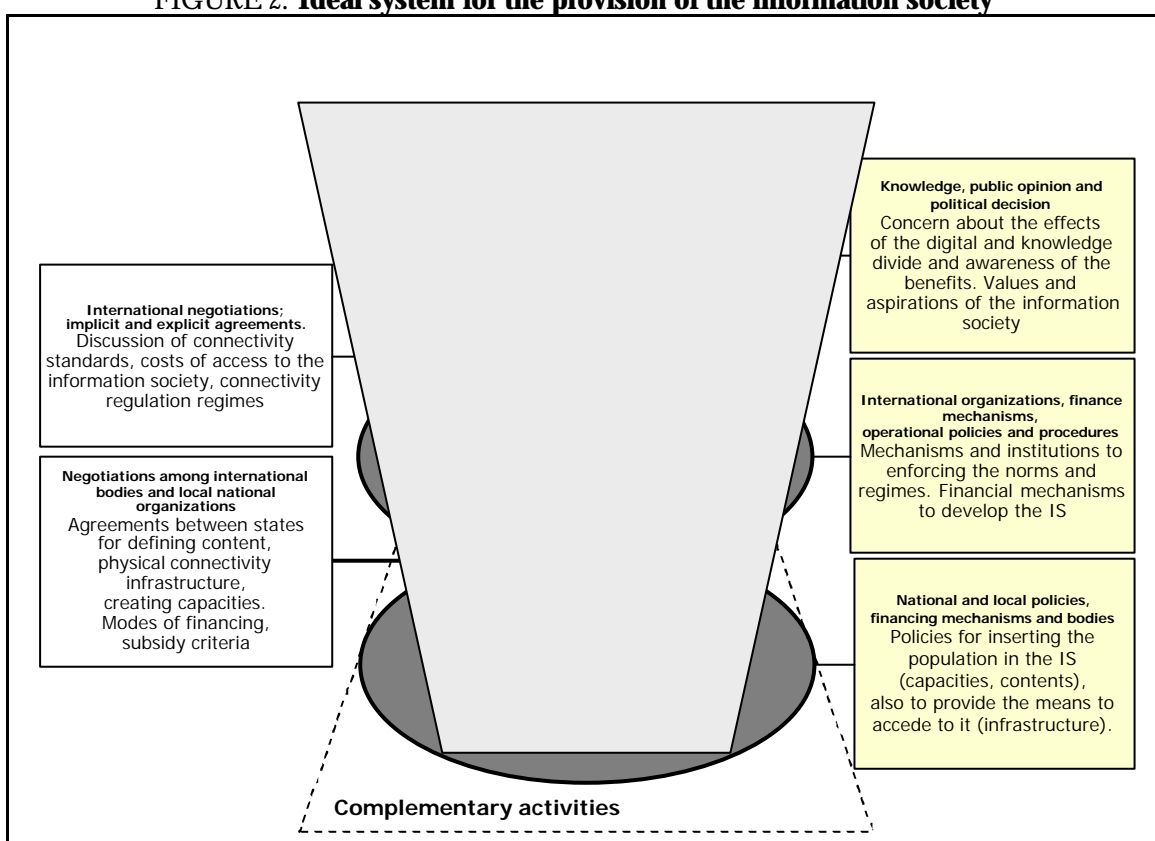
¹⁰ Universal access policies are geared to gaining access for users to communication technologies – in some cases this also means access to information technology – whether in their own home or through public facilities that are at a geographic distance that is defined through national standards. These policies also mean that the price must be affordable for users in the community. In short, the geographical barrier on top of the income barrier defines the extent of the efficiency gap in the market. This gap is calculated by the regulator in each country, so it is possible to identify which communities could be handled by the market, which communities would need a subsidy to make them commercially viable, and which cannot be catered to with the technology available and will need alternative mechanisms to provide this good (ITU 2003). These concepts will be integrated into the strategy of financing in section III.

¹¹ It is necessary to point out that the activities described in the local/national ambit probably do not have the properties of non-exclusion and non-rivalry, and their externalities are manifested only in this ambit, which “technically” disqualifies them from being considered global public goods. It is this that sometimes causes confusion about whether a good can be classed as a global public good. Sagasti and Bezanson (2001) argue that a GPG exists to the extent that the international community, through knowledge, policy decision and global public concern, consider it to be one.

technologies and to knowledge, have prompted the adoption of a wider definition of the activities of the nucleus. That is to say, they coincide more with activities which take place in the local/national ambit and which in other cases could be considered “complementary” to the system for providing the GPG.

In this case, what are considered as part of the activities of the nucleus, apart from those indicated in the first option, are the provision of connectivity infrastructure for countries or population sectors that are disadvantaged in access to the information society, and also support for adopting standards at the local level, which would allow greater connectivity and access. This could be compatible with the aspiration to set “universal access” schemes for developing countries in motion, as has been done in the European Union and the United States, with the aim of including disadvantaged population sectors from provincial regions in those countries.

FIGURE 2. Ideal system for the provision of the information society



In both cases the implications for financial strategies are important. In the first option, the financial strategy could involve mechanisms to reduce externalities through making the users pay for the services they accede to – for example, enterprises providing means of communication pay tariffs for the exclusive use of internet protocols (IPs), or users “buy” the services of secure servers or of information filters to avoid undesirable mail. Logically, this modality means that the resources are redistributed to provide the services for which the users pay. However, this vision of the information society only guarantees the rights of users who already benefit from the system. In short, this amounts to protecting rights and giving better service to those who are already in the information society – and thanks to competition, the prices are lower and lower.

The international community has stressed how important it is to adopt the widest definition of the information society so as to progressively include the whole population of the world in the benefits and potential of that society. And this wide vision also appears in the governments' declaration of principles and in the civil society declaration in the first phase of the WSIS.

With this general aspiration as a base, we consider that it is possible to design options for a financing strategy which would permit the resources of those who are already in the information society to be distributed, to be channelled into promoting the rights of those who have not yet been included in that society. Likewise, it is possible to go beyond a vision of user-service, such as that described in the paragraph above, and include innovative financial mechanisms in harmony with the market that would allow resources to be channelled into communications and information infrastructure. As well as this, resources from different international sources could be channelled, and domestic resources mobilised, to create capacities in countries that are currently disadvantaged and enable them eventually to take advantage of the potential of the information society.

III. Exploring strategies for financing the information society

In the academic literature a variety of different options are proposed to link sources of finance with the intrinsic characteristics of the GPGs and to bring about the allocation of resources for providing GPGs. This would be done with criteria of efficiency, and it would serve as a basis for multilateral agreements. To this end, a number of different classifications and typologies have been suggested with criteria for allocating responsibilities for providing a good, and this would allow the actors with greater responsibility and participation in the financing and production of these goods to be identified.¹² These include the proposal by Sandler (2001, 2004) to allow a proportion of the contributions from individuals to be allocated in accordance with their participation in the production of the good, using technologies of aggregation as a criteria (see Box 2). In short, these criteria could serve to define the types of financing (public, private, mixed, etc.) that should be allocated in the provision a particular good

¹² A wide selection of these typologies is considered in Annex B of Sagasti and Bezanson (2001). Among them we find the technologies of aggregation, the criteria on non-exclusion and non-rivalry for impure public goods (clubs, natural resources and mixed goods) and for pure ones; spatial criteria (regional, national or global externalities), etc.

Box 2. Aggregation technologies, global public goods and sources of finance

Aggregation technologies are crucial criteria for understanding efficiency in the provision of global public goods. These criteria seek to explain how individual contributions are combined to achieve a total level of public good available to consumers. In accordance with these criteria it is possible to allocate responsibilities (reflected in institutional arrangements) and identify the most suitable sources of finance. According to this typology, goods can be classified into three kinds, with three sub-types:

- ? **Summation:** The aggregate level of the public good is equal to the sum of the contributions of the actors (cleaning a lake, preserving a tropical forest). A sub-type is a **weighted sum** in which the level of provision of the public good is equal to the sum weighted in accordance with the relative contribution of the countries in question (the reduction of acid rain, elimination of the terrorist threat). In both cases collective action is the best option, and the system of financing will be more efficient if each country contributes in a way that is similar or weighted as the case may be. However, the common problems of coordination and free riders may occur.
- ? **The weakest link:** The smallest contribution determines the aggregate level of the public good (the creation and design of international standards for the financial market, the prevention and mitigation of natural disasters). In the sub-category of **the weaker link**, the smallest contribution has the greatest influence on the aggregate level of the good, and the next countries have a contribution and influence that decreases proportionally (connectivity to internet, transport infrastructure). In these cases the best strategy is that the actors who are most involved, generally only a few, should have incentives so that they provide the good with their own resources or with resources from international cooperation.
- ? **The best shot:** The longest contribution determines the aggregate level of the good (finding the cure for a disease, preventing conflicts, agricultural research). In the case of **the better shot**, the bigger contribution has the most influence, and the other contributions have influence that decreases proportionally (discovery of a treatment, managing political instability). In these cases the best strategy is that the actors who are most involved should provide the good through contributions to a common fund, since there are few actors and the question of coordination would facilitate these schemes.

Source: Sandler 2001, 2004.

But how can wide-ranging agreements and automatic results be achieved when the public good includes a variety of components with different degrees of non-rivalry, non-exclusion and externalities, asymmetries in decision making, and marked differences in patterns of consumption and provision? The information society, as defined in its widest sense in line with the section above, is clearly a good of this type since it contains the following elements:

- ? A first global public component which is in *the global domain* and the *regimes* (the information which flows freely through the Internet, standards for connectivity, regimes for governance, etc.).
- ? A second component that is more geographically localised and in which there is a high degree of rivalry in consumption is in *the networks domain*, and it influences the national/local ambit through *agreements and contracts* (often called the information technologies market, which includes connectivity infrastructure and related services, development, and the design and use of technologies for transmitting information and increasing productivity).

- 2 In third place there is a more localised component in *the local/national ambit* which has a high degree of exclusion as regards benefits (aptitudes to be able to accede to the flow of information, the capacity to generate knowledge and content, the educational level of the population to be able to take advantage of the benefits of the information society, the capacity to adapt content to the ambit of production and to generate increases in productivity).

The criteria about global public goods proposed in the academic literature for allocating financial schemes very often does not manage to discern the most efficient way to provide a public good or allocate responsibilities for financing in an automatic way. It is possible to obtain general criteria for allocating funds to provide determinate goods (such as “*the one who causes the pollution pays,*” thus creating a market for emissions, which is what has taken place in the fight against climatic change) it is not always possible to allocate tax obligations without going through previous agreements and negotiations in which policy criteria can have more weight relative to technical criteria (such as “*the richer countries should finance the provision of global security against the threat of terrorism.*”) There was a notable step forward in a recent book from the UNDP in which mention is made of three dimensions of what is “public”: the consumption of goods, the taking of policy decisions about providing a good, and appropriation of the benefits (Kaul et al 2003). In this way, the ideal provision of public goods would be achieved when these three dimensions are in equilibrium.

However, the GPG focus could provide a series of criteria for identifying which options are most suitable for financing the information society. From a GPG perspective, the aspirations and values of society make up the definition of a GPG, and this includes the three aspects mentioned above. But the negotiations at the political level must yield the means that are needed to be able to put these aspirations and values into practice, especially when it comes to financial resources and regimes. To the extent that plausible proposals can be developed, the vision of the information society will be viable.

1. How much will it cost to develop the information society, bearing in mind the WSIS Declaration of Principles?

It is very difficult to arrive at concrete figures about the price that would have to be paid to provide a good like the information society, which is made up of three elements with different properties. To give an idea of the amounts involved, one part of the second component (the information technologies market) was calculated at USD 950 thousand million for 2004, and it is estimated that this could rise to USD 1,250 thousand million in 2008 (IDC 2004).¹³ And we should bear in mind that ICTs are only one part of the infrastructure that is needed.

According to other estimates, the total value of physical infrastructure in the world in the year 2000 was USD 14,966 million.¹⁴ Of this, infrastructure in the electric sector – an indispensable element to ensure connectivity – amounts to 40.4% of the total, while the fixed and mobile telecommunications sectors come to 2.5% and 3.3% respectively (Fay and Yepes 2003).¹⁵ The composition of telecommunications and electricity infrastructure has varied considerably: in 1960, the telecommunications sector accounted for 2% of the total

¹³ This calculation includes three components, hardware (40% of the total cost), software (40%) and services (20%).

¹⁴ Of this total, 60% is in high-income countries (only 16% of the world’s population), 28% is in middle-income countries (45% of the world) and 13% on low-income countries (39% of the total).

¹⁵ The rest is for transport infrastructure (41%), water and sewage services (7.5%) and trains (5.3%).

value of infrastructure, but in 2000 it amounted to 6% of the total. In the same period, the share of the electric sector increased from 22% to 44%. It is estimated that in 2010 telecommunications infrastructure will make up 10% of the total value.

One of the limitations on estimating the needs for future electric and telecommunications infrastructure has to do with the capacity for transformation and the continuous change in the technologies which serve to support the information society. In developed countries, where there is relatively less need to invest in infrastructure, it is maintained that market development itself will generate incentives to close the gaps in access. As technologies reach the so-called tipping point, the adoption of information technologies accelerates and it becomes much cheaper to connect new users. In the literature on economics and industrial organisation, this is known as the network effect: the cost of adoption increases in proportion to utility. The fact that a big part of the population has already joined the system generates the necessary incentives for more people to get connected, which means that the marginal costs of connection come down and investment increases to cover expected new demand. In those countries the technological explosion has moved the market near to the tipping point, so we can expect exponential growth in enterprises which adopt web services in the next twenty years, from 25% of firms in 2004 to 75% in 2010 (Schmelzer and Bloomberg 2004).

There have been attempts to make estimates for developing countries. The World Bank has published a study with the rates of social return on its investment projects in the telecommunications sector for the 1960-2000 period, and the estimate is that this reached 21.5% of the value of investment (Briceño and others 2004)¹⁶. In this same study it is calculated that developing countries need annual investment of between 6.5 and 7.7% of GDP to close the infrastructure gap and meet the needs of maintenance – some USD 550-650 thousand million, and USD 450 thousand million assuming an acceptable level of efficiency (Briceño and others 2004). In these estimates, 30% is absorbed by the electric sector, and telecommunications accounts for between 5 and 7%. It should be noted that, at the moment, developing countries spend 3.1% of GDP on infrastructure, but the effort to close the infrastructure gap varies depending on level of income. In low income countries, which currently invest 4% of GDP, the effort would mean raising this between 7.5 and 9% per year, whereas in middle to high income countries the effort would mean an increase from the current level of 2.6% of GDP to 3%.

When it comes to the third component, one calculation that could serve as an approximation is the effort necessary to meet the second Millennium Goal of achieving universal primary education.¹⁷ In this case, estimates of the investment that would be needed in 2004 range from USD 9.1 to USD 38 thousand million. This would come mainly from developing countries, but there would also be support from developed countries which would amount to USD 60 thousand million between 2004 and 2015 (DESA 2001).

¹⁶ At the regional level, rates of return start at 31.1% in Eastern Europe and 16.6% in Latin America.

¹⁷ The Index of the Information Society drawn up by Minton and Emberley (2004), and also other estimates, consider that in order to measure capacities to take advantage of the benefits of the information society, the most important indicator is the population's level of higher education. On the other hand the director of the technology group of the UBS investment bank thinks that 70% of the world's population are "analogue", and these people do not have the capacity to use information technologies correctly, 15% are "digital immigrants", people who adopted the new technologies in their youth, and the remaining 15% are "born digital" since they adopted these technologies in their childhood (*The Economist* 2004). It is clear that both these opinions reduce the problem. In the first case information technology is directly related to the better-educated population, and in the second it is reduced to a question of generations and ignores the fact that many infants grow up without any opportunity of access to the information society.

To sum up, the level of investment needed to establish the information society in developing countries is great, and it calls for a very big effort to mobilise domestic and foreign resources and sustain this over time.

2. The internalisation of externalities: how far is this possible?

From a public goods perspective, the first option for financing is to ask how far it is possible to *internalise externalities*. That is to say, what is the limit of the dynamic of markets themselves to generate the conditions to expand cover and allow a larger proportion of the population to join the system, taking advantage of economies of scale and the network effect? When it comes to the information society this mechanism has its limitations, in spite of the advances that have taken place in recent years.

First, the incorporation of new users through the growth of investment (private, public or mixed) so as to recover the investment and achieve financial sustainability through payment by users, comes up against the barrier of the poverty levels in the population. According to World Bank indicators, the average cost of acceding to Internet for 20 hours per month is USD 37. In high income countries people pay USD 23 and in middle-income countries they pay USD 29, but in low income countries the cost is USD 57. To make matters worse, in terms of gross national income *per capita*, this cost amounts to only 2% in high-income countries and 19% in middle-income countries, while in low-income countries the cost is 2.5 times income.

Besides the income barrier there is also the geographical barrier. This is why we find the suggestion in the academic literature that there is a difference between “universal service” (cover at the level of each home) and “universal access” (cover at the level of communities in which the population can accede to ICTs at an accessible distance depending on the geographical situation). The second strategy is more suitable for developing countries, and different experiences have proven to be successful. For example, in Latin America universal access funds have been developed based on charging a fixed percentage of the gross income of the regulated enterprises in the telecommunications sector. This fund is for promoting cover in rural areas (or thinly populated urban areas) using competition mechanisms such as auctions for the lowest subsidy. What happens is that a competitive environment is created for a number of enterprises that can provide access for X percent of the population at a distance Y from a public installation, at a price Z. The fund provides the finance necessary to cover fixed costs, and it also makes a commitment to guarantee a minimum level of profitability (Intelecon 2004). However, it is recognised in the literature that even when it is possible to some extent to mitigate the income barrier and the geographical barrier by using competition mechanisms and regulation schemes, there is a so-called “real access gap” in which the implementation of market mechanisms is scarcely viable (Navas-Sabater, Dymond and Juntunen 2002; ITU 2003).

However, it is not possible to predict the impact of technology sector innovations that would bring about reductions in the cost of access to technology and thus open up access to a greater number of users. For example, what would be the effect of the accelerated development of low cost computers, or Simputers, on access for poorer populations?¹⁸

¹⁸ The “Simputer” – a “Simple”, “Inexpensive”, “Multilingual” computer - is a portable unit that has been developed by an enterprise in India. Its power source is three AAA batteries, and instead of a keyboard it operates with a touch screen interface that mainly utilises icons and graphics. The Simputer uses LINUX

Besides this, there is talk about the possibility of putting *stratellites* on the market, satellites placed in the stratosphere that would provide a more economical way to transmit digital data and information that could be received by antennae. At the moment this technology is only economically viable in areas of high population density, but we can imagine similar technology with a greater range that could provide cover in isolated and rural areas. This long-range technology can be developed from applications designed to handle commercial routes, which carry a lot of traffic but are not densely populated.¹⁹

Secondly, the internalisation of externalities through the development of the market and better opportunities for investment might not solve the access problem through competition. For example, research carried out in the MERCOSUR countries indicates that hardware and software only account for around 40% of installing Enterprise Resource Planning (ERP) systems, and the remainder of the cost is for training, for internal equipment and for the general expenses of running the organization (Symnetics, 2000). Thus the subject of capacity – the third component in information societies – becomes very important, even for enterprises that have been able to adopt complicated web service connection schemes.

An appealing focus that was outlined in *The Economist* (2004) argues in favour of the potentiality of the market to internalise externalities. The next step for the technology sector will be to conquer complexity and simplify technology, which will help to lower the access barrier and consequently reduce costs. According to one calculation, American enterprises incur a cost of USD 700 thousand million per year because their systems are extremely complex, and around 80% of information technology budgets goes on adapting or repairing software and hardware systems that enterprises already have. The objective of ICTs should be to reach a point at which it is easy for the user to utilise the services available. We can draw an analogy here with the electricity sector, in which the user can benefit from the technology simply by plugging into a socket or flicking a switch. The average user does not have to know about all the processes that took place beforehand and made it possible for him or her to have access to energy (the production of energy, transmission, storage, control of demand, and so on). If simpler applications and uses of technology were developed for users who are already in the information society, this could benefit the developing countries since these latecomers would need a shorter time to develop the aptitudes to obtain the same benefits.

A third limitation is that while externalities may be internalised the result is not neutral of the kind of technology that is adopted, and this could lead to higher costs for adopting a new technological standard in the future. For example, in the area of mobile telephony three main technologies are in use: the open European standard or Global System for Mobile Communications (GSM), the Time Division Multiple Access system (TDMA), and the cdmaOne (2G) system. In Latin America TDMA is used most (60% of the mobile telephony market), but this goes against the world trend since TDMA accounts for only 10% of the world market as against 69% for GSM. In Latin America GSM technology only accounts for 6% of the market (CEPAL 2003).

software with a public domain font code, and it can be bought for about 200 dollars. (<http://www.simputer.org>).

¹⁹ See <http://www.globetel.net> for further information about the potential of this technology and about the advantages of *Wireless Fidelity* (Wi-Fi) in general, which is spreading very fast in the developed countries and in the big cities of the developing world.

3. Financial mechanisms for the information society

What happens when the mechanisms of internalising externalities do not function automatically? With this question in mind, in the following section we will outline a series of financial instruments and their main perspectives, which will serve as building blocks for constructing strategies for financing the information society.

At the moment there are many financial options for development, and there are also specific instruments to cater to the diverse requirements of developing countries. Some of these have not been thoroughly explored from the perspective of the information society, and others are being developed, but experience in other sectors could be significant (Table 3). These instruments can be differentiated in accordance with the kind of financial source in question, the amount of resources that could be mobilised, the institutions that mobilise the funds, the kinds of activities that are financed, the criteria employed for eligibility, the requirements for administration and administrative capacities, mechanisms for disbursement, and the volatility of the funds. The information society could be financed with a combination of the kinds of financial instruments given below.²⁰

Bilateral sources. Bilateral instruments involve providing finance directly from a donor country to the receiving country. The resources are mainly channelled through aid agencies as part of official development aid (ODA) and also through international programmes of the ministries in the area in question (ministries of infrastructure or of communications), and through independent agencies (such as those that promote and guarantee investments by enterprises in the country itself, such as the Overseas Private Investment Corporation (OPIC) in the United States.

Bilateral assistance is one of the tools available to the developed countries for putting their foreign policy into practice, and it is usually guided by strategic objectives and interests. The motivation behind it (and the criteria of eligibility) vary from country to country, they have evolved over time, and they range from international solidarity, geopolitical interests, and the provision of international public goods (especially connected to peace, security, financial stability and the protection of investments). Hence ICT has not been the sector that has benefited most from these kinds of financial instruments. Funds for investment in information technologies went from USD 1.2 thousand million in 1990 (2.5% of total bilateral ODA) to USD 194 million in 2002 (0.3% of the total).

There are two vital elements that should be promoted in the future to increase the financial resources that go to this sector. First, it is necessary to promote private investment from enterprises in the donor countries by fostering mechanisms to exchange debt for investment in connectivity, or by using guarantees to mitigate risks, which can be done on a small scale and can be directed to the poorest countries. Second, it is necessary to promote bilateral aid to the poorest countries through budget support for the current costs of maintaining infrastructure, or by using bilateral funds to guarantee access to multilateral sources for investment in the sector (for example, making payments that are due to multilateral sources or by cancelling bilateral debts to increase the country's capacity to absorb funds and raise investment, both in infrastructure and to provide services to create the capacities needed to be able to accede to the information society).

²⁰ In this section there are results obtained in Sagasti, Bezanson and Prada (2005). These results are complemented with the preliminary results from the Task Force on Financial Mechanisms for ICTD of 20 November 2004.

TABLE 3. **Financial instruments for the information society**

Financial instruments	Sub-types of financial instruments
1. Bilateral sources	
? Regular and concessional loans	? Loans for programmes, projects and related sectors ? To governments or intermediaries for revolving funds
? Donations to organizations in the public sector or civil society	? Public or private pre-investment. Technical cooperation ? Direct fiscal support for the costs of maintaining infrastructure ? Donations to ensure access to multilateral or private investment funds
? Debt management	? Exchanging debt for specific investment (education, infrastructure)
? Funds to promote foreign investment (FDI)	? Loans, shares and joint ventures guaranteed by bilateral agencies against political, regulatory and exchange rate risks (e.g. OPIC)
2. International organizations (the United Nations system and regional organizations)	
? Donations	? Technical cooperation and donations for institutional development (regulatory)
3. Multilateral development banks (World Bank, regional and sub-regional banks)	
? Regular and concessional loans	? Loans for programmes, projects and sectors (including sectoral adjustment loans) for the public or private sector ? Pilot loans to build capacity (learning and innovation)
? Donations to bodies (mainly public)	? Technical assistance and the strengthening of capacities ? Covering pre-investment and associated costs
? Instruments to manage the risks of private investors	? Guarantees against political, contractual, regulatory, credit and exchange rate risks ? Financing for operations hedging against exchange rates and interest rates ? Securitization, syndicated loans, financial rents ? Participation in shares (direct, quasi-equity, preferential shares)
? Debt reduction	? Operations of reducing debt by exchanging it for investment
? Additional instruments	? Mobilisation of resources from other bilateral and multilateral sources ? Bonds to strengthen domestic markets in local currency
4. Private sector	
<i>a. Corporations</i>	
? Direct foreign investment and concessions	? FDI: subsidiaries, partial investment in shares, joint-ventures, privatisation ? Participation in the private provision of public services (concessions)
? Donations and socially responsible activity	? Corporative donations to public and local civil society institutions and socially responsible activity
<i>b. Commercial and investment banks</i>	
? Loans	? For investment programmes and specific projects
? Instruments to manage risks	? Derivatives, options, futures, <i>swaps</i> , hedging instruments, technical counselling ? Guarantees and provision of insurance
? Investment in portfolios	? Purchase of bonds and shares (standard, performance linked bonds, convertible bonds, subordinate, in international markets, etc) ? Investment in capital markets in developing countries and socially responsible investment (SRI)

Financial instruments	Sub-types of financial instruments
<i>c. Private foundations, non-profit and non-governmental institutions, individuals</i>	
? Donations	? Funds for specific projects
? Financial remittances	? Workers' funds which guarantee investment in rural areas
5. International taxes (single fund for a specific purpose)	
? Institutional arrangements for taxes	? Global tax on information transmission (Bit Tax) ? Global tax on inputs (e.g. production of chips)
6. Partnerships	
? Multi-donor funds	? Financial funds for the information society ? <i>Ad-hoc</i> version of the International Finance Facility

Adapted from Sagasti, Bezanson and Prada (2005)

International organizations (United Nations system). These organizations make small donations to recipient countries mainly to support programmes in the public sector. They also play an important role in creating capacities and technical cooperation in developing countries, and in designing standards, transmitting best practices, and holding forums for negotiation and the development of knowledge. The support of these bodies in putting reforms into practice is crucial in countries with a lower level of institutional development. Their contribution is focused both on the first component of the information society, that is to say in the area of regulation and standardisation, and in the sphere of the third component, which has to do with the creation of capacities, especially those that generate development strategies for the information society at the local and national level.

The most important aspect of international bodies is rooted in their capacity to coordinate the points of view of different countries in the world, the numerous civil society organizations and the private sector on matters that fall within their specialised field. However, this is also their main weakness. These institutions operate in a variety of areas and are financed with compulsory contributions from countries and with voluntary contributions from different sources. This means that transaction and administrative costs are high. Unlike the bilateral funds, which can choose which countries they wish to support, these institutions operate in a global ambit in accordance with their mandates.

Multilateral development banks (MDBs). These institutions are in a privileged position among the organizations on the development sphere. The MDBs interact with a wide range of institutions including governments in developed and developing countries, regional and national organizations, bilateral aid agencies, enterprises, private banks, capital markets, investors, the academic sector, etc. These organizations mobilise resources from capital markets and official aid sources to promote loans on terms that are softer than those prevailing in the market, and they also make donations, give guarantees, and act in developing countries. In addition, they provide technical assistance and counselling for development in the sectors involved in the information society, specifically in developing infrastructure and aptitudes, and also in disseminating best practices and academic research.

The MDBs have a wide range of instruments at their disposal, and they operate with different criteria of eligibility to adapt their instruments to the needs of different countries. Thus they can offer loans at concessional rates for long-term projects in which the private sector would not make a profit, or in which the benefits are less tangible. In some regions big networks of these institutions have come into being, and they have been relatively successful in providing sustainable anti-cyclical funds, as has happened in Latin America

(Sagasti and Prada 2002). Hence the MDBs have been able to cater to the financial requirements of each of the three components of the information society, with emphasis on mobilising resources for the infrastructure sector, long term sectoral loans to create capacities in education, and donations and technical support in areas like regulation, standardisation and the generation of information.

Two elements in these institutions are vitally important for the future of finance for the information society. First, their role in mitigating the risks involved in private investment and mobilising the different resources for the infrastructure sector. As yet, guarantees have not been developed to their full potential, but they have proved to be important in emerging economies and in a group of middle income countries in which they have effected a significant reduction in the costs of acceding to long term credits – even lower than sovereign risk (Griffiths-Jones and Lima 2004). The second element is the agreement of MDB financial support with national development strategies, which has far-reaching implications about the nature of relations with national governments. It has been found that if the programmes are coordinated with national strategies and are suitable for the countries (ownership), there are better results in terms of welfare and duplication is avoided, which makes for a gain in efficiency.

There is another question which is outside the ambit of the multilateral banks but very closely connected to it: the role of the International Monetary Fund. Although the IMF mandate is to provide short term financing for financial stability, the implications of its policies have a crucial impact on public investment decisions. A first factor has to do with the limits that are put on public investment by long term indebtedness because of the limits on the fiscal deficit that the countries (especially those that are most in debt) commit themselves to in their letters on intent. Some countries have suggested softening the limits on temporary investment to allow for a big push in investment, excluding investment in some specific projects from the calculation of the fiscal deficit (e.g. Peru and Brazil). These mechanisms could be explored for projects which promote connectivity. So as to avoid higher levels of indebtedness, only projects which the public sector (or multilateral banks) guarantee, and which are able to mobilise determinate percentages of private investment, could be excluded from the calculation of the deficit. However, if the projects are not profitable (socially or economically) or sustainable, this window of opportunity could disappear and not be used for the benefit of other countries.

The private sector and international capital markets. The private sector has been very dynamic in investment in communications infrastructure, and the modality that has been utilised most has been privatisation or concessions in telecommunications services. It is calculated that the level of private investment in telecommunications projects in developing countries in the 1990-2003 period was USD 265 thousand million, according to the World Bank's Private Participation in Infrastructure database (PPI). This expenditure has been concentrated in emerging middle-income countries, and it has been highly volatile – two operations to purchase shares in Telebrás-Brasil in 1998 involving USD 20 thousand million and other services, meant that the level of investment in that year was double the 1997 figure (in 1998 the private sector spent USD 70 thousand million in the telecommunications sector, in 1997 spending was USD 33 thousand million, but in 1999, after the Asian crisis, the amount was USD 10 thousand million).

However, the private sector offers a variety of financial instruments to increase investment (Mistry and Olsen, 2003). One field concerns mechanisms to mitigate the risks of investment, for example by providing guarantees, derived instruments, and above all

providing insurance at accessible prices (at first to higher-income countries with lower levels of risk). An area with a lot of potential is the development of funds for investment in infrastructure in poor countries. This has been tried with relative success in Africa, thanks to the capacity of bilateral agencies and multilateral bodies to provide guarantees for the operations and promote the mobilisation of resources from capital markets (e.g. the Emerging Markets Partnership and the South Africa Infrastructure Fund). Similarly, these mechanisms could be developed to allow more diversified socially responsible investment (SRI), which would involve big private investors who decide on their investments using criteria other than the maximisation of economic profitability (although this is still a long way from philanthropy) which could be exploited for developing infrastructure in poor countries. At the moment, less than 1% of the funds for SRI go to developing countries. There could be big opportunities for investment, and this has been shown by the rate of return that the World Bank has obtained in this sector (Briceño and others, 2004).

A second field has to do with the active role of private enterprise in providing welfare in the countries it invests in, in that the philanthropic activity of private foundations in developed countries could spread. The explosion of philanthropy in these countries is still directed to the donor countries themselves, but mechanisms could be explored that would allow a greater part of this investment to go to foreign activities, possibly channelled through United Nations organizations or through private foundations which operate in developing countries, so as to avoid administrative costs or duplication.²¹ These efforts could be directed to programmes to create capacities for the information society that are very focalised on determinate population sectors. However, an important limitation is that these funds might be “thematically” volatile, and could respond too much to the logic of public opinion, and there is evidence that they could suffer from the “flavour of the month” syndrome.

Another field to be explored is the possibility to use remittances from workers for local development and for providing public goods at the local level. One mechanism that has been proposed is to use a portion of these funds as a guarantee of saving, mobilising public resources under the modality of matching grants, and channelling them to providing infrastructure on a small scale in line with the priorities of the location in question, and part of this could be invested, or could complement investment, in connectivity in rural areas.

International taxes.²² Apart from the financial instruments which are not geared exclusively to the information society – described in this section – there are proposals to set up a series of mechanisms that would be used exclusively to finance the components of the information society. International taxes or levies would meet the need for mechanisms to resolve the question of the additionality of funds for the information society. These have great capacity for collecting resources, they are highly re-distributive, and they are efficient for resolving the problem of the under-provision of global public goods (internalising externalities).

²¹ For example, in 2002, philanthropy by individuals and enterprises in the United States was USD 241 thousand million. Individuals accounted for about 76% of the total, private foundations and fiduciary funds for 19%, and corporations for 5% (American Association of Fundraising Council 2003).

²² Technically, international taxes are considered as a way to internalise externalities because, when the good or service which gives rise to the externalities has to be paid for, the costs of that activity are internalised. However, these mechanisms are conceptually distinct from those dealt with in section III.1.3 as they do not need market mechanisms in order to operate; they need intervention from the public sector in order to do so.

However, these proposals have come in for strong political opposition in some of the developed countries because a high proportion of the burden of the different global taxes being proposed would fall on their citizens, mainly because of the relative size of those countries and the consumption patterns in them. Even so, the potential collector has indicated that these proposals for taxes have been considered by the developed countries, but to complement the tax income in those countries themselves, as in the case of the carbon tax (OECD 1997:6). Nevertheless, different actors in civil society have joined the developing countries in applying pressure in favour of putting these mechanisms into operation.

The most well known example of global taxes for the information society is the Bit Tax. According to UNDP (1999), this could have generated about USD 70 thousand million in 1999 if a tax of USD 0.01 per megabyte transmitted had been levied. But this proposal is not viable in the current context because it has limitations which are not only political but also technical. First, the tax could lead to high costs for the transmission of information, and the burden does not fall on an activity which is necessarily considered undesirable. Even if a charge were made only for undesirable information (such as spam), both focuses would incur very high administrative costs since they would be levied on a considerable number of servers, and, worse still, of distributors and users, and it would be virtually impossible to keep track of the enormous amount of information they transmit and receive. Second, the tax would be very regressive if it was imposed globally because it would fall with relatively more weight on developing countries where there is a higher cost in relation to the Gross National Product *per capita*. If the tax was imposed only on providers in the developed countries it is very probable that these activities would migrate to countries with great technological potential (India, Brazil, China) and in the end it would favour nations that have better access to different sources of finance, or else it would reduce the potential yield (and not be cost effective, something which has not even been tested in its original version).

One idea for setting up a global tax that is gaining strength, and that would avoid the potential problems involved in collecting the Bit Tax, is a tax on electronic components (Chip Tax). Whatever the kinds of components that are used as a base for taxation, the tax would have the advantage of being applicable to a relatively small number of producers, and they would all be easy to identify. The most important semiconductors are components in the memory and central processing unit (CPU). In the case of the latter, only two firms have more than 97% of the market (Intel had an average of 86.8% and in 2004 AMD had 12.1%, and these percentages have not varied to any significant extent in recent years). The total value of this market in 2004 was USD 30.2 thousand million, and it is expected to rise slightly, to USD 35.2 thousand million, in 2007 (World Semiconductor Trade Statistics).²³ In this case, a possible tax on net sales could be analysed with a view to creating a universal access fund on a global level, like the funds developed in some developing countries (Box 3). An additional incentive for these enterprises is that positive externalities could be generated with the increase in access for people in developing countries, which could be of considerable benefit to these enterprises.

²³ This structure has undergone big variations in the middle term. In 1996, the market was USD 16.6 thousand million, of which Intel controlled 83.7%, IBM had 4.1% and AMD had 2.7% (WSTS).

Box 3. The viability of a global tax for a universal access fund

An analysis of the Intel (2003) and AMD (2003) annual reports could give a better perspective on the viability of this initiative. In the case of Intel, in 2003 net income from microprocessors was USD 21.8 thousand million, and that from other products amounted to USD 4.2 thousand million. In 2003 AMD net sales were USD 3.5 thousand million, of which USD 1.9 thousand million was from microprocessors and USD 1.4 thousand million for memories. Therefore a tax of 1% on net microprocessor sales in both enterprises (98% of the world market) would have generated USD 237 million to start up this fund. If this trend in annual market sales continues, this fund could accumulate USD 1,500 million in 5 years. One possibility to obtain capacity for investment in a shorter time period could be to devise a leverage mechanism (e.g. bonds in international capital markets guaranteed with future income from the gross sales of both companies, or association with multilateral banks to undertake joint issue). Logically, the income of this fund would go to finance connectivity projects in the poorer countries, perhaps using competition schemes to enterprises which would be able to carry out projects using the lowest subsidy). Thus it can be seen that this is a very promising and interesting option to explore.

However, there is an important threat to the viability of a scheme of this type. First, these enterprises operate under taxation schemes that are defined and localised in a single country. 75% of Intel's production takes place at its facilities in the United States (Oregon, Arizona, New Mexico, Massachusetts, California and Colorado) — microprocessors, chipsets, memories and networks — and the other 25% is produced at its facilities in Israel and Ireland - components for microprocessors. The facilities in Malaysia, the Philippines, Costa Rica and China are mainly for the assembly and testing phases of production. As to AMD, the microprocessors are all manufactured in Dresden, Germany, and the memories are produced in Texas in the United States and in Yakamatsu in Japan. Therefore these companies pay taxes where their production is mainly located. Intel's pre-tax income was USD 7.4 thousand million, and the provision for taxes was USD 1.8 thousand million, while AMD had a negative net income of USD 0.8 thousand million, and only paid USD 2.9 million in taxes. Therefore the negotiation process would be mainly with the government of the United States, which has been reticent about initiating cooperative schemes of this type and on this scale. The German government would also be involved, but to a much lesser extent.

Another threat, which is less tangible, is dependence on market trends. The fund's income would be subject mainly to the evolution of the gross sales of these two enterprises. However, it is most unlikely that there would be any significant fall in the fund's income.

Partnerships. This is an alternative focus for obtaining a global financing scheme for the information society. In the first phase of the WSIS the Senegalese delegation presented the possibility of setting up a "digital solidarity fund" which would be financed with a solidarity tax, voluntary donations from private enterprises from the sale of personal computers, software and network equipment (one dollar for each of these), and also voluntary donations from the developed countries. These funds would be used for many activities to develop the information society, including developing infrastructure, developing applications and services for public administration and social services, developing new markets and creating stable jobs, developing human resources capacities, and preventing

the brain drain. The proposal is still being formulated, and it will be presented again at the second phase of the WSIS.²⁴

Another different focus is the possibility to apply the innovative concept of the International Financial Facility (IFF) to the question of the information society, but on a scale that is smaller and more manageable for the donor countries.²⁵ Added to this there could be schemes to hedge against risks using contributions from bilateral or multilateral sources to insure the debt, to solicit additional contributions from private foundations to provide guarantees for debt servicing, and to create financial mechanisms to facilitate disbursements (*matching grants*, the contribution of guarantees for investment funds, etc.). Likewise, a smaller scale financial facility could be channelled through established multilateral institutions, which would allow make it possible to avoid the additional costs involved in setting up a new institution. This fund could begin with a contribution of USD 0.5 to 1 thousand million from the developed countries as part of their contribution to ODA, and it would seek to mobilise a similar amount in capital markets through issuing bonds. There are many options for how the institution to take decisions could be designed, including management shared with developing countries, the inclusion of representatives from civil society and the private sector, or schemes of disbursement with solidarity criteria. Unlike the other mechanisms proposed for administering the fund through a global tax, this would diversify the source of income and could take advantage of the potential of international capital markets. In this case, negotiation would be multilateral and it could benefit from the current political situation in that the United Kingdom, where this concept came into being, has assumed the presidency of the G8 group, and is promoting innovative schemes for cooperation. A limited version of the IFF for something as strategically important as financing the information society could serve as a small-scale demonstration to test the scheme in the field.

4. Towards a strategy for financing information societies

In the section above we looked at a series of options for viable and complementary financial mechanisms. However, the strategy needs two additional elements to be complete: (i) The *type of countries*, divided among low-income countries (with low capacity to mobilise

²⁴ The proposal, at this level of its development, has two basic problems. First, it does not create the incentives that are needed to stimulate developed countries or private enterprises to donate financial resources. A problem with voluntary donations that has come up in connection with United Nations programmes is that the programmes that are based on voluntary contributions do not have stable income, and this has caused difficulties of sustainability for some of them. What is more, there is evidence that obligatory contributions (for current costs, and which come mainly from European countries) serve to cover the administrative costs of the programmes that are based on voluntary contributions, mainly financed with resources from the United States government (Bezanson and Sagasti 2002). The second problem has to do with the range of subjects that the fund could finance. In a context in which donor countries are tending to demand greater "development effectiveness", their contributions are mainly to specific funds with quantifiable goals and precise results. Besides, a fund that finances so many different areas must have a considerable amount of finance available in order to be effective (Section III.1).

²⁵ The basic idea of the IFF is to double the current amount of Official Development Aid through issuing bonds in capital markets payable with future contributions that will come from donor countries. This would generate an additional USD 10-15 thousand million between 2006 and 2010, and up to USD 50 thousand million per year in the 2010-2015 period. These funds would be for investment in developing countries and to meet Millennium Goals (Reisen 2004; DFID 2003). This proposal has been well received in the world of development because it is simple and relevant. However, it has not escaped debate, and there are some limitations that are technical (Would the issue of bonds be entered in the books as part of the debt ceiling?), administrative (Who would be responsible for issuing bonds, a country or an *ad hoc* trustee fund?) and political (Would the IMF resolve the problem of additionality or would it serve to freeze the contributions of donor countries?).

domestic and foreign resources), middle income (with middle level capacity), and middle-high income (with high capacity); and (ii) the *components of the information society*, which have diverse characteristics and require different solutions and financial mechanisms.

The first element of the strategy is to create and consolidate the mechanisms needed to make it possible to internalise externalities, with special emphasis on the infrastructure sector. In this way densely populated urban areas have been the prime recipients in the explosion in the use of ICTs in developing countries, and this trend should continue as far as possible. However, there is a wide range of instruments to strengthen regulatory capacities so as to avoid excessive dependence on particular types of technology on the one hand, and to reinforce current consumption patterns on the other. This is probably more operative in situations in which a country has a greater capacity to mobilise domestic resources (higher income). Nevertheless, the international community could direct financial resources and technical cooperation (mainly with United Nations programmes) to strengthen these capacities in countries that have less capacity to mobilise resources.

The second element is to take advantage of the range of financial mechanisms that are offered by different sources of finance in accordance with national development strategies, and adapt them to the needs of each country and each component of the information society. We believe that insertion in the information society ought to take place on the terms that each individual country decides. Middle and middle-high income countries can press for fixed-time investment programmes (10 years) through framework agreements with the IMF, proposing projects with high social return as regards connectivity, and financed with private capital resources. In this way the countries would have great freedom to decide what the best strategies for insertion are, and would depend less on loans from multilateral and bilateral institutions. On the other hand, low-income countries could include more ambitious proposals for connectivity investment programmes in their Poverty Reduction Strategic Papers (PRSP) to be able to accede to more debt reduction or exchanging debt for investment.

A third element is the constant and sustained pressure to install specific financial mechanisms for the information society (global taxes or the limited version of the IFF) so as to widen financial options and complement the resources going to developing countries. Initially there was opposition from developed countries, but there are good arguments from the GPG perspective that support for investment in the information society will result in benefits for the whole world, allowing not only the transmission of information but also support for social and educational programmes, the creation of commercial possibilities, etc. Therefore it is worthwhile structuring financial options for a big push in investment in developing countries.

A fourth element is that countries could take advantage of the implicit division of labour among financial sources. High-income countries could put greater emphasis on private sources that seek a certain level of profitability in their operations, while in countries with lower income levels the emphasis could be on softer sources of financing or on donations. Likewise, there is a division of labour among the components. At higher income levels the emphasis is on contribution to activities in the global ambit (participation in creating standards, technical assistance to other countries, more investment in research and development to create options that are more economical and more suitable for developing countries) while at lower income levels the areas where finance is most urgently needed is to tackle the gaps in infrastructure and capacities. Table 4 shows the challenges and the

financial instruments that are most important and most suitable by type of country and component of GPG.

Lastly, the strategy must complement shortcomings in the local/national ambit. It is clear that there are not only divisions between countries but also inside countries. The idea of complementing shortcomings involves identifying these differences within populations and implementing the strategies that are most suitable in the framework of that country's national priorities. In this way, countries with greater capacity to mobilise resources could initiate support programmes with softer sources of financing (bilateral and from foundations), and on a very small scale and geared to experimentation, so that these could be replicated on a larger scale with domestic resources. Countries with less capacity to mobilise resources could initiate programmes financed by multilateral loans (and eventually with resources from capital markets through investment funds) for the more profitable layers of connectivity.

Strategic options for financing the information society

		Components of the “information society” global public goods		
		Global domain	Infrastructure	Capacities
Kinds of country (by income)	Middle-high	<p><u>Main challenge.</u> Participation in designing standards, governance and technical assistance to other developing countries (best practices)</p> <hr/> <p><u>Instruments.</u> Technical cooperation, counselling of private enterprises, support funds for participation (NGOs)</p>	<p><u>Main challenge.</u> Mobilisation of resources from the private sector and expansion of domestic investment</p> <hr/> <p><u>Instruments.</u> Universal access funds with mobilisation schemes for foreign and domestic resources, with high participation of capital markets</p>	<p><u>Main challenge.</u> Creation of connectivity options more suitable for developing countries (investment in R&D)</p> <hr/> <p><u>Instruments.</u> Sectoral financing for focalised education programmes (multilateral)</p>
	Middle	<p><u>Main challenge.</u> Support for adopting standards, participation in their design</p> <hr/> <p><u>Instruments.</u> Long term loans to strengthen regulatory schemes (multilateral)</p>	<p><u>Main challenge.</u> Minimise private investment risks and provide stable long term investment funds</p> <hr/> <p><u>Instruments.</u> Lowering of investment ceilings (IMF), guarantees against risks (multilaterals), universal access funds</p>	<p><u>Main challenge.</u> Investment in education for better insertion of the poorest population sectors</p> <hr/> <p><u>Instruments.</u> Sectoral financing for education (multilateral), focalised donations for intervention</p>
	Low	<p><u>Main challenge.</u> Support for adopting standards and for creating content (inclusion of the population)</p> <hr/> <p><u>Instruments.</u> Technical cooperation, donations to strengthen regulatory capacities (bilateral)</p>	<p><u>Main challenge.</u> Support for the creation and maintenance of infrastructure (big push to cover sunken costs)</p> <hr/> <p><u>Instruments.</u> SRI investment funds, guarantees (bilateral and from foundations), long term concessional loans and donations (multilateral banks)</p>	<p><u>Main challenge.</u> Programmes to create capacities and to prevent brain drain</p> <hr/> <p><u>Instruments.</u> Combination of resources for fiscal support (bilateral, multilateral, private foundations) to strengthen education systems</p>

IV. Conclusions and recommendations

The GPG focus allows us to recognise the elements that make up the information society in line with the vision, aspirations and values which define it, namely the global domain and regimes, and connectivity infrastructure and national/local capacities. Besides this, it allows us to explore a range of possibilities for financing each of the components, and also to propose financial options for the information society as a whole.

In addition, this focus allows us to recommend focusing efforts from the international community on consolidating assistance suitable for providing this good. To declare that a good is a GPG is only the first step towards providing it, and the negotiations to generate this system of provision could be enriched through adopting a systemic vision such as that presented in this paper. Each component has its own challenges, and the negotiation processes are under way, but there are solid arguments why representatives of civil society should recommend that governments and the different actors in the negotiations should adopt a *systemic vision* to avoid discussion and partial solutions to the question of the information society.

Hence the WSIS is an opportunity to discuss these points of view and to reach conclusions which, within a reasonable time frame, will enable the greatest possible number of people in the world to belong to the information society and take advantage of the benefits it has to offer.

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