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**Improvements and innovations in existing financial mechanisms****Improvements and innovations in existing financing mechanisms: information and communication technology for development****Report of the Secretary-General***Executive summary*

This report presents findings and recommendations on “Improvements and innovations in existing financial mechanisms” drawn from the 2009–2010 Commission on Science and Technology for Development (CSTD) intersessional panel discussions, contributions by members of the CSTD and other relevant literature. It presents observations and trends in the development of information and communication technology (ICT) opportunities and financing, and identifies key challenges and opportunities for addressing continuing gaps and new conditions in ICT development policy and financing. It concludes that financing mechanisms remain crucial and that further efforts are needed to address the access gap, develop new content and applications and build capacity. Capacity development and relevant content often lag behind heavy infrastructure and hardware investments. Financing these “soft” and less visible components, which are key to the use of technologies, remains a particular challenge. These are areas where it has been more difficult to generate funds from the private sector, thus highlighting the importance of continuous support from governments and bilateral and multilateral donor organizations.

## Introduction

1. The Geneva phase of the World Summit on Information Society (WSIS), which took place in 2003, recommended that “while all existing financial mechanisms should be fully exploited [to make available the benefits of information and communication technologies], a thorough review of their adequacy in meeting the challenges of ICT for development should be completed by the end of December 2004. This review shall be conducted by a task force under the auspices of the Secretary-General of the United Nations and submitted for consideration to the second phase of this summit.” In 2004, the Task Force on Financing Mechanisms (TFFM) released a report that was forwarded for consideration by the PrepCom of the Tunis phase of the WSIS in 2005.

2. One of the main outcomes of the Tunis phase was the Tunis Agenda for the Information Society, which contains a section on “Financial mechanisms for meeting the challenges of ICT for development”. The Tunis Agenda draws on the work of the TFFM, and identifies a number of areas as in need of greater financial resources, and where the existing approaches to ICT for development financing had been inadequate. The Tunis Agenda also outlines a number of recommendations that aim at “improvements and innovations in existing financing mechanisms”, directed at national governments and multilateral, regional and bilateral development organizations.

3. The CSTD has been requested by the Economic and Social Council to assist it in the follow-up to WSIS. In this context, the commission selected, at its twelfth session, to examine “Improvements and innovations in existing financial mechanisms” during its 2009–2010 intersessional period.

4. To contribute to a further understanding of the issues, and to assist the CSTD in its deliberations at its thirteenth session, the UNCTAD secretariat convened an intersessional panel meeting in Geneva from 9 to 11 November 2009. The present report is based on the findings of the panel, contributions by members of the CSTD, the multi-stakeholder processes<sup>1</sup> and other relevant literature.

## I. Background and key challenges

5. The issue of financing for ICT development does not stand in isolation, but should be considered within the overall framework of national ICT policies, and indeed national development and poverty reduction policies in general, as information and communication have become increasingly central to effective, sustainable economic growth throughout the world. The TFFM Report strongly encouraged the establishment of ICT policy frameworks that promote and enable competitive investment opportunities and open markets for these technologies and services: “removing barriers to market entry and resource mobilization can, by themselves, unleash major flows of untapped financing”.

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<sup>1</sup> The Open Consultations of the United Nations Group on the Information Society (UNGIS) on Financing Mechanisms for Meeting the Challenges of ICT for Development were held in Geneva on 8–9 October 2009. The meeting was hosted by the International Telecommunications Union (ITU) and jointly organized by the UNGIS Chair and Vice-Chairs, i.e. the ITU, the United Nations Educational, Scientific and Cultural Organization, UNCTAD, the United Nations Economic Commission for Africa and the United Nations Development Programme. The meeting was open to all WSIS stakeholders. There were 147 participants, representing governments (49), international organizations (41), civil society (41), the private sector (11) and others (5). In response to the call for contributions, more than 40 documents were submitted to the UNGIS Secretariat and published on the UNGIS website ([www.ungis.org](http://www.ungis.org)).

6. There are many examples of innovation and growth that have occurred in liberalized ICT markets, from mobile telephony and SMS text messaging to the Internet itself. To reinforce and sustain the impacts of such fundamental market forces, government policies must establish strong and effective regulatory mechanisms that can guide the transition toward lasting and expanding competition. As identified in the TTFM Report, the key regulatory imperatives necessary to promote market-based development include:

- (a) Licensing procedures;
- (b) Competition regulation;
- (c) Interconnection regulation;
- (d) Reducing costs and risks.

7. Throughout the past two decades, the overwhelming majority of countries have embraced, to one degree or another, the potential benefits of liberalized telecommunications markets and have followed the path of opening markets and establishing regulatory agencies aimed at managing and promoting competition. The challenges associated with market liberalization include not only the basic steps of modifying legislation and issuing new licenses, but the more complex demands of developing regulations that fairly and effectively implement each of the key requirements identified above. Perhaps most difficult, especially at the outset of such policy reforms, is for newly established regulatory authorities to obtain the expertise and skilled personnel, as well as other resources, essential to oversee a newly created competitive market. This is especially challenging when, as has most often been the case, the introduction of new, competitive operator licenses takes place before all the critical elements of the competitive regulatory regime have been set up.

8. At the same time, the rapidly changing dynamics of the ICT sector and its role in national economies and poverty reduction strategies has mandated that ICT policies be linked and integrated with a range of other government initiatives. Many countries have brought ICT objectives to the highest levels of public priorities, establishing new national ICT policy statements, “e-strategies” and high-level agencies empowered to promote the ICT development agenda across multiple sectors of public and private activity. This is new territory for most of these governments, which are also seeking to implement their own internal ICT-related resources and “e-government” initiatives.

9. Further progress is needed in the transformation of national telecommunications and ICT policies in many countries, and international technical assistance and best practices should be shared as widely as possible to facilitate these goals. One of the key roles that development assistance can play in this regard is to mobilize national forums and consultative processes at the highest levels of government, and also to follow up policy development exercises with affirmative, coordinated implementation projects across the spectrum of ICT sector initiatives.

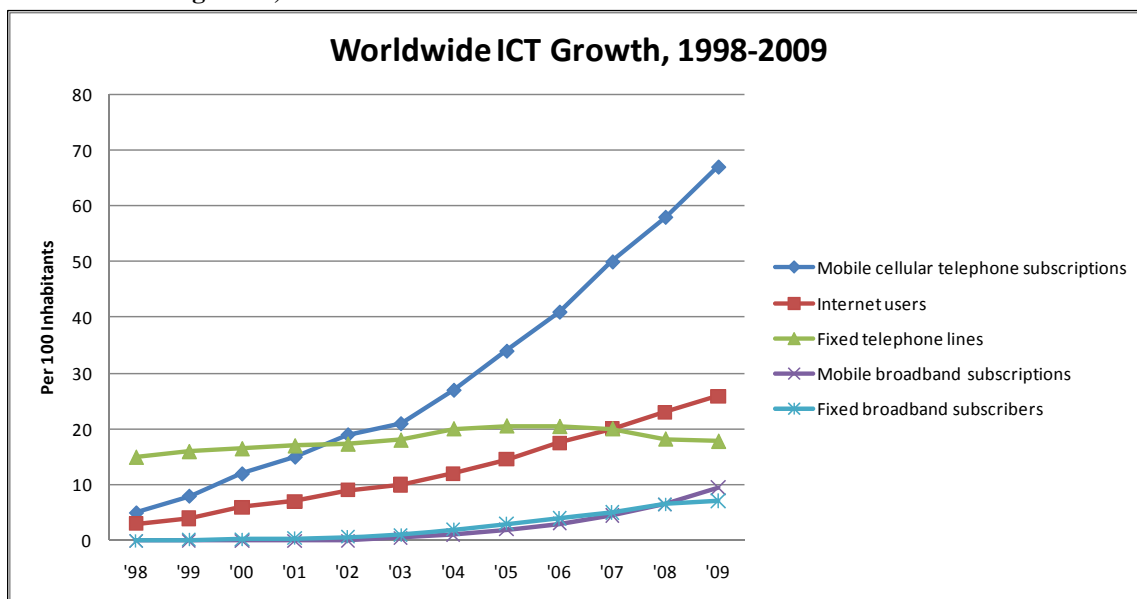
10. Similarly, the Tunis Agenda recognized that key prerequisites to effective utilization of financial mechanisms include, among others:

26. a. Creating policy and regulatory incentives aimed at universal access and the attraction of private sector investment.
- b. Identification and acknowledgement of the key role of ICTs in national development strategies, and their elaboration, when appropriate, in conjunction with e-strategies.

11. Since 2005 there has been continued rapid growth and evolution in the global ICT sector, particularly in developing countries, where markets have been expanding steadily, while the role and utilization of technologies for all forms of communication have penetrated further into the basic structures of these societies. This expansion is largely

attributable to the transformation of national policy regimes to encourage competitive entry and the free flow of financial resources into this increasingly vital sector.

Figure 1  
Worldwide ICT growth, 1998–2009



Source: ITU (2009). *The World in 2009: ICT Facts and Figures*.

12. The most dramatic development has occurred in the cellular mobile telephone market. Further supporting the continued expansion of ICT markets have been the ongoing trends of privatization of many state-owned operators, the creation and enabling of national communications regulatory authorities and the adoption of national telecommunications and ICT policy documents, strategic plans and legislation, embracing this sector as a critical component of the development agenda and channelling resources and political will into promoting ICT opportunities. International finance institutions and donors have continued to support policy reforms and initiatives as a priority focus, to promote further market expansion and access to competitive private finance.

#### A. Infrastructure investment

13. One of the most fundamental barriers to more rapid and efficient development of ICTs in much of the developing world is the lack of available and affordable transmission capacity in national and international “backbone” networks. Backbone networks invariably require the highest upfront investment in major infrastructure, thus imposing the greatest burdens and potential risks upon investors. They typically involve a combination of transmission technologies, from fibre optic cables (terrestrial and undersea) to microwave towers and satellite systems, and they must be fully linked across often harsh terrain in remote areas: mountains, jungles, oceans and deserts. For these reasons, the financing of backbone networks depends upon large-scale investments, often by a combination of governments, major network operators, international investors and partners, as well as donors and financial institutions.

14. Nearly all traffic is now digital, and an increasing proportion of voice is transmitted via Internet Protocol packet switching, so that the vast majority of transmissions worldwide are in digital format, indistinguishable between voice and data. As a consequence, the demand for additional backbone bandwidth throughout the world has grown steadily. In

less developed countries, the barriers represented by insufficient capacity, including the resulting premium prices for both international and domestic connectivity, have become a critical impediment to Internet market growth in particular.

15. Cooperative strategies and partnerships should be considered to help promote greater investment in remote backbones, including further eliminating entry barriers and introducing open access principles, mitigating financial risk through demand stimulation, and developing joint infrastructure together with other utilities. Based on this assessment, the Tunis Agenda recommended that greater international financial resources should be directed toward:

23. c. Regional backbone infrastructure, regional networks, Network Access Points and related regional projects, to link networks across borders and in economically disadvantaged regions which may require coordinated policies including legal, regulatory and financial frameworks, and seed financing, and would benefit from sharing experiences and best practices.

d. Broadband capacity to facilitate the delivery of a broader range of services and applications, promote investment and provide Internet access at affordable prices to both existing and new users.

...

27.b. Enhancing regional cooperation and creating multi-stakeholder partnerships, especially by creating incentives for building regional backbone infrastructure.

16. To a considerable extent, the much heralded expansion of mobile voice telephone networks throughout the developing world in recent years has overshadowed the continuing, and even growing, disparities between the least developed countries and the rest of the world in other areas of ICT infrastructure. In particular, the industrialized and emerging economies are seeing broadband Internet services become increasingly standard and widespread (although not yet truly universal), and the vast bulk of online services and applications are becoming bandwidth-rich, and hence less accessible to older, narrowband and dial-up technologies. In sub-Saharan Africa, especially, although Internet usage has grown substantially in percentage terms, levels of overall Internet penetration remain starkly low: less than 7 per cent, compared with world averages of over 24 per cent (see table 1).

Table 1

**World Internet usage and population statistics**

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	Population (2009 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Users Growth 2000-2009	Users % of Table
Africa	991,002,342	4,514,400	65,903,900	6.70%	1359.90%	3.90%
Asia	3,808,070,503	114,304,000	704,213,930	18.50%	516.10%	42.20%
Europe	803,850,858	105,096,093	402,380,474	50.10%	282.90%	24.20%
Middle East	202,687,005	3,284,800	47,964,146	23.70%	1360.20%	2.90%
North America	340,831,831	108,096,800	251,735,500	73.90%	132.90%	15.10%
Latin America/Caribbean	586,662,468	18,068,919	175,834,439	30.00%	873.10%	10.50%
Oceania / Australia	34,700,201	7,620,480	20,838,019	60.10%	173.40%	1.20%
<b>WORLD TOTAL</b>	<b>6,767,805,208</b>	<b>360,985,492</b>	<b>1,668,870,408</b>	<b>24.70%</b>	<b>362.30%</b>	<b>100.00%</b>

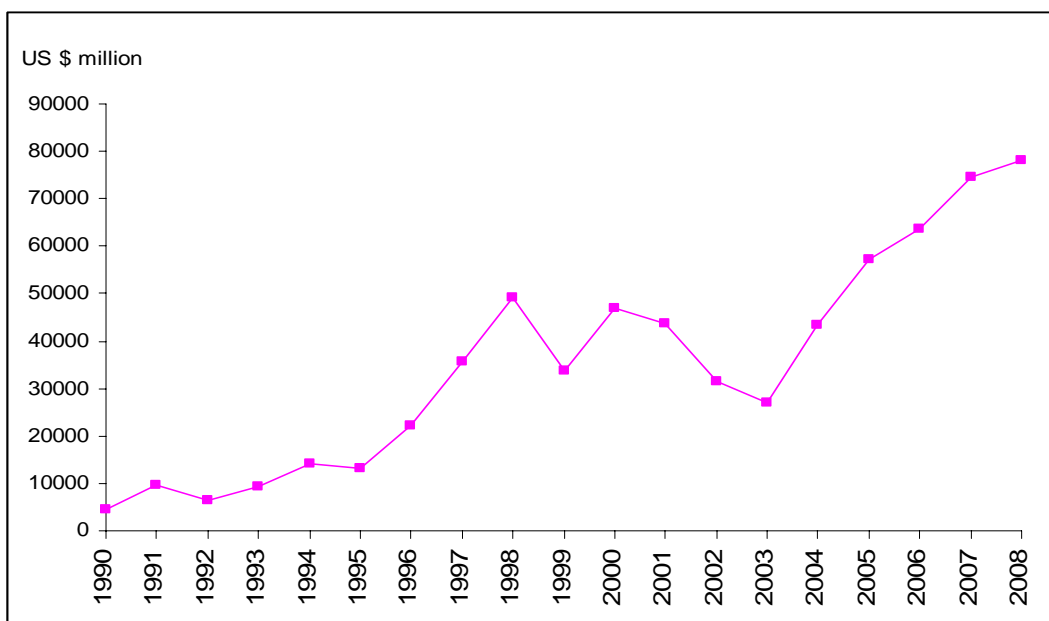
NOTES: (1) Internet Usage and World Population Statistics are for June 30, 2009.

17. A World Bank report<sup>2</sup> highlights the disparity in Internet access and backbone networks within Africa in particular, and notes that “the current backbone network infrastructure in sub-Saharan Africa is extensive but it is predominantly low capacity, wireless-based infrastructure designed to carry voice communications traffic. The current network infrastructure is not capable of carrying the volumes of traffic that would be generated if affordable broadband connectivity was available on a mass-market basis.” At the same time, there has also been a significant lack of international bandwidth connecting countries in Africa and other regions to the global Internet. The impact of these low levels of supply is that prices for data transmission, for example leased line capacity for Internet service providers, can be prohibitively high, suppressing the entire market for Internet development.

18. The supply of telecommunications infrastructure investment is sensitive to changes in the economic climate. Globally, investment in telecommunications infrastructure suffered from a dramatic decline during the “dot com” crisis at the turn of the millennium, but has since picked up momentum. The picture for international backbone network development, at least, is now becoming more promising on the whole. At the regional level, infrastructure investment in sub-Saharan Africa has experienced less fluctuation than it has in many other regions of the world.

Figure 2

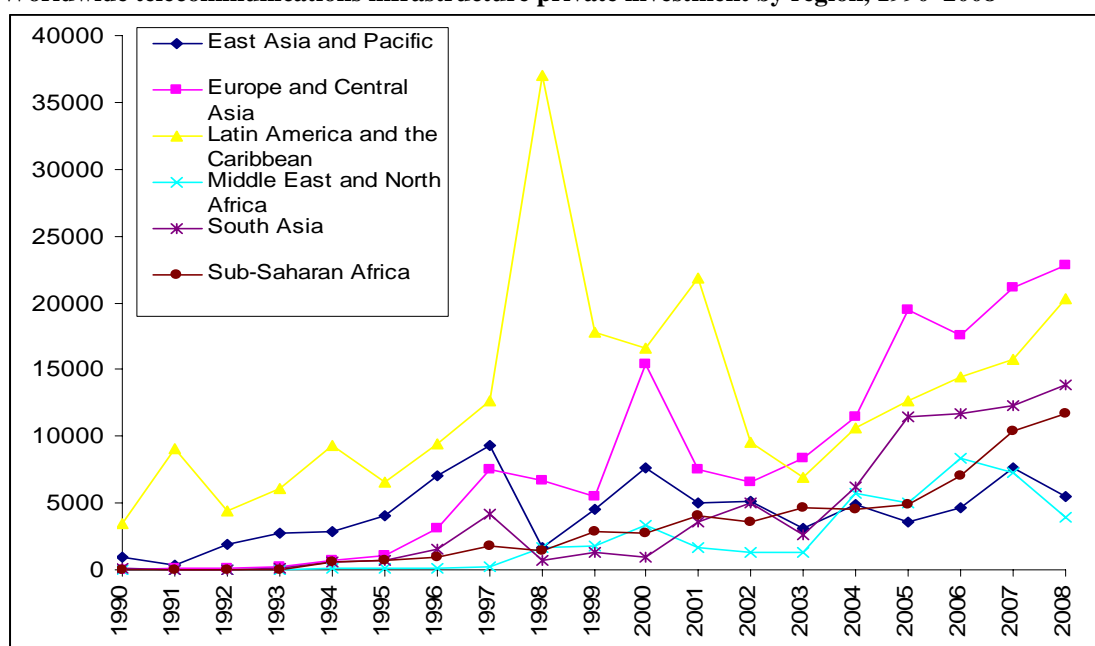
**Worldwide private investment in telecommunications infrastructure, 1990–2008**



Source: World Bank (2009). *Private Participation in Infrastructure Projects*.

<sup>2</sup> World Bank (2008). *Broadband for Africa: Policy for Promoting the Development of Backbone Networks*.

Figure 3  
Worldwide telecommunications infrastructure private investment by region, 1990–2008



Source: World Bank (2009). *Private Participation in Infrastructure Projects*.

19. Telecommunications infrastructure investment accounts for a large portion of capital expenditures in many countries and is likely to be adversely affected during economic downturns. It is reasonable to believe that decreased access to private capital will be most deeply felt by developing countries. In addition, as many of the donor funds for the ICT sector have been diverted to pay for domestic stimulus packages, it is plausible that many donor-funded projects will suffer from underfunding and eventual termination. Although the extent of the current decrease in donor funds is yet difficult to determine, policymakers should nonetheless consider employing countercyclical measures so as to stimulate ICT infrastructure development. Financing the ICT sector can be secured by either injecting public capital that is no longer available from the private sector or by providing economic incentives to attract private capital. In particular, countercyclical fiscal stimulus packages that seek to build broadband infrastructure can potentially foster long-term economic growth and development.

## B. Access funding

20. Access is the most basic prerequisite to obtaining the benefits and opportunities of information and communication. Even where backbone networks extend reasonably far into these regions, they need to connect across the “last mile”.

21. The most prominent and increasingly common financial mechanisms that have been introduced to address these access challenges are so-called Universal Service Funds or Universal Access Funds (USFs/UAFs).

22. The TFFM Report noted the strong progress that had been achieved in financing access networks in the developing world, particularly in the growth of cellular telephone services, while also acknowledging that the economics of rural access remained challenging for many investors and governments. It presented a variety of models and trends that indicated promising opportunities to channel additional sources of financing toward rural

networks and services, including USFs/UAFs, but also other sources of investment and finance, among them the emerging concept of local community-based investment and ownership. The report emphasized that a combination of methods for increasing financial support for local ICT access was called for, through integrated strategies that expand market opportunities, leverage available funds, mitigate investor risk and involve local communities as well as other public institutions, on a coordinated basis.

23. The Tunis Agenda highlighted the need to focus particular attention on the potential and needs of USFs/UAFs, by directing additional resources toward: “26. c. Developing institutional and implementation capacity to support the use of national universal service/access funds, and further study of these mechanisms and those aiming to mobilize domestic resources.”

### **C. Applications and content**

24. As the Internet and related global information resources have continued to expand and grow in influence in all levels of society on a worldwide scale, it has become increasingly apparent that these electronic transmission media are only the vehicles through which the truly valuable commodity – information – is accessed and shared. There is a strong synergy between the market for information content and the market for underlying digital networks and facilities, as users will be more inclined to demand and pay for Internet access to the extent they perceive that the content they will find is of value to them. For new users, particularly in the early years of Internet growth and popularity, simply being able to communicate via electronic mail and to access chat rooms and the like was a primary driver of Internet demand, and this remains the case for newer generations of users, but as the Web has grown to provide virtually limitless sources and means of obtaining every conceivable type of digital content, the value and role of Internet-based information resources can be much more diverse, and indispensable.

25. The TFFM Report recognized applications and content as the “next frontier” for ICT financing, noting that “the ICT revolution is about much more than telephones”, despite the continuing primary value of voice communications. The task force noted the heavy dominance and influence of the United States in all elements of the worldwide software and content markets, from computer operating systems to end user applications to television and films. As the report stated:

Beyond the “access gap”, which divides the connected from the disconnected, this imbalance between creators and consumers of information is even greater, and possibly more difficult to overcome.

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What is most missing from the limitless worldwide knowledge base is an adequate representation of the vast diversity and richness of knowledge, ideas, experience and imagination that thrive throughout the developing world, but rarely find their way into the consciousness of the commercially driven, mass media markets...

26. The report recommended a range of areas where financing should be enhanced, such as support for user-friendly, graphic-based interfaces; content in local, indigenous languages; culturally sensitive and diverse materials; self-directed content production; fostering of sustainable local markets for information; and support for shared, coordinated development of content, such as government applications.



## D. Capacity-building

27. Among all the issues addressed by the TFFM and the WSIS, capacity-building in ICTs was highlighted as perhaps the most important need, and the most underfinanced. While acknowledging that a wide variety of initiatives had taken place to promote ICT training and human resource development, the TFFM Report indicated that this field was nevertheless relatively new and not well understood within the overall picture of ICT for development policies. The Tunis Agenda went on to conclude:

22. We note that ICT-related capacity-building needs represent a high priority in all developing countries and the current financing levels have not been adequate to meet the needs, although there are many different funding mechanisms supporting ICTs for development.

23. We recognize that there are a number of areas in need of greater financial resources and where current approaches to ICT for development financing have devoted insufficient attention to date. These include:

a. ICT capacity-building programmes, materials, tools, educational funding and specialized training initiatives, especially for regulators and other public sector employees and organizations.

28. Part of the reason for the continuing challenges in this area is the fact that “capacity” itself is an elusive concept, embracing a wide range of human and institutional skills, knowledge, experience and insight that are difficult both to build up and to measure in explicit, unambiguous ways. For purposes of promoting effective ICT sector development, the TFFM Report identified at least four key categories of human resource capacity that need to be strongly reinforced for any medium- or long-term information society agenda to be achievable:

(a) Basic education in the use of ICTs, as well as utilizing ICT tools to teach other topics in schools;

(b) Advanced training in technical fields, as well as in job skills that require utilization of ICTs;

(c) Government, public sector training for public employees, especially those responsible for designing and implementing policies and regulations regarding the ICT sector, as well as managing e-government programmes;

(d) Public awareness campaigns of various types, to support understanding and adoption of ICTs and related capabilities and services.

29. These are related, mutually dependent areas of responsibility, given that citizen interaction with ICTs increasingly occurs at multiple stages of education, job responsibilities and civil society. Ideally, effective investment in basic educational resources at the earliest stages will ultimately pay dividends by creating a more skilled workforce, more effective public servants and greater awareness of and involvement with ICTs at all levels.

30. One of the most overriding needs, as noted by both the TFFM and the Tunis Agenda, is to increase support to government policymakers and regulators in the ICT field itself, where many countries have not had the knowledge or skills to implement effective sector reforms, and hence stimulate market development to its full potential. In the realm of UAFs, for example, as discussed above, a primary reason why many of these funds have been unsuccessful to date in fulfilling their mandates has been a lack of adequate staffing, technical and management skills, and other human resource needs. Yet many of these funds are prohibited by their statutes to pay for their own internal capacity-building needs. With

more strategic allocation of resources towards this basic requirement, all other aspects of the ICT development agenda could be more easily achieved.

## **II. New developments and opportunities**

### **A. Policy frameworks and implementation strategies**

31. The accelerated transformations of the ICT sectors of nearly every country continue to introduce new challenges for policymakers and regulators, who must cope with constantly changing technical and market conditions. The key imperative remains to enable and encourage investment financing of ICTs for development objectives, and to ensure that the market and regulatory environment facing current and potential investors will allow maximum deployment of resources, in the most equitable and advantageous ways possible.

32. While the liberalization of ICTs worldwide has resulted in dramatic growth of the sector in developing markets, there is still a great need for effective management of competition. In addition, in view of the rapid convergence in the ICT industry that has blurred the distinctions between fixed and mobile networks, regulatory reforms in licensing regimes, spectrum allocation plans and media content treatment are necessary in order to bring national policies up to date with the current information society landscape. Furthermore, the emergence of cyberrisks requires the establishment of new bodies of consumer protection law that are specific to telecommunications' competitive environment.

33. Some prominent trends and issues that will require new ideas include:

- (a) Effective management of competition;
- (b) Regulatory reforms in view of convergence;
- (c) Consumer protection.

34. For the fundamental purpose of mobilizing financial capital to invest in ICT networks and services, a mix of open markets, free and fair competition, minimal restrictions, technological neutrality and competent, effective regulation has proven itself repeatedly. Many of the remaining bottlenecks in national ICT objectives, including those discussed in the further sections of this report, could be greatly reduced or eliminated with additional doses of competition opportunity.

35. As one valuable example, the World Bank's infoDev programme, together with the ITU, sponsored the creation of a new and extensive online "ICT Regulation Toolkit",<sup>3</sup> which provides detailed information, ideas and extensive examples and references to support regulators and policymakers in all aspects of ICT policy development. Such initiatives have contributed strongly to the steady pace of reform and growth in the global ICT sector, in developing countries especially.

### **B. Financing backbone infrastructure**

36. There has been a flurry of recent activity in the realm of international backbone infrastructure development, particularly focused on Africa. Among the new projects that are at some stage of development are Globacom, SEACOM, the Main One Cable, the Eastern Africa Submarine Cable System (EASSy) and the ACE (Africa Coast to Europe). This

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<sup>3</sup> <http://www.ictregulationtoolkit.org/en/index.html>.

surge of interest in supplying international capacity to Africa reflects high expectations that Internet traffic will soon be growing in a pattern similar to the explosion of mobile voice service demand. By delivering the needed capacity to permit such Internet usage at more affordable costs, these projects may well catalyse this new demand.

37. The upsurge of recent and anticipated investments in new international backbone cables provides strong encouragement that many of the bottlenecks in this area are being addressed, including in some of the least developed regions. To the extent these trends are relatively new and tentative – and the impact of the global financial crisis remains highly uncertain – policymakers and other stakeholders may prefer a “wait and see” attitude before evaluating their impact and the scope of the remaining international gaps in backbone investment and finance.

38. However, where the lack of available and affordable transmission capacity in national and international backbone networks remains a significant barrier, loosened restrictions on market entry coupled with positive incentives may encourage infrastructure investment in rural areas and small island states. Moreover, regulators and investors should recognize the gains of open access and infrastructure sharing. Governments can help the private sector identify country-specific needs and the associated costs in addressing the problem.

39. Infrastructure sharing arrangements, in particular applied to rural and remote areas, may help bring down costs and allow operators to better compete based on price, service offering and geographic coverage. There is a need to associate ICT infrastructure, particularly the laying of fibre optic cables, to the provision of water, gas and electricity infrastructure projects and, where appropriate, the building of ICT infrastructures should be timed with road and pipeline-laying works. The laying of fibre optic cables is seen as critical for economic development; the technology enables transmission over longer distances and at higher bandwidths and allows for an enhanced and wider use of ICT applications.

### **C. Financing universal access**

40. Developments in the telecommunications industry have moved forward so rapidly that the basic issues traditionally raised under network access policy discussions have shifted dramatically. The explosive growth of cellular mobile telephone coverage has brought access to voice telephones within the reach of hundreds of millions of users who were previously without any form of telephone service, and this form of access is far more convenient, flexible and useful than increasingly outdated public telephone booths. These changing dynamics have compelled the re-examination of access policies and funds, even as many countries have only recently established them, often without yet reaching the point of implementation and disbursement.

41. Several important studies and reports since the WSIS led to an emerging set of new perspectives on approaches to and objectives for ICT access, as well as a formidable body of knowledge concerning the effectiveness and problems of various UAF/USF methods. USFs/UAFs have produced mixed results: while some have proven to be successful, others are not operational and unable to disburse the very large sums that they contain.

42. The model of some form of public fund to support equitable ICT access will remain a key financial mechanism and a cornerstone of many countries’ development policies for some time to come. Many developing countries have only very recently passed legislation or introduced regulations to establish new USFs, and have yet to implement the formal rules and procedures that will determine how the fund is managed and spent. Those that

have been in operation for a number of years are now generally wrestling with new questions of priority objectives, efficient use of resources and institutional capacity.

43. Policies may need to re-examine the objectives of USFs/UAFs in meeting the needs of delivering ICT capabilities and services and to improve the funds' institutional management. Furthermore, USFs/UAFs are well suited to be involved in financing decentralized and community-based approaches to delivering ICT services.

44. There is support for the idea of decentralized and community-based approaches to engendering ICT services, pointing out the potential of ICT in facilitating microfinance –an important outcome of the Tunis phase of the WSIS. Such services may foster local entrepreneurship and be beneficial to economic development. Governments may consider encouraging small entrepreneurs using ICTs and forging public-private partnerships.

#### **D. Financing applications and content**

45. Financing for ICT content and applications remains a critical challenge, even as these technologies have become central to overall development strategies. ICTs have begun to enter mainstream discussions as a primary component of education, health, agriculture, employment and poverty reduction policies in general. Also most governments have adopted some degree of e-government applications, from web portals for government information and services to digital record-keeping and electronic procurement and transactions.

46. The dynamics of the content marketplace, however, are very different from the market for communications networks and services, and at least to date, the prospects for commercially driven, open and competitive growth in locally produced ICT content and applications in the developing world have not proven nearly as promising. Although governments and donors have put financial resources behind numerous specific projects to disseminate high priority information to citizens, such as in the health and education fields, and through e-government platforms, these initiatives have typically been small and slow to implement effectively. Meanwhile, commercially profitable software and information service sectors are at best marginal in most developing countries, with certain well-known exceptions such as India.

47. Among the most prominent trends are the increasing role of broadband, multimedia content and the explosive arrival of social networking and user-generated content.

48. Experience around the world is starting to demonstrate that interest in these types of peer-to-peer and user-originated communication and content is essentially universal. As Internet access and especially broadband have begun to take hold in developing countries, these same services, and local imitations of them, have immediately taken a lead in user popularity, especially among the younger generations that tend to be the most prolific adopters and users of new ICTs.

49. There has been significant public investment in recent years in the more “socially desirable” forms of ICT content and applications. In the education field, where international organizations such as the World Bank have taken strong initiatives, the need to develop ICT platforms and tools suited to the education process is acute. The World Bank’s infoDev programme for example “is developing an integrated curriculum of briefing sheets, handbooks, toolkits, case studies, best practice and lessons learned, and is sponsoring related training activities focusing on the appropriate use of ICTs in education”.<sup>4</sup> The

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<sup>4</sup> <http://www.infodev.org/en/Topic.4.html>.

education system is lagging behind in terms of teaching school children how to be creative. It would be necessary to reshape ICT education in schools and better utilize social networking tools in education.

50. Increasing attention has been paid to e-government programmes, particularly the development of websites for the majority of national level ministries and agencies that interact with the public. The democracy and good governance dimensions of e-government may warrant more attention. The use of e-government may prevent corruption and misinformation and facilitate citizens' participation in governmental processes. While government websites can be easily replicated from country to country, most national governments lack a centralized body that coordinates all government information resources and locally available content.

51. In other realms, such as health care, agriculture, small business management, women's and children's needs and many others, there have been numerous initiatives and ideas to develop customized ICT-based information (videos, websites, interactive learning tools, etc.), but the amounts of finance directed toward them has been small by most standards.

52. Software and ICT content development remain largely external industries for most developing countries, with applications based primarily upon large international software firms, and only a small amount of local value added, translation or other adaptation. Even where some domestic content is produced, for example in news reporting or basic public information, such sites are typically minor in comparison with their international counterparts. The markets for domestic web design and custom software applications are often tiny, even as the number of national websites and web users has been increasing. Despite many gains, the imbalances in content remain, and continued efforts are required to promote more equitable sources of content and ICT applications.

53. Although most social networking initiatives have not been financed by government or donor investments, there remains an important place for public investment in more "socially desirable" forms of ICT content and applications that cater to the needs of training and learning, and production and dissemination of standardized information resources, as well as indigenous and local culture and knowledge. The use of social networking tools such as Facebook can be helpful in creating a network where scientific results and findings can be shared and disseminated.

## **E. Strengthening capacity, promoting opportunity**

54. Despite multiple efforts to provide training and capacity-building opportunities in the ICT sector, these programmes have often been inefficiently designed to reflect the needs and experience of the regions and are also generally costly. Most important, many initiatives have failed to produce a practical and lasting impact on the development of regulatory and policy capacity.

55. A recent study by infoDev<sup>5</sup> provides a useful overview of capacity-building programmes and initiatives in Africa, the Caribbean and the Pacific, and identifies the following key findings:

- (a) Chronic capacity shortages of policy and regulatory bodies;

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<sup>5</sup> infoDev (2008). Building local capacity for ICT policy and regulation: a needs assessment and gap analysis for Africa, the Caribbean and the Pacific. Working paper no. 16.

- (b) The predominance of one-off, short-term training courses, based heavily on developed country models and experiences;
- (c) Poor coordination among suppliers of capacity-building initiatives;
- (d) Inadequate attention to the broader ecosystem of, and other key stakeholders in, effective policy and regulation;
- (e) Lack of clarity on the roles of, and insufficient support for, regional institutions.

56. The study recognizes that the existing initiatives are not fulfilling the demand for ongoing specialized training. Current initiatives may be useful and informative, but mostly lack a practical and interactive aspect that facilitates learning by doing. In response to this situation the ITU, infoDev and the World Bank have launched a joint initiative – the Global Capacity-building Initiative for ICT Regulators (GCBI). While still in its early stages, this \$2.25 million multi-stakeholder initiative aims to provide sustainable capacity-building opportunities, through the implementation of a framework focusing on the development and support of local and regional research efforts, as well as the establishment of capacity programmes at regional universities or training centres. To be implemented in all developing regions during the 2009–2012 period, the GCBI provides an opportunity to establish reputable specialized programmes for long-term needed capacity-building opportunities in developing regions.

57. The ITU has taken several comprehensive initiatives in ICT capacity-building in the developing world. The ITU Telecommunications Development Bureau has established a Human Capacity-building Programme<sup>6</sup> that sponsors a wide range of workshops, meetings, online training resources and Centres of Excellence around the world. The ITU has also initiated the “Connect a School” sponsorship programme to promote linking schools to computers and the Internet. For regulators and policymakers, the ITU co-sponsored the infoDev ICT Regulation Toolkit and hosts the annual Global Symposium for Regulators, among many other activities.

58. Many donor governments have sponsored various forms of bilateral training projects. For example, Finland recently launched the South Africa–Finland Knowledge Partnership (SAFIPA) programme, which has several concrete objectives (see box 1).

**Box 1. Elements of the South Africa–Finland Knowledge Partnership (SAFIPA) programme**

**Component 1: Institutional development to facilitate the take-up of ICT service applications**

A process involving value added instruction, the training of trainers, activities with multiplier effects and networking both on the institutional and human levels.

**Component 2: Expert skills building to develop ICT applications for end users**

A seed fund addressing education and learning sector competences and societal development issues amongst the selected constituency. Special attention is given to institutional education and learning outputs as a sustainability factor. Selection, upgrading and implementation of ongoing projects and identification and preparation of new projects and stakeholder groups.

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<sup>6</sup> <http://www.itu.int/ITU-D/hrd/>.

**Component 3: Partnership development to bring ICT service applications to the market**

Strengthening the cooperation between networks and research institutions locally and globally, and supporting public-private partnerships in the service delivery process. Open dissemination of results and ideas to elaborate new development activities and promote networking.

59. Basic and advanced ICT training has become a significant market itself in many developing countries, where training institutions offer courses in a variety of technical skills that will most likely lead to favourable job prospects, to those who can afford the tuition. The National Institute of Information Technologies of India, which has established its reputation as one of the most successful training organizations in the developing world, now has franchises in more than 30 countries that are building upon the same business model.

60. Other programmes are offered under the sponsorship of major international ICT corporations, again in the interests of their own long-term market growth in the developing world. Intel has established several global programmes, such as the Intel Education Initiative and Learn Programme, and sponsors country-specific initiatives in numerous countries. Microsoft, Cisco and many other technology companies provide similar broad-based training, certification and technical assistance support.

61. ICT-related capacity-building remains one of the most elusive challenges in the realm of ICT development and finance. Public policies and international coordination are necessary in order to better institutionalize capacity-building as a core element of ICT development strategies, as there is a lack of coordination and standardization and very little direct linkage between sector revenues and funding of education, training and awareness programmes. The need to channel financial resources toward such programmes through partnerships, public policies and international coordination is likely to remain paramount. Beyond simply continuing and expanding the variety of established approaches, there is certainly room to consider new ideas and options, which might help accelerate and better institutionalize capacity-building as a core element of ICT development strategies.

62. It would be important to consider innovative ways of linking capacity-building to other forms of ICT content, such as taking into account the development in social networking and user-generated content. Some issues and objectives that should be taken into consideration in such programmes include the following:

- (a) Developing methods and studies to improve the measurement and assessment of ICT capacity-building programmes;
- (b) Increasing coordination and standardization of capacity-building across governments, international agencies and the private sector;
- (c) Considering innovative ways of linking capacity-building to other forms of content, including decentralized, peer-to-peer approaches;
- (d) Reinforcing technical assistance to policymakers and regulators, with greater emphasis on “hands on” capacity-building.

### **III. Findings and recommendations**

#### **A. Findings**

63. The following main findings were highlighted by the CSTD panel and put forth for consideration by the Commission at its thirteenth session, scheduled to take place in Geneva from 17 to 21 May 2010:

(a) The financing of ICT for development remains a significant challenge. Growing private sector investment in the ICT sector does not obliterate the need to address the remaining access gap, developing local content and applications and building capacity;

(b) The challenge of developing financial mechanisms to foster ICT's dissemination in developing countries remains;

(c) Infrastructure sharing can be an effective way to reduce the costs involved in rolling out backbone networks;

(d) The lack of available and affordable ICT in low density areas in developing countries needs to be tackled;

(e) The Internet is increasingly susceptible to cyberrisks and privacy concerns, which national regulators and investors should address;

(f) The objectives of universal service or access funds deserve to be re-examined, taking into account a changing information society landscape where access to mobile, Internet and even broadband may become crucial;

(g) Public investment in more "socially desirable" forms of ICT content and applications, such as e-learning and e-government, is needed;

(h) Public policies and international coordination are necessary in order to bring current capacity-building models up to date;

(i) The potential of social networking and user-generated content for information sharing should be further explored;

(j) Financing mechanisms may range from large-scale financing sources to small-scale microfinance solutions. Each form has its unique benefits and drawbacks and its success is often context dependent;

(k) Involving local users, local content and building local capacity may contribute to the sustainability of ICT projects;

(l) National development plans are vital to identify needs and priority areas for financing ICTs.

#### **B. Recommendations**

64. The CSTD panel has put forth the recommendations set out below for consideration by the Commission at its thirteenth session:

(a) Recognizing the need to mobilize additional resources for developing countries;

(b) Channelling financing from bilateral and multilateral donor organizations and the private sector for ICT content and capacity-building;



- (c) Encouraging financing of decentralized and community-based approaches to delivering ICT services;
  - (d) Calling for financing mechanisms to play an important role in stimulating the development of cybersecurity technologies and solutions, and in facilitating their implementation through strengthened national and regional cooperation;
  - (e) Promoting ICTs and science, technology and innovation as useful tools for achieving the Millennium Development Goals;
  - (f) Calling on governments to help correct market failures, maintain competition, attract domestic and foreign investment and enhance ICT infrastructure and applications to maximize the socioeconomic benefits of ICTs, especially for underserved communities;
  - (g) Continuing concerted efforts at the national and international levels to foster a socioeconomically inclusive, people-centred information society.
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