UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

THE DIGITAL DIVIDE:

ICT DEVELOPMENT INDICES 2004

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PREFACE

The digital divide between the information-rich and the information-poor is of increasing concern. A major challenge for policy-makers at the national and international level, therefore, lies in addressing the issue of digital divide between rich and poor countries, rural and urban areas, men and women, skilled and unskilled citizens, and large and small enterprises.

Information and communication technologies (ICTs) offer unique opportunities for developing countries to narrow the development gap with industrialized countries. They have the potential to assist developing countries "leap frog" entire stages of development. However, despite the potential benefits offered by ICTs, significant barriers to their effective use exist in both developed and developing countries. These barriers must be addressed to allow the realization of the full potential of ICTs'. Some barriers may be endemic (e.g. the generation gap, learning processes and gaining experience in ICTs). Developing countries have to deal with problems of telecoms infrastructure, poor computer and general literacy, lack of awareness of the Internet and regulatory inadequacy.

Benchmarking the extent of ICT development is an important tool for policy-makers. It allows comparisons between countries and indicates how well countries are doing compared to others in terms of adaptation, mastery and development. Comparison with better-performing countries helps identify policies for further improvement and progression, which forms part of this report. Cross-country analyses without benchmarking the extent of the digital divide lack the depth of insight required for policy purposes.

The WSIS Plan of Action calls for "realistic international performance evaluation and benchmarking (both qualitative and quantitative) through comparable statistical indicators and research result. A composite Information and Communication Technology (ICT) Development index could show the statistics while the report would present analytical work on policies and their implementation" (p.13). This report presents such analysis and research, and seeks to inform policy-making and enlighten decision-makers in their attempts to promote ICT development, especially in developing countries.

This report updates UNCTAD's ICT Development Indices to benchmark ICT development and review trends in the digital divide. It presents a summary of the policy options that countries can adopt to foster ICT development, and illustrates these by reviewing four country case studies that have successfully promoted growth in ICTs. Importantly, this Report adds depth to its benchmarking analysis by describing examples of innovative grassroots programmes in the field of ICTs in Africa. One of the key findings of the analysis is that it is not merely policy that matters but also what drives the policy and the quality of its implementation. The report contributes to the discussion on how to overcome the digital divide on the basis of examples of ICT policies that are being enacted in practice and to draw guidance as to how implementation might be improved. It represents part of UNCTAD's contribution to the World Summit on the Information Society, to be held in Tunis in November 2005.

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ABBREVIATIONS AND ACRONYMS

ADSL	Asymmetric Digital Subscriber Line
CEE	Central and Eastern Europe
CIS	Commonwealth of Independent States
CSTD	Commission on Science and Technology for Development
DSL	Digital Subscriber Line
EU	European Union
GDP	Gross Domestic Product
ICP	Internet Content Provider
ICT(s)	Information and Communication Technology (Technologies)
ISDN	Integrated Services Digital Network
ISP	Internet Services Provider
IT	Information Technology
ITU	International Telecommunication Union
IXP	Internet Exchange Point
MISP	Mobile Internet Service Provider (Republic of Korea)
OECD	Organisation for Economic Cooperation and Development
PC	Personal Computer
P(S)TN	Public (Switched) Telephone Network
PTO	Public Telephone Operator
RCDF	Rural Communications Development Fund
RTDF	Rural Telecommunications Development Fund (Uganda)
SOE	State-owned Enterprise
SSAs	Sub-Saharan African
UAFs	Universal Access Funds
UCC	Ugandan Communications Commission
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Programme
USP	Universal Service Provision
VoIP	Voice over Internet Protocol
WSIS	World Summit on the Information Society
WTDI	World Telecommunication Development Indicators (published by the ITU)
WTO	World Trade Organization

OVERVIEW

The importance of technology to economic development has long been recognized. This may be especially true of Information and Communication Technologies (ICTs), which cut across all economic activities and have a wide range of applications. They offer the potential for increased availability of information, new means of communication, re-organization of productive processes and improved efficiency in many different economic activities.

Despite the potential benefits that can be offered by ICTs, developing countries face significant obstacles to ICT connectivity and access. The underlying causes of low levels of ICT penetration in developing countries includes a lack of awareness of what these technologies can offer; insufficient telecommunications infrastructure and Internet connectivity; expensive ICT access; absence of adequate legal and regulatory frameworks; shortage of requisite human capacity; failure to develop local language content; and a lack of entrepreneurship and business culture open to change, transparency, and social equality.

These problems are reflected in highly uneven growth in the use of ICTs across countries. The so-called digital divide between the information-rich and the information-poor is of increasing concern. A major challenge for policy-makers at the national and international level, therefore, lies in addressing the issue of the digital divide: between rich and poor countries, rural and urban areas, men and women, skilled and unskilled citizens, and large and small enterprises.

From a historical respective, technological gaps, uneven diffusion and possible exclusion from benefits of technologies are not new. Telephony and electricity are still far from being evenly diffused. With ICTs, however, the size and scale of the potential benefits foregone through failure to participate in the new 'digital society' are likely to be much greater. It is essential, therefore, that steps are taken to ensure that developing countries have the ability to participate in the knowledge economy.

The formulation and implementation of national ICT strategies that deal effectively with the preceding challenges must be particularly sensitive to two elements: first, the need for mechanisms to monitor and assess ICT readiness, usage and impact; and second, the need to link ICT policies to other development policies, such as education, trade and health to allow for benefits from synergies between different elements and more broad-based diffusion of ICT.

This report responds to these two needs. It monitors and assesses the international digital divide and its implications. It evaluates ICT development using a range of indicators to benchmark connectivity, access, ICT policy and overall ICT diffusion in a cross-country analysis of a total of 165 countries. The findings are presented in the ICT Development Indices. Further, it extends this benchmarking analysis with a consideration of the policy options open to policy-makers, and how chosen policies can be implemented and linked to a range of other policies. The aim is to make a useful contribution to ICT policy thinking for public and private decision-makers, with a focus on developing countries and, in particular, Africa.

In the benchmarking analysis, countries from the Organisation for Economic Cooperation and Development (OECD) continue to dominate the upper rankings. This lead is partly due to the priority given to ICT policies by OECD countries, with policies across a broad range of fronts (ICT policies are summarized in Chapter 3). South Asian and African countries occupy the lower half of the rankings. Sub-Saharan countries dominate the lower end. This reflects that, as a region, Africa still has a considerable way to go in connectivity and ICT diffusion to hold its own with other regions. Major gains in connectivity have been made by transition economies. Changes in rankings are generally small for Arab and Asian countries. Latin American and Caribbean countries have maintained their levels of ICT diffusion. Intriguingly, a wide variety of countries have made gains in ICT diffusion, while losses are confined to certain regions, notably Africa.

Trends in the digital divide have been analysed. Levels of inequality in access to ICTs remain high still, *around twice average levels of income inequality*. Trends in the digital divide show sharply contrasting trends according to the type of technology. The distributions of Internet hosts and personal computers remain highly uneven. Mainline telephony shows small, but steady reductions in inequality. However, the distributions of mobile telephony and Internet users across different countries suggest strong gains in access to mobiles and the Internet and an expansion of ICT access in developing countries in particular. Mobile telephony and Internet usage suggest that the digital divide measured by inequality in these distributions may be reducing.

The lack of matching gains in more widespread access to personal computers however suggests that gains in Internet usage and access are being achieved mostly through shared access. Policy initiatives such as community telecenters and Public Access Points are thus increasingly important. Promising examples of such initiatives are examined in Chapter 5. The analysis of the digital divide presented in this study provides evidence that marked disparities in ICT access and usage between countries continue to exist, and remain sizeable, although disparities in Internet and mobile usage are reducing rapidly, suggesting more even and widespread access to ICTs.

For further insight, this benchmarking analysis has been extended with a summary of different policy tools that may be used to promote ICT development, and the experiences of some countries that have been successful in promoting access to ICTs are reviewed. Similar policies are relevant to developing countries, although their policy mix differs according to individual countries' needs and circumstances. Policy mixes in developing countries often prioritize resources and seek to increase basic