

# Global Strategy and Practice of E–Governance: Examples from Around the World

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Information Science  
**REFERENCE**

**INFORMATION SCIENCE REFERENCE**

Hershey • New York

Senior Editorial Director: Kristin Klinger  
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Production Coordinator: Jamie Snavelly  
Cover Design: Nick Newcomer

Published in the United States of America by  
Information Science Reference (an imprint of IGI Global)  
701 E. Chocolate Avenue  
Hershey PA 17033  
Tel: 717-533-8845  
Fax: 717-533-8661  
E-mail: [cust@igi-global.com](mailto:cust@igi-global.com)  
Web site: <http://www.igi-global.com/reference>

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#### Library of Congress Cataloging-in-Publication Data

Global strategy and practice of e-governance : examples from around the world  
/ Danilo Piaggese, Kristian J. Sund, and Walter Castelnovo, editors.  
p. cm.  
Includes bibliographical references and index.  
ISBN 978-1-60960-489-9 (hardcover) -- ISBN 978-1-60960-490-5 (ebook) 1.  
Internet in public administration--Case studies. I. Piaggese, Danilo, 1956-  
II. Sund, Kristian J., 1975- III. Castelnovo, Walter, 1960-  
JF1525.A8G564 2011  
352.3'802854678--dc22

2010053484

#### British Cataloguing in Publication Data

A Cataloguing in Publication record for this book is available from the British Library.

All work contributed to this book is new, previously-unpublished material. The views expressed in this book are those of the authors, but not necessarily of the publisher.

## Chapter 26

# The Knowledge Economy: A New Development Paradigm for Latin America and the Caribbean (LAC)

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### ABSTRACT

*The escalating competitiveness in the international global economy has created a growing demand for the creation and diffusion of knowledge. A Knowledge Economy (KE) is one that by creating and taking advantage of new knowledge can dramatically increase the wealth of a nation. Many countries have grown to become successful knowledge economies including Finland, the United States and most recently Korea, China and India. Latin American and Caribbean countries are faced with the predicament of being left behind because of their low quality of education, their weak macroeconomic base and their poor infrastructure on information and communication technologies (ICT). There are several indicators that need to be improved to establish a base for knowledge economy such as laws, improvement and creation of research and development institutions, education infrastructure, comprehensive intellectual property rights, ICT networks, and knowledge transfers between research institutions and local enterprises. This chapter brings in the concept of the KE as a new development paradigm for Latin America and the Caribbean region.*

### INTRODUCTION

The concept of Knowledge Economy (KE) has gained a lot of momentum in the past years by publications from international organizations

and universities. However, this concept lacks a substantive and coherent definition. It is because of this difficulty in truly defining what it is that makes the operationalization and measure of it extremely hard. Firstly, *knowledge* needs to be defined; simply put knowledge is any information or skill that a person can learn either through

DOI: 10.4018/978-1-60960-174-4.ch026

## *The Knowledge Economy*

education or experience. Knowledge for development can therefore include the creation of research and development institutions, the construction of schools or the transfer of a technical know-how. By focusing on knowledge economy we observe that: (a) knowledge is becoming a crucial input for economic growth; (b) the products that knowledge can produce are becoming increasingly beneficial to the wealth of a country; and (c) the development of knowledge economy relies heavily on technological changes in ICT (Smith, 2002, p. 8).

We move to a more practical application of the definition. The global economy has transitioned in a way that it has become more complex and sophisticated, thus causing living standards to improve. Many countries around the world have gone from being primitive agricultural-based societies, to industrial-based developed ones. Now, the knowledge economy is focusing on the production of innovative ideas in order to reap greater benefits. To put it in simpler terms, the main factor in gathering wealth in an agricultural economy is land. In an industrial economy, natural resources are the components that create wealth. In a knowledge-based economy, knowledge is the main resource that generates capital (Houghton & Sheehan, 2000, p.4).

For many years conventional wisdom has told us that by building infrastructure and plants economic development can be attained. Although this is true, it is only part of a greater scheme of things. Building roads and factories are not the only elements needed to foment development; education, information and communication technologies, and intellectual property rights, among others, form part of what makes a solid foundation for economic development in a country. Joseph Stiglitz (1999) emphasizes this point when he says, “We now see economic development as less like the construction business and more like education in the broad and comprehensive sense that covers knowledge, institutions, and culture.” (p. 2) He touches upon an important concept here, which is the *culture* of knowledge economy and how

this is very hard to establish in a government or a corporation. It is only when people acknowledge that creativity, entrepreneurship, and effective transfer of knowledge are more important than adhering to previously established paradigms of growth that knowledge becomes an opportunity for economic development.

China and other East Asian countries have been able to grasp the concept of knowledge economy and have effectively channeled resources to reduce the knowledge gap. There are many ways Asia has done this; it has improved education, invested in ICT and R&D institutions, and it has improved its economic regimen overall. The Latin America and Caribbean (LAC) region is lagging behind Asia. Policy makers need to understand that we are at a time in history where those who know stay on top of the global marketplace and those who do not know are left behind. Countries in the LAC region and the Fondazione Rosselli Americas (FRA) are working together to create an environment that will produce an incentive to adopt the principles and practices of a knowledge economy. FRA hopes its involvement will make a substantial contribution in supporting the LAC countries to find a niche that will respond to their comparative advantages. The creation of a knowledge economy is very complex and requires a concerted effort supported by five pillars. These five pillars summarize the key elements needed for the formation of a knowledge-based economy. When education, ICT infrastructure, innovation, social inclusion, and a government policy environment conducive to changes like protection of intellectual property rights, seamlessly converge towards the same objective, a virtuous cycle is triggered that would eventually lead knowledge to become a tangible good that has a value in the market and facilitates the economic growth of a country. This chapter considers how the concerted development of each of these aforementioned pillars helps create an environment that will allow for the establishment of a knowledge economy

and in effect, enhance development opportunities for the LAC region.

## **BACKGROUND**

Let us reiterate that we live in a knowledge economy (KE) at present, and that the KE is the result of an ensemble of pillars that must be in place and balanced at the same time in order to support a positive change in the economy of a given country. (Dahlman, Routti & Ylä-Anttila, p.6). Success stories of knowledge economy include Finland, Korea, China and India. These countries used to have low levels of education and low diversity of exports. In the past, Finland was faced with an economic recession; high inflation and increased foreign borrowing. However, today Finland is one of the most successful members in the Organization for Economic and Co-operation and Development (OECD). Finland faced tough and risky decisions, their high unemployment was hurting the economy but they decided to invest in R&D. This was accomplished through a concerted national strategy and the active participation of policy-makers from the different sectors in the economy. Since then, Finland started to specialize in intensive high-tech R&D that in the long run was able to generate domestic production of knowledge. China and India have also increased their economic growth through a joint effort to improve education, manufacturing, and the service sector. All of these countries have one thing in common: they are able to generate knowledge and disseminate it at a fast pace. Because they have improved on the five pillars that make the essence of a knowledge economy, these countries have been able to experience substantial development and economic growth. In the following paragraphs each of the five pillars are explained and their contribution to knowledge economy is highlighted.

Education is a key element when it comes to constructing a knowledge-based economy. Human

capital is increased when a greater part of the population is educated and has a set of skills. The Finns realized that in order to increase economic growth not only was the quantity of schools important but the quality of education. Their education system began a campaign that guaranteed equal quality of education for everyone, regardless of gender, socioeconomic background and region. With an educated population it was easier for the country to diversify their production. They were able to move from a resource-driven economy to an investment-driven economy. If a country invests in education the supply and demand for innovation are also affected since the more a population knows, the more it will be able to do.

The development of information and communication technologies is almost synonymous with the knowledge economy since it is through these mechanisms that information is captured and knowledge is diffused at an increasing rate. Economists associate long-term economic growth with technological progress and the development of ICT is just that. According to Carl Dahlman (2005), ICTs provide the means for developing countries to accelerate their progress or even leapfrog into the current phase of development and to enable their integration into the global economy (p. iii). The improvement of ICT infrastructure can facilitate the participation of low-income people by allowing them to become more connected and have better access to knowledge and information. In this chapter, ICT will be discussed in depth as to how its application and improvement can help knowledge economies flourish.

Innovation comes in hand with ICT development; ever since Finland started to invest in ICT, R&D institutions also started to arise. By diversifying its exports and investing in R&D, Finland was able to create domestic knowledge. These innovations inspired by their own people helped to expand the products they put out in the market and they also helped speed up their economic development. India and China are also substantially increasing the amount of R&D in-

## ***The Knowledge Economy***

stitutions because they are aware that profits are larger when a country is able to produce its own knowledge innovative products. Innovation is an important base for creating a knowledge economy: without the creation of new ideas or a new way to do the same things, a country can stay behind in this fast paced developing world.

When Finland decided to invest in equal quality of education for all, it was also investing in *equal opportunity for its citizens*. Social inclusion is important because it decreases the possibility of creating a wealth gap that becomes disadvantageous to a country and promotes growth.

One of the hardest pillars to manage and improve is social inclusion since this requires a change in mentality or culture within a country. A knowledge economy cannot thrive if its inhabitants are excluded from receiving such knowledge. Without social inclusion a country can economically grow but it cannot attain social development. China, for instance, has increased the rate of education among females in the country. India, although to a lesser extent, has also increased its education of women. Finland was among the first in Euro to include women in their political system as well (actually it was one of the first European countries having a female Prime Minister). When the population of a country has an equal opportunity to provide service to it, more is added to the pool of ideas.

Nonetheless, LAC countries have many differences that make their transition to a knowledge-based economy harder than it was for Finland. LAC suffers from a staggering amount of inequality; the indigenous people and low-income class citizens are marginalized and their needs do not form a big part of the agenda in these countries. This inequality then give rise to many other problems such as poverty, lack of education and crime. LAC has been severely affected by crime and this places the Region as an unattractive investment for foreign corporations.

A characteristic of knowledge is that it is inherently non-rivalry and non-excludible, also known

as a public good. However, knowledge can be excludable to a certain point and to an extent it should be excludable. Knowledge is most efficient when there is a charge made in order to use it; if this was not the case, firms and innovators would have no incentive to produce new knowledge. Here is where intellectual property rights (IPR) come into play: by applying IPR to the new knowledge that is being created it gives ideas a kind of ‘protection’. This protection gives security to innovators that their ideas will not be copied so that others can profit from them. Governments are responsible to create a policy environment conducive to effective IPR protection. Without them, the incentive to create is greatly diminished. However, as Joseph Stiglitz (1999) comments, strengthening intellectual property rights often means raising the price of a key ingredient into research - knowledge - and thus it is possible that an excessively “strong” intellectual property regime may actually inhibit the pace of innovation (p.6). Hence there is an inevitable trade-off between protection and innovation, but let us reiterate that the protection of ideas is necessary for the development of a country.

## **BOOSTING THE SOCIAL DEVELOPMENT OF THE LAC REGION THROUGH KNOWLEDGE ECONOMY DEPLOYMENT**

### **The Knowledge Economy (KE) Opportunities**

The rapid advances and pervasive diffusion of information and communication technology (ICT) combined with the growth of the Internet and other global networks have led to deep transformations in economic, social and institutional structures and are at the heart of a sound knowledge economy. ICT applications affect the performance of businesses and the efficiency of markets, foster the empowerment of citizens and communities by enhancing the trust in governments, as well as

their access to information, its processing and transformation into knowledge, and contribute to strengthening and redefining governance processes at all institutional levels.

The growth rate of the global economy has been relatively fast with increasing availability of material goods, services, wealth and knowledge. This has been possible thanks to the increase in capital stocks, knowledge, science and technology, population, innovation, improved productivity and other related economic factors. Some important characteristics of a knowledge economy are the rise of the on-line economy, rising value of knowledge and integrated international markets and globalization (Sheehan and Tegart 1998)

Nevertheless, as with all major and wide-ranging technological advances, the ICT revolution is at the same time creating enormous opportunities and posing daunting challenges. On one hand, it has the potential to increase productivity and wealth, generate new activities, products and services, and improve the well being of the population, notably in regard to education and health levels. On the other hand, such opportunities can lead to further alienation of marginalized communities and an exacerbation of existing socioeconomic inequalities. Thereby, a balanced access and effective use of ICT tools and networks in the new global economy, along with an integrated process of technological innovation are critical for reducing poverty, increasing social inclusion and improving living conditions for all.

Numerous studies have focused on the direct contribution of ICT to socioeconomic development and, while their findings and conclusions vary according to the context and application, there is an overall agreement that access to information can transform production processes, increase income potential, and improve the living conditions of the poor. ICT is an effective tool that, when supplemented by investments in connectivity and other factors such as innovation, education, health and infrastructure, increases competitiveness and contributes to economic growth, social development and poverty reduction

Indeed, ICT is changing the way people live and do business globally, and is creating new social and economic development opportunities for lower-income populations, by enlarging markets and facilitating greater access to information, public services and economic activity. Yet, these opportunities cannot be effectively and fully realized if left to market forces alone, and require the active participation of the public, private and civil society sectors under integrated efforts towards the development of an inclusive knowledge economy.

### **Knowledge Economy and Social and Development**

The “digital divide” (a phrase coined in the 1990s) described the perceived growing gap between those who have access to and the skills to use information and communication technologies and those who, for socioeconomic and/or geographical reasons, have limited or no access. In particular, it is used to raise the concern that the emergence of ICT could exacerbate existing inequalities in the access to information and that, thereby, certain groups could face additional disadvantages because of their geographic location, age, gender, culture, and social and economic status, among others. Moreover, the phrase reflects the prevalence of socioeconomic and structural inequalities at the regional, national and local levels, which are characterized by insufficient infrastructure, relatively high access costs, inappropriate or weak policy regimes, inefficiencies in the provision of telecommunication networks and services, lack of local content, and uneven ability to derive economic and social benefits from information-intensive activities.

The United Nations Millennium Declaration notes that efforts to make access available to all and harness the power of ICT can contribute toward the achievement of the Millennium Development Goals (MDGs) by 2015, thereby creating “digital opportunities” in development. Directly, the deployment of ICT can affect the achievement of MDGs by expanding the reach, scope and impact

*Table 1. World Internet Penetration 2005 (in millions of inhabitants and percentages)*

World Regions	Population % of World	Internet Users	Internet Penetration	% of World Users	AG 1/ 2000-2005
Middle East	2.9%	18.2	9.6%	1.8%	454.2%
Africa	14.1%	22.7	2.5%	2.2%	403.7%
LAC 2/	8.5%	79.0	15.2%	7.8%	272.8%
Asia	56.4%	364.3	9.9%	35.7%	218.7%
Europe	12.4%	290.1	35.9%	28.5%	176.1%
Oceania/Australia	0.5%	17.7	52.9%	1.8%	132.2%
North America	5.1%	225.8	68.1%	22.2%	108.9%

1. Accumulated Growth.

2. Includes only the Inter-American Development Bank (IADB)'s borrowing member countries of the Latin American and Caribbean Region.

**Source:** International Telecommunications Union (ITU), in IADB (2006).

of social development programs, health services, and education and training programs, and providing opportunities for improving gender equality and citizen participation. Indirectly, ICT affects MDGs by creating new economic opportunities and/or extending them to lift individuals, communities and nations out of poverty.

Such indicators reveal the need for concerted actions by various stakeholders and sectors of the Region to create the conditions that will allow for the diffusion of KE, while promoting and ensuring the functioning of the market that alone cannot fully overcome the challenge in hand. Concerted actions should address a number of factors such as limitations in institutional capacity to coordinate and promote public policies for the dissemination of ICT, the limited coverage of connectivity and ICT access costs, and the need for widespread digital literacy.

### **ENHANCING KE DEVELOPMENT OPPORTUNITIES THROUGH THE DEPLOYMENT OF ICT**

ICT solutions can facilitate the participation of lower income populations in the development process of the LAC region by directly tackling relevant aspects, which precisely hinder their

integration to social and economic development. In particular: (a) limited knowledge and literacy which impairs access to skills and jobs (education); (b) poor health and sanitary conditions limiting employability and risk-taking attitudes (health); (c) active involvement in civic life and strengthening of democratic process; and (d) economic opportunities. In this respect, the evolution of modern ICT brings about concrete opportunities for enhanced provision of social services and poverty reduction through, among others, distance education and telemedicine solutions, connectivity, and strengthened and more transparent government operations (i.e. e-government) (See IADB, 2005b). It also provides for the modernization and expansion of the micro-finance sector to effectively reach marginalized and less favored populations through effective technology-based solutions and innovative financial services and, thereby, creating economic opportunities at the local level.

Untapped opportunities exist to replicate, multiply and scale up successful pilot projects and approaches in the deployment of ICT as a means to reduce poverty and promote social development. Of particular interest are those opportunities that further the potential of ICT for sharing knowledge, generating synergies and economies of scale, and adapting to local conditions. Indeed,

scaling up poverty reduction efforts through ICT requires extensive outreach and capabilities for deepening its impact.

### **ICT in Human Capital Development**

Inequality in access to education--especially high-quality education that prepares young people for employment opportunities in an inclusive information society and to become active citizens in complex, market-driven, democratic societies--are a critical barrier to reducing poverty and increasing economic growth. Near-universal access to the Internet via low-cost networks enables teacher training, enhances student access to traditional teaching materials via Internet distribution, and allows the introduction and use of new and advanced multi-media resources and learning tools. The young generation takes readily to computers and such resources, and there is evidence that classroom access to ICT tools can improve learning and help motivate students to stay in school.

Outside the classroom, affordable and near-universal access to information--via government or commercial voice-driven systems and the Internet--enables life-long learning and encourages the habit of searching for information to support personal and family decision-making. For many adults, voice-driven information sources and services in local languages that are accessible via telephones are important means for improving their access to information. At the same time, there is evidence that informal learning outside the classroom is strongly enhanced by affordable access to the Internet. This informal learning is driven, in part, by the growing availability of information on the Internet and the increasing organization of such information by search engines, but also by the growing use of interactive systems--from "chat" systems to e-mail and text-messaging to web logs and other interactive web-based systems.

Best practices for ICT-enhanced classroom education have been slow to emerge, in part

because of the high cost of providing computers, appropriate curricula and adequate teacher training. Nevertheless, there are a number of concrete examples that show the effectiveness of widespread, small-scale experimentation and pilot projects which, coupled with careful evaluation, provide best practice ICT applications for formal and informal education.

### **ICT in Social Services**

The improvement in the delivery of health care services in geographically remote and rural areas is one of the most promising and clearly demonstrated applications of ICT in social development. Evidence suggests that improved health outcomes have been achieved through various applications of ICT solutions. In particular, ICT is being used in many developing countries and communities to facilitate: (a) remote consultation, diagnosis and treatment through the use of digital cameras to download images onto a computer and transfer them to doctors in nearby towns; (b) collaboration and information exchange among physicians; (c) ICT-based medical research through the use a network of satellites and ground stations to submit data for clinical trials; (d) medical training through ICT-enabled delivery mechanisms; and (e) access to centralized data repositories connected to ICT networks that enable remote healthcare professionals to keep abreast of medical knowledge. Moreover, ICT provides considerable benefits and capabilities when applied to disease prevention and response efforts during epidemics. The Internet is an effective means to disseminate public health messages and disease prevention techniques in developing countries. It also enables better monitoring and response mechanisms. Also, ICT is helping improve the efficiency of public health systems and medical facilities by, for example, streamlining medical procurement or creating and managing patient records.

## **ICT in Financial Services**

ICT tools can drive down transactions costs for financial services such as microfinance and a widening range of banking, insurance, and other services for low-income groups, particularly as their delivery expands beyond nonprofit groups and becomes more widespread. For example, the expanded use of ICT and the Internet can reduce the transaction costs of remittances in a way that brings higher social benefits for all parties involved in these transactions. Nonetheless, there is still much to do. Transaction systems adapted to serve low-income communities via text messaging over mobile phones have been successful in Asia and Africa, and may prove useful in LAC as well. ICT technology offers several approaches to expanding access to electronic transactions and banking services via remote transaction devices for microfinance that work over mobile phone networks; smart cards that can store account balances, transaction histories, and positive IDs such as a fingerprints. The next generation of mobile phones may be capable of conducting transactions automatically via very short-range radio, potentially turning phones into electronic wallets.

Among the potential benefits of expanding ICT-based financial services and electronic commerce to low-income communities are: market access, economic value added, improved household security, the ability to grow microenterprises, reduced vulnerability to theft, and greater participation in the formal economy.

## **Wireless Technologies and Community-Based Communications Services**

Largely for reasons of cost, most rural communities and many low-income urban communities lack effective and affordable local phone systems. These communities usually rely on a few pay phones or shared mobile phones (which are used sparingly) and most calls are made to numbers outside the

community. Yet historically, where affordable local phone systems exist, typically 60 percent of all phone traffic is within the community. Thereby, a low-cost local phone system can make universal access a reality in many communities of LAC.

The technological potential to do so has now emerged, via local Wireless Fidelity Networks (Wi-Fi) and Voice-Over-Internet (VOIP) telephony using peer-to-peer systems. For example, technologies such as Skype are having a global impact on long distance calling. In addition to making a wide range of voice-driven e-government and commercial services accessible and affordable, low-cost wireless networks, VOIP and high-capacity broadband networks, enable access to a great variety of Internet services and information via a computer or other converged device.

One of the benefits of voice-driven or voice-accessible services--especially if also made available in indigenous languages—is helping overcome literacy and computer skill barriers. Other benefits also include ending rural isolation, enhanced family solidarity, increased access to information and services, improved ability to find employment and, at a community level, higher economic capacity and productivity and wider citizen participation in democratic processes. The experience shows that this can be achieved with affordable computers and Internet access, especially if these services are delivered through local entrepreneurs or community access facilities (such as telecenters) that can assist in computer and Internet usage.

Nevertheless, only a few countries in LAC have made VOIP legal or removed restrictions to its use. Likewise, few countries have made frequencies available for unrestricted Wi-Fi use, permitted open competition for telecom and Internet services, or allowed community-based systems exemption from legal/natural monopolies. Beyond regulatory restrictions, the business environment in many countries still poses barriers to entrepreneurs and the creation of small businesses. There have been few pilot projects that promote best practices with

rapidly emerging ICT technologies such as those cited. As a result, the LAC Region still lags behind many Asian, and even some African countries in realizing the potential development benefits from widespread ICT access and emerging wireless and no conventional communication technologies.

### **Helping the Poor Profitably: A Case for Access to ICT and Wireless Solutions**

Professor C. K. Prahalad of the Michigan Business School highlights in his book *The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits*, the collective purchasing power potential of the world's 4 to 5 billion poorest people. He urges efforts to promote an enabling business climate that goes beyond the promotion of social corporate responsibility as means to foster local well-being, while generating a strong revenue and profit potential base in the long term. Moreover, a recent study by the London Business School found that, in a typical developing country, an increase of ten mobile phones per 100 people boosts GDP growth by 0.6 percentage points. The study concludes that wireless solutions are concrete examples of "technologies that help people help themselves."

It becomes clear that the poor can benefit from the effective deployment of ICT and the development of the knowledge economy when such interventions match the local conditions and meet the following four requirements (IADB, 2005a). First, promote a multi-stakeholder partnership framework delineating the effective participation of the public sector and civil society, while creating the incentives for socially responsible private investment. Second, strengthen the provision of ICT-based public social services and promote social inclusion, while maintaining the role of the private sector as the main source of innovation. Third, stimulate macroeconomic growth by facilitating access to knowledge and information through increased connectivity and appropriate

ICT solutions for marginalized and lower-income populations, thereby tapping a strong market potential. And fourth, design and adopt long-term ICT investment frameworks in human development (i.e. education, health and environment), along with the design and implementation of cost-effective technologies aimed at increasing the market access, efficiency and competitiveness of the poor (connectivity, knowledge centers, etc.).

By removing barriers to the entry of new and lower-cost technologies (such as fixed wireless) and of new communication and ICT-based services (such as Voice-Over-Internet phone service), and ensuring open competition, it will be possible to increase entrepreneurial activity and expand private sector investment. Nevertheless, the direct involvement of the public sector continues to be fundamental in sharing and expanding service into remote areas and to serve as a catalyst for the effective delivery of social services. This also reduces risk for private enterprises and helps comply with commitments to serve certain regions, communities and marginalized or disadvantaged groups, while also allowing market forces to trigger actions and operate effectively.

## **CREATING THE CONDITIONS FOR DEVELOPMENT OF A KE IN THE LAC REGION**

### **Dissemination of ICT for Development**

Contributing to development through ICT requires an environment that facilitates its dissemination and use in various institutional, business and social settings and, in particular, the promotion and creation of the necessary conditions to facilitate investment in technological infrastructure and connectivity, promote competition, facilitate access, foster digital education and training, promote the development of local content, and delineate the participation of various stakeholders.

In particular and, as expressed above, an effective environment conducive to the promotion and use of ICT requires a number of concrete actions under a multi-sector approach. First, the creation or strengthening of the institutional capacity with the participation of the public, private and civil society sectors, in order to promote and foster the dissemination and use of ICT through programs and initiatives that build a participatory information and knowledge society. Second, raising awareness and creating the conditions for the design and implementation of pilot initiatives and the replication of best practices in priority areas including ICT for social development and poverty reduction, ICT for governance, and ICT for economic growth, among others. Third, the undertaking of actions necessary to promote a digital inclusion for all. Fourth, creating the organizational conditions for the identification of concrete and comprehensive national ICT investment plans which effectively delineate the participation of the various sectors and stakeholders. Fifth, implementing and/or strengthening national and regional regulatory frameworks to, among others, promote competition and loosen restrictions on the telecommunications market, allow for the expansion of media convergence, and promote and facilitate research and technological innovation. Such measures should also facilitate the extension of broadband connectivity services, bring rates into line with purchasing power, while placing priority on semi-urban, rural, and remote areas. They should also provide citizens and firms with access to ICT through initiatives that combine training, connectivity and infrastructure at affordable prices.

### **A Multi-Sector Stakeholder Approach**

ICT for development requires not only a concrete delineation of the responsibilities that the public sector, private sector and civil society should assume, but also the promotion and establishment of partnerships based on their mandates,

responsibilities, purpose and competitive advantages. Indeed, the consolidation of a knowledge economy triggered by the effective deployment of ICT requires an action-oriented multi-stakeholder approach. Experience shows that these partnerships allow for addressing multiple issues that cannot be resolved without the concerted efforts of diverse constituents, while also allowing for synergies, coordination and sharing of priority investments, and ultimately leading to a more efficient and sustainable process of economic and social development and poverty reduction through the deployment of appropriate and innovative technologies.

First, with respect to the public sector, experience shows that ICT-based programs aimed at enhancing the reach and impact of social development and poverty reduction programs not only strengthen the capacity of the public administration--at the national and local levels--to deliver public services, but also contribute to building public trust while enhancing citizen participation. Also, taking into consideration the evidence derived from lessons learned and best practices, and based on the social development needs and opportunities in LAC, ICT is a proven instrument that, when effectively deployed, facilitates the provision of access to formal and informal education, the delivery of government and health services, the creation of new financial services and, overall, the implementation of targeted poverty reduction programs in priority remote and marginalized areas.

Second, adequate organizational arrangements must be in place to facilitate the participation of civil society organizations in the promotion and implementation of community-based development programs and, thereby, complement public sector investments in connectivity, ICT solutions in health care facilities, schools, and neighborhoods, the development of local content and the delivery of social and poverty-targeted actions at the local level.

Third, the active participation of the technology-based private sector in the development of the Region represents a pivotal source of innovation for promoting social development, and creating local jobs, income opportunities and wealth. This can be achieved through the effective integration of market, regulatory and institutional conditions to create the incentives necessary to balance social responsibility with profit motives. It can also be achieved by promoting the participation of the private sector through ICT and connectivity investments and technical assistance in priority social sectors while, at the same time, creating value-added opportunities and the expansion of ICT-based social and financial services to underserved communities; and tapping the profit potential that can be realized from efforts aimed at improving the social and economic conditions of the poor (i.e. under a “blended strategy”). Promoting social corporate responsibility under a “blended strategy” framework, is based on the principle that the enhancement of the productive and economic capacity of the poor (under a long-term profit motive) through the provision and deployment of adequate technologies, has a direct impact on their access to information and sources of financing, their ability to enter formal labor markets, their purchasing power and, thereby, the economic growth of the Region.

## **A CASE FOR THE DEVELOPMENT OF A KE BETWEEN THE LAC REGION AND THE PEOPLE’S REPUBLIC OF CHINA**

### **LAC Progress in the Knowledge Economy (KE)**

As mentioned before, the term Knowledge Economy has taken many definitions in the vast amount of literature that has been recently published. We have defined it as an economy where the generation and utilization of knowledge has

come to play a predominant part in the creation of wealth (Dahlman 200 p.1). Under the knowledge economy, *knowledge* is seen as a competitive factor; the value of new ideas, services and networks are utilized as a development tool. The valuation and utilization of existing knowledge —on which developing countries tend to be rich; the generation of new knowledge —which requires additional effort and investment; and the adaptation of knowledge originally developed elsewhere, are all valid instruments to increase the participation of knowledge in the economy. Given the present scarcity of financial and natural resources among developing countries, an economy based on such a global public good as knowledge bears great promise for them.

Knowledge has always been an important factor for economic growth, but a renewed interest in knowledge has emerged because innovation is becoming ever more important to competitiveness and growth in international markets. In the case of LAC, conventional economic models would have the region concentrating in those areas that have constituted its comparative advantage in the past —agricultural produce, fuel and minerals. These sectors, however, have low demand elasticity and are subject to huge, often unpredictable swings in the international markets. If, instead, the LAC region were to invest in participating as a player in the global knowledge economy, it could encounter greater growth opportunities through products and services with higher demand elasticity and more innovation potential (Dahlman, 2007). The KE could represent a new paradigm of development for LAC.

### **China’s Performance as a Knowledge-Based Economy**

China is emerging from an agricultural economy and is rising as a global leader with a booming economy and thriving industrial and financial sector. China’s success in the last three decades is due, partially, to its ability to assimilate global

advanced technology and large flows of foreign investment; make use of its great pool of indigenous knowledge and talent; and put in place a policy framework that provides strong incentives for innovation.

In taking this path, China faced and still faces problems that are similar to the ones faced by other developing regions such as LAC; for example: the prevalence of low-skilled labor force and industries; inequalities in the access to education and wealth; and regional disparities that limit its innovation performance (Huang & Soete, 2007).

To overcome these obstacles, China is investing in improving education and learning; information infrastructure; dissemination of new technology; and research and development systems. Thanks to this investment, China is building the foundations to become a knowledge-based economy, heavily favoring the service sector—marketing, logistics, consulting and management—and pursuing greater diversification in goods and services to keep a steady rate of employment and foreign investment. China's indigenous innovation strategy for 2006-2020, for example, emphasizes the importance of technological progress for economic development and R&D activities, both essential to achieve growth in human capital.

Other obstacles need still to be tackled, in particular, enforcement of intellectual property rights—a factor essential to protect indigenous knowledge application and development—as well as weak competitiveness in its financial systems. China, like Europe and other regions gearing towards the KE, still needs to increase international trade of services, internationalization of research networking and access to brains and talent (Huang & Soete, 2007).

China's investment in its Knowledge sector utilizes lessons learned in previous experiences, particularly Europe's commitment—Lisbon agenda—to invest in innovation, science and technology, and knowledge-based resources. Europe's experience so far illuminates the need for outward-looking, global strategies, to maximize

the benefits of such investment. No region by itself will achieve much, for knowledge gives its richest fruits when fed by diversity and diversity flourishes in open global markets.

A recent substantial Chinese contribution to the Inter American Development Bank (IADB) would highlight China's intention to support the Bank's transition towards more innovative investment fields, away from the traditional natural-resource based model that has characterized investment in the LAC region so far. Innovation bears great potential in the search for shared solutions to solve some of the most pressing global problems—climate change, health and sanitation services coverage, poverty—all problems that loom large in LAC's and China's future. China's participation could be complemented by the participation of European nations, intimately familiar with the task at hand.

China's support would facilitate LAC's entrance into the global knowledge economy market, but at the same time would create an opportunity for exchange and cross-fertilization between China's millenary and new knowledge wealth and LAC's significant untapped resources in this area. More importantly, China's contribution would acquire global significance to the extent that it would contribute to an enlargement of the international pool of knowledge resources, a pool from which every region—developing and developed—can partake and in doing so, benefit.

This is the time when a gap between the Asian and LAC regions could be filled in and a potential chronic lag of the LAC Region versus the Asian one could be converted into a win-win situation, by having the two regions teaming-up in the creation of a trans-continental Knowledge Economy

## **CONCLUSION**

Beneficiary countries, donors and international organizations are currently devoting much attention to the issue of development effectiveness.

However these discussions seem not to adequately reflect the strategic role of knowledge economy expansion as a new paradigm of development.

In the LAC Region, the economic, social and political reforms of recent decades increased the demand for information, knowledge and the deployment of the knowledge economy.

The “second generation” reforms will require the effective integration of a comprehensive approach to knowledge economy expansion into developing planning.

This is a two way process-reform: it provides incentive for knowledge economy expansion while knowledge economy expansion ensures that all participate and benefit from the reforms.

Consequently it will be necessary for all stakeholders in the ICT-for-development field to learn to speak the economic and financial language of finance ministers, policy makers, development planners and decision makers. More specifically, it is essential to produce more economic statistics that link ICT and knowledge economy expansion to overarching development objectives (Piaggese & Vitro, 2002)

The effectiveness of such linkage depends, in large measure, on bringing stakeholders together to strengthen the institutional capacity to integrate a deeper understanding of the historical role of ICT, information and knowledge, into development planning; and carrying out a democratic process of efficient, equitable and sustainable development as a collective effort to deploy a knowledge economy based society.

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## KEY TERMS AND DEFINITIONS

**Information and Communication Technologies (ICT):** Information and communications technology --or technologies-- includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICT is mentioned in the text, together with education, innovation, social inclusion and enabling policies, as one of the five pillars of the KE.

**Innovation:** The capacity to do the same thing in a different way and the act or process of inventing or introducing something new. In the text, innovation refers to the introduction of new ideas, products or processes for the purpose of enhancing development opportunities for a country, a sector, or an enterprise.

**Intellectual Property Rights:** A number of distinct types of creations of the mind for which property rights are recognized by law. In the text, intellectual property rights refer to the protection of human ingenuity and creativity which can become factors in development.

**Knowledge Economy (KE):** The added, non-monetary value that society accrues from increased access to data, information, and knowledge, as a spin-off of the new global communication and data processing technologies.

**Knowledge for Development:** The use of knowledge (indigenous knowledge or knowledge developed elsewhere but adapted to local circumstances) as an asset for a country's development.

**Latin America and the Caribbean (LAC):** Geographic term that includes the 21 countries that make the Caribbean, 7 countries that make Central America, 13 countries that constitute South America, and 1 country in North America. In the text, LAC is referred to as a region most receptive to the deployment of ICT and posed to leapfrog into a KE.

**Millennium Development Goals:** Eight international development goals that all 192 United Nations member states and at least 23 international organizations have agreed to achieve by the year 2015. They include reducing extreme poverty,