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## **Knowledge Management for Development: Towards a practical approach for the Caribbean**

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## **Abstract**

This report proposes a framework for locating, collecting, creating, sharing and applying information and knowledge (from within and outside the subregion) for development purposes in the Caribbean subregion. The framework emphasizes the importance of protecting and tapping into the rich cultural heritage and traditional knowledge of the Caribbean to support its development.

This knowledge management for development framework, advanced by ECLAC, is proposed for consideration in the design and implementation of both national policies and strategies, and community-level projects to support the achievement of the Millennium Development Goals and the overall sustainable development of the Caribbean subregion.

It considers six main elements, namely inputs, processes and tools, outputs, pillars (on which all the above are built on), the environment or context in which this, like any other scheme, operates and the monitoring and evaluation of knowledge management initiatives. The approach draws from examples of models, frameworks and initiatives developed worldwide, with particular emphasis on those from Latin America and the Caribbean.

# I. INTRODUCTION

## A. BACKGROUND

The objective of the Economic Commission for Latin America and the Caribbean (ECLAC) Subregional Headquarters for the Caribbean in the area of knowledge and information management is to continue exploring the developments in information and communications technologies (ICT) as a means of overcoming the limitations of small size, commercial isolation and bolstering inclusive economic and social development, while capitalizing on the knowledge base and potential of the subregion.

In line with this objective, ECLAC Subregional Headquarters for the Caribbean has undertaken to explore a number of key issues revolving around the topic of knowledge management and its potential contribution to the development of the subregion. The results of this research and analysis are summarized in this report.

The role of knowledge and innovation in economic growth is now widely acknowledged, as knowledge has come to be accepted as the key driver of competitiveness and economic growth. The elaboration of appropriate and efficient policies to capitalize on this knowledge has proven to be a challenging process in most of the developing world, and the Caribbean subregion is no exception. The reasons being a more complex political, social and economic environment which over the last years has been compounded by the effects of the world financial crisis, the escalation in food prices and global warming. For example, as a consequence of the financial crisis and despite significant improvements during the last decade, many countries in the Caribbean face now the possibility of a reversal in key social issues like poverty reduction and eradication, the fight against HIV/AIDS and other diseases, and other goals as set forth in the Millennium Declaration.

The challenges facing the Caribbean subregion are, therefore, many and the development of a knowledge management framework in the Caribbean is seen by ECLAC as a key contributor to overcoming pressing economic, social and environmental challenges. Two main aspects are being carefully considered: (a) the existence of a rich cultural heritage and traditional knowledge in the Caribbean that can lead to potential contributions to the development of the subregion; and (b) the development of a regional knowledge management framework as a potential key contributing factor towards the achievement of the Millennium Development Goals, by the establishment of a “methodology” for locating, capturing, creating, sharing, applying and storing information, knowledge and experiences from within and outside the subregion.

The role of the ECLAC Subregional Headquarters for the Caribbean is, therefore, to harness a variety of knowledge sources as contributors to economic growth, social development, environmental protection and to act as an enabler of institutions and governance in the policymaking process.

## **B. PURPOSE OF THE REPORT**

This report aims to raise awareness among policy and decision makers in the Caribbean of the importance of knowledge management as a tool to promote economic development, environmental protection and social empowerment. It also aims to advance a knowledge-based management for development framework (for the Caribbean subregion), an approach in which practical tools and measures on how to implement and effectively use knowledge (-based) management strategies could be derived. It draws from examples of models, frameworks and initiatives developed worldwide, with particular emphasis on those of the Latin American and Caribbean region.

The report focuses on the implications of a knowledge management for development strategy at the country level as well as at the community and project level. As such, the knowledge economy model of the World Bank, among others, is introduced and, similarly, various initiatives related to knowledge economies and/or knowledge-based management for development in sectoral programmes and projects, such as in health and education. This methodology is used to further explore the possibilities for down-streaming and up-streaming content and lessons learnt.

Special attention is paid throughout the report to the cultural dimensions and traditional knowledge in the Caribbean subregion. A Caribbean culture is understood as a wide variety of socio-cultural adaptations and social structures that were spawned in the past, defying broad generalizations regarding a shared Caribbean culture, society, and personality.<sup>1</sup> Traditional knowledge, indigenous knowledge, traditional environmental knowledge and local knowledge are understood as the long-standing traditions and practices of indigenous or local communities in the Caribbean, encompassing the wisdom, knowledge and teachings of these communities.<sup>2</sup>

## **C. CONCEPTUAL OVERVIEW OF KNOWLEDGE AND KNOWLEDGE MANAGEMENT**

Knowledge is defined by the Oxford English Dictionary as: (a) expertise, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject; (b) what is known in a particular field or in total, facts and information; or (c) awareness or familiarity gained by experience of a fact or situation. Philosophical debates, in general, start with Plato's formulation of knowledge as "justified true belief". There is, however, no single agreed definition of knowledge presently, or any prospect of one, and there remain numerous competing theories.

Knowledge management involves distinct but interdependent processes of knowledge creation, knowledge storage and retrieval, knowledge transfer and knowledge application. At any point in time, an organization and its members can be involved in multiple knowledge management processes and chains. As such, knowledge management is not a monolithic but a dynamic and continuous organizational phenomenon. Furthermore, the complexity, resource requirements, and underlying tools and approaches of knowledge management processes vary based on the type, scope, and characteristics of knowledge management processes.<sup>3</sup>

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<sup>1</sup> Source: Premdas, Ralph R., "Ethnicity and Identity in the Caribbean: Decentering a Myth" (1996), working paper #234 [online] <<http://www.nd.edu/~kellogg/publications/workingpapers/WPS/234.pdf>>

<sup>2</sup> Source: definition adapted from Wikipedia.

<sup>3</sup> Alavi, Maryam and Dorothy Leidner, "Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues" (2001), MIS (Management Information Systems) Quarterly, Vol. 25 No. 1, pp. 131.

## 1. Knowledge management components

People, processes, and technology are the three essential components of knowledge management. People are primary because they implement knowledge management processes as part of their work and help shape a knowledge-sharing culture.<sup>4</sup> While technology can enable and expedite knowledge management, for it to have an impact, it has to be integrated with the way people work, address their real needs, and be appropriate to the setting.

### D. KNOWLEDGE MANAGEMENT AS A DEVELOPMENT TOOL

According to the World Bank Institute's report "Building Knowledge Economies: Advanced Strategies for Development", knowledge could act as the driver of competitiveness and productivity, as a facilitator of welfare and environment, and as an enabler of institutions and governance, hence contributing to economic and social development.<sup>5</sup>

*Knowledge as the enabler of institutions and governance:* knowledge is crucial in the policymaking process. It can be transformed into effective decisions and actions to solve development problems both in the short and long term. Most development policies are based on the identification and dissemination of good policy practices to all aspects of public administration.

*Knowledge as the driver of competitiveness and productivity:* an econometric study conducted by the World Bank concluded that close to two thirds of the differences between the GDP of two countries (Ghana and the Republic of Korea), over a half century, were explained not much by the accumulation of physical capital and labour but by other sources of growth and productivity in which knowledge was crucial.

*Knowledge as the facilitator of welfare and environment:* knowledge improves nutrition, cures epidemics and protects against natural dangers.

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<sup>4</sup> Source: MAQ (Maximizing Access & Quality) (2004), "Managing Knowledge to Improve Reproductive Health Programs", Paper No 5.

<sup>5</sup> Source: WBI (World Bank Institute Development Studies) (2007 "Building Knowledge Economies. Advanced Strategies for Development", Washington, D.C.

**Table 1: Knowledge as the facilitator of welfare and environment**

<i>Knowledge cures</i>	The use of knowledge in the health arena has had tremendous implications for the well-being of individuals. For example, on the treatment of river blindness, a disease that afflicts millions of people in Africa. Over the last 30 years, a broad international partnership, through the proper creation, dissemination and use of knowledge, has defeated this disease in parts of West Africa and is making rapid progress in the remaining areas where it is endemic.
<i>Knowledge protects</i>	The tsunami that hit coastlines on the Indian Ocean in December 2004 showed the importance of knowledge and information dissemination in mitigating the effects of natural disasters. Effective satellite and early-alert radio systems could have prevented many deaths.
<i>Knowledge nurtures</i>	The term “green revolution” refers to the increased food production resulting from improved strains of wheat, rice, and other cereals developed by Norman Bourlag and others in the 1960s and disseminated throughout the world. The Green Revolution changed India’s status from a food-deficient country to one of the world’s leading agricultural nations.

## II. INTERNATIONAL MODELS, FRAMEWORKS AND EXPERIENCES ON KNOWLEDGE (-BASED) MANAGEMENT FOR DEVELOPMENT AND KNOWLEDGE (-BASED) ECONOMIES

This section of the report introduces selected well-known and, to a lesser extent, known international models and frameworks of knowledge (-based) management for development purposes: the Knowledge Economy Model as proposed by the World Bank, the Knowledge-based Management for Development Framework as proposed by the Asian Development Bank (ADB) and the Knowledge for Poverty Alleviation Framework (KPA) for developing low-income communities.

### A. THE KNOWLEDGE-BASED ECONOMIES (KBE) MODEL OF THE WORLD BANK

The World Bank defines a knowledge economy as “one in which the generation and exploitation of knowledge has come to play the predominant part in the creation of wealth”. A key point in this definition is that KBE is not just about high technology or just about creating new knowledge, it is about the effective use of all types of knowledge for wealth creation.

The World Bank proposes four pillars on which knowledge and innovation-related policies should be built on. These four pillars are:

- An educated and skilled labour force able to continuously upgrade and adapt their skills to create and use knowledge efficiently.
- A modern and adequate information structure to facilitate effective communication, dissemination and processing of information and knowledge. ICTs – including telephone, television, and radio networks – are seen by the World Bank as the essential infrastructure of the global, information-based economies.
- An effective innovation system composed of firms, research centers, universities, consultants, and other organizations that keep up with new knowledge and technology, tap into the growing stock of global knowledge and assimilate and adapt it to local needs.
- A country’s institutional regime and the set of economic incentives it creates that allows for the efficient mobilization and allocation of resources, stimulates entrepreneurship, and induces the creation, dissemination and efficient use of knowledge.

It is proposed by the World Bank that for countries to become successful knowledge economies, “they have to rethink and act simultaneously on their education base, their innovation systems, and their ICT infrastructure, while also building a high quality economic and institutional regime”.

The same study by the World Bank highlights the perceived benefits that the countries of North America as well as Finland and Ireland have been able to take advantage of from the efficient use of knowledge, becoming “models of knowledge-based growth and competitiveness” of the twentieth century.

The following are some selected examples that have been chosen (and summarized) from the same report by the World Bank on each of the four knowledge economy pillars. The objective is to illustrate the positive results achieved as a result of the implementation of policies in one or more of the aforementioned four ‘pillars’ of the Knowledge Economy Model.



## 1. Innovation

### Box 1<sup>6</sup>: The Malaria Research and Training Center (MRTC) of Bamako University in Mali

<p><b>Roots:</b> Due to high and increasing demand to fight Malaria, the Malian Government supported the creation of the MRTC in 1992. The center capitalized on earlier work of Professor Philippe Ranque and his team of three fellow researchers. The MRTC first expanded to include 12 Malian researchers and later 24 African researchers, and became internationally recognized for its contributions to research on malaria and improvement of public health standards in Africa.</p>
<p><b>Mission:</b> MRTC mission was: (a) to increase the understanding of malaria in Mali and elsewhere in Africa through research and training; (b) to produce high-quality scientific results to inform decision-making; (c) to strengthen the implementation of public health programmes; and (d) to participate in international efforts to develop vaccines and medicine.</p>
<p><b>Achievements:</b> In 2006, the center had a faculty of 30 professors plus 50 Ph.D. students/research assistants and 40 administrative staff. It gained international recognition, succeeded in international grant competitions and was hailed as a center of excellence by the Agence Universitaire de la Francophonie and the U.S. National Institutes of Health. MRTC was also certified by the U.S. Food and Drug Administration to conduct clinical tests according to international standards; tests of anti-malaria vaccines were projected to start in 2006. MRTC researchers in partnership with traditional doctors set up a network for immediate care of malaria-affected people in the Bandiagara region, an initiative that had significantly reduced malaria mortality. In 1997, prior to the programme, the mortality rate among children under 5 years of age was 20% to 30%. By 2005 it had been reduced to 5% to 7%.</p>
<p><b>Achievement factors:</b> The MRTC benefited from a clear strategy, ambitious goals, strict implementation methods and tools, and wide local and international partnerships. It also benefited from a supportive social and political context.</p>

The above example illustrates the positive impact of education, research, training and, by extension, innovation (combined with tools and methods and a conducive environment) to enhance the capacity of local institutions to confront challenging problems such as the fight of malaria in Africa.

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<sup>6</sup> Source: WBI (World Bank Institute Development Studies) (2007) “Building Knowledge Economies. Advanced Strategies for Development”, Washington, D.C.

## 2. ICT Infrastructure

### Box 2<sup>7</sup>: “e-Sri-Lanka” and a holistic approach to ICT<sup>8</sup>

“Sharing a strong belief that ICT enables development and global competitiveness, Sri-Lanka’s government, private sector, and other stakeholders developed a vision for “e-Sri-Lanka”. This involved introducing ICT to every village, citizen, and business, and revolutionizing the way the government operates. A concerted effort was made to design and implement a comprehensive, nationwide strategy to harness the potential of ICT to achieve broader socioeconomic goals. In collaboration with international donors, the project attempted to fulfil these goals through affordable access to ICT, modernized government practices, delivery of citizens services, the development of public-private partnerships, and the creation of competitive knowledge industries. Adopting a comprehensive and inclusive approach, the programme cut across many sectors and devoted much attention to developing the skills of government workers, students and teachers, and other citizens.”

The above example illustrates how ICT policies and a comprehensive and inclusive approach are used to achieve broader development objectives by linking ICT programmes with other economic, financial and social policies.

## 3. Education

### Box 3<sup>9</sup>: The Jordan Education Initiative: new methods for improved teaching

The purpose of the Jordan Education Initiative (JEI) was to accelerate social and economic development in Jordan through the broad application of e-learning, hardware, curricula and training. Its ultimate goal was to produce sustainable economic growth and support the development of a knowledge economy. JEI objectives were: (a) to improve the delivery of education in Jordan through public-private partnerships; (b) to foster innovation among teachers and students through the effective use of ICT; (c) to build the capacity of the local information technology industry; and (d) to create a model of reform that can be used by other countries. Programme implementation began with the design, development, and deployment of a mathematics curriculum for grades K-12 to be delivered in more than 100 schools. With regards to the first and second objectives, a McKinsey study showed that, by 2005, JEI had more than 30 active partners from public sector organizations such as the United States Agency for International Development (USAID) and the British Council, and private sector companies including Cisco, Dell, and Microsoft. One hundred schools were fully networked, with access to computer labs and online curricula. A full math e-curriculum (grades 1-12) was in the process of being developed; Arabic online, English as a foreign language, and ICT were tested at varying stages in schools; and online civics and science courses were in the process of being developed.

With regards to the third objective, JEI was to develop the Jordanian ICT industry by encouraging partnerships with global firms. Five local companies benefited from close working relationships with global partners, and McKinsey estimated that approximately \$3.7 million had been transferred to local companies as a direct result of JEI programmes.

The accomplishment of the fourth objective was by 2005 already in evidence: the Jordanian Government had received enquiries from more than 10 countries interested in adapting elements of the JEI model for education reform.

<sup>7</sup> Source: WBI (World Bank Institute Development Studies) (2007) “Building Knowledge Economies: Advanced Strategies for Development”, Washington, D.C.

<sup>8</sup> A holistic approach is considered by the World Bank and other development institutions as an interdependent and inclusive approach which includes a wide range of tools to ensure greater impact.

<sup>9</sup> Source: WBI (World Bank Institute Development Studies) (2007) “Building Knowledge Economies: Advanced Strategies for Development”, Washington, D.C.

The above example illustrates the positive impact of a carefully crafted strategy centered on education, ICT and public-private partnerships.

#### 4. Economic and institutional regime

##### Box 4<sup>10</sup>: The case of Botswana

With rapid growth, Botswana became a middle-income country. The main reasons of this achievement are attributed to good governance and growth-promoting economic policies:

- a. The country's minerals' policy established mutually profitable arrangements with foreign investors and one of the very few successful international marketing arrangements. Rent from the sales of diamonds and other minerals were channelled into investments that promoted both growth and human development while maintaining fiscal discipline.
- b. Trade policy kept the economy open to competition from imports and maintained access to markets for some important non-mineral exports.
- c. Money and banking policies, while not always optimal, generally provided stability to the economy and to the financial sector.
- d. Exchange rate policy ensured stability in exchanges of goods and services and avoided the danger of an overvalued currency, a common phenomenon in states rich in natural resources.
- e. Fiscal policy, on the whole, has been disciplined. The accumulation of substantial government savings and foreign exchange reserves has enabled the country to ride out downturns in the diamond market, and the careful management of those reserves has generated a significant return to the nation.
- f. Labour market policies avoided both the extremes of an exorbitant real minimum wage and a bidding war for scarce talent. The government pursued a policy whereby wages and salaries in the private and parastatal sectors generally conformed to those paid to comparable grades of public employees.

The above example illustrates the positive influence on growth and development of a country's economic and institutional regime.

Besides the positive results achieved as a result of the implementation of policies and strategies in one or more of the four 'pillars', these four examples shown above are proof of the interrelated nature of the 'four pillars' of a knowledge economy and the importance of considering a comprehensive and inclusive (holistic) approach for the purpose of designing and implementing national plans and strategies.

#### B. THE KNOWLEDGE-BASED DEVELOPMENT (KBD) MODEL OF THE ADB

The KBD model of the ADB is based on the World Bank formulation of the four pillars of a KBE, expanded to include planning for a knowledge-based society and a knowledge-assisted care of the environment.

It is proposed by the ADB that knowledge should be designed to support growth in economic capital, social capital and natural capital, elements which are considered the three "value domains" of sustainable development. These value domains should be pursued in a matrix form through the development of corresponding categories of knowledge assets, such as human capital through education, structural capital through innovation, and stakeholder capital through the building of networks<sup>11</sup>.

<sup>10</sup> Source: WBI (World Bank Institute Development Studies) (2007) "Building Knowledge Economies: Advanced Strategies for Development", Washington, D.C.

<sup>11</sup> ADB (Asian Development Bank) (2007), "Moving toward knowledge-based economies: Asian experiences".

**Table 2: A Model of KBD**

	<b>Economic (KBE)</b>	<b>Social</b>	<b>Natural</b>
Education (development of human capital)	Education for a skilled workforce	Education for total human development	Education for sustainable development
Innovation (development of structural capital)	Systems, processes, and technological innovations	New institutions and protocols for peace, equity, and human rights	Environmental technologies
Building Networks (development of stakeholder capital)	Financial and physical networks, e.g., ICT infrastructure	Social networks, social trust, cultural integrity	Agreements to protect and sustain planetary life support systems

Source: ADB (Asian Development Bank) (2007), “Moving toward knowledge-based economies: Asian experiences”

The World Bank’s four pillars of a KBE are represented by the three categories of intellectual capital of the economic domain (see “Economic KBE” column in Table 2): education, innovation and ICT. Accordingly, if the World Bank’s assessment methodology (to be explained later on in this report) is broadened to include indicators along the six additional elements under the social and natural development, the result would be an assessment methodology for KBD<sup>12</sup>.

The table below highlights some of the policies and strategies implemented by three Asian countries in terms of the four pillars of a KBE.

**Table 3: Matrix of selected Asian countries’ initiatives**

<b>Country</b>	<b>Education and Skilled Workforce</b>	<b>National Innovation System</b>	<b>Networks and ICT</b>	<b>Policy and Regulatory Environment</b>
<b>People’s Republic of China</b>	<ul style="list-style-type: none"> <li>• Compulsory basic education programme</li> <li>• Massive retraining of employees</li> <li>• Promotion of university education, especially in Shanghai</li> <li>• Relaxing restrictions on hiring graduates from other parts of the PRC</li> </ul>	<ul style="list-style-type: none"> <li>• Massive reforms in the NIS</li> <li>• Universities and research institutes asked to engage in market-related research</li> <li>• Promotion of high-tech industrial parks</li> <li>• “Knowledge innovation” programme restructuring research institutes</li> </ul>	<ul style="list-style-type: none"> <li>• Heavy capital investments in the western part to address digital divide</li> <li>• ICT used in health, media, entertainment sectors</li> <li>• Assistance to businesses on e-commerce</li> <li>• “12 Golden Projects” on e-governance</li> </ul>	<ul style="list-style-type: none"> <li>• 10th five-year plan highlighting education and skills development, and ICT</li> <li>• Reforms on innovation and R&amp;D</li> </ul>
<b>India</b>	<ul style="list-style-type: none"> <li>• With a critical mass of educated and IT-skilled workforce</li> <li>• Universal elementary</li> </ul>	<ul style="list-style-type: none"> <li>• With global high-tech production and off shoring activities</li> <li>• Research-oriented</li> </ul>	<ul style="list-style-type: none"> <li>• Has developed its own IT-related industries</li> <li>• Uses ICT for</li> </ul>	<ul style="list-style-type: none"> <li>• Has identified 8 Cs in using ICT for development</li> <li>• Adopted</li> </ul>

<sup>12</sup> ADB (Asian Development Bank) (2007), “Moving toward knowledge-based economies: Asian experiences”

	education <ul style="list-style-type: none"> <li>• Innovative use by private sector of ICT for education</li> <li>• Quality university systems being established</li> <li>• “Brain drain” to “brain gain”</li> </ul>	universities and research institutions <ul style="list-style-type: none"> <li>• Support by big companies in carrying out universities’ R&amp;D</li> <li>• With a National Innovation Foundation to support S&amp;T</li> </ul>	knowledge and info sharing across sectors, reaching even the rural folks <ul style="list-style-type: none"> <li>• Some e-government services</li> </ul>	broadband policy for broadband connection in the country <ul style="list-style-type: none"> <li>• Establishment of Knowledge Commission</li> </ul>
<b>Republic of Korea</b>	<ul style="list-style-type: none"> <li>• Huge investments by the government</li> <li>• EduNet project using ICT for students, teachers, and the general public</li> <li>• “IT Education for 10M People” educating farmers, fishermen, housewives, and disabled</li> </ul>	<ul style="list-style-type: none"> <li>• Centrally managed NIS</li> <li>• Private players engaged in research encouraged to join policy formulation</li> <li>• Promotion of high-tech industries</li> <li>• R&amp;D support for SMEs</li> <li>• Government providing marketing and commercial support to leading techs</li> </ul>	<ul style="list-style-type: none"> <li>• With internationally known ICT brands</li> <li>• Government support to core technologies for development</li> <li>• Small Enterprise Networking Project to get SMEs connected to net</li> <li>• Government support to telecom companies to reach remote areas</li> <li>• e-governance in five core areas</li> </ul>	<ul style="list-style-type: none"> <li>• e-Korea Vision 2006</li> <li>• A variety of legislation for the KBE</li> </ul>

Source: ADB (Asian Development Bank) (2007), “Moving toward knowledge-based economies: Asian experiences”.

### C. THE KNOWLEDGE FOR POVERTY ALLEVIATION (KPA) FRAMEWORK

The Knowledge for Poverty Alleviation (KPA) Framework, a study jointly conducted by CCFI.Philippines<sup>13</sup> and Peace and Equity Foundation (PEF), contributes to the operationalization of KBD by applying intellectual capital concepts to the eradication of poverty at the community level. KPA is designed for application of KBD in the design, implementation and evaluation of community-based anti-poverty projects and aims to identify various forms of tangible and intangible assets that local communities either own or can use for poverty alleviation.

The starting point in the KPA framework is the recognition of various forms of intangible assets a community may possess or has access to. Once recognized and appreciated, a set of management actions, both old and new, are recommended. These actions cover: (a) recognizing, assessing, leveraging and

<sup>13</sup> CCFI.Philippines is a leading knowledge-based management and organizational learning advocacy and service provider in the Philippines.

building on community tangible assets by using its intangible assets, and vice-versa; and (b) sustainably protecting and building local tangible and intangible assets.<sup>14</sup>

The table below summarizes the KPA framework.

**Table 4: KPA framework**

Identification of assets	Project Design	Project Implementation and Monitoring & Evaluation	Actions
<ul style="list-style-type: none"> <li>- Expand concepts of “asset” and “capital”</li> <li>- Participatory and appreciative assessment of community assets</li> <li>- Risk assessment, e.g. weaknesses in community assets</li> </ul>	<ul style="list-style-type: none"> <li>- Leverage intangible assets</li> <li>- Address weaknesses in community assets</li> <li>- Strengthen stakeholder capital, e.g. links to external support systems</li> <li>- Add sustainability elements: empowerment, economic sustainability and environmental sustainability</li> </ul>	<ul style="list-style-type: none"> <li>- Optimize interplay of capital</li> <li>- Address weaknesses in community assets</li> <li>- Monitor/assess capital gained, project outcomes, and sustainability</li> <li>- Nurture personal and community engagement</li> </ul>	<ul style="list-style-type: none"> <li>- Legislative/policy reforms to remove/reduce drains in tangible/intangible community assets</li> <li>- Provide/sanction/formalize access rights</li> <li>- External support systems for micro/small/medium enterprises (MSMEs)</li> </ul>

**Source:** Knowledge for Poverty Alleviation: A Framework for Design and Evaluation of Development Projects for Low-Income Communities.

<sup>14</sup> Talisayon, Serafin D., University of Philippines, Jasmin P. Suministrado, CCLFI, (2008) “Knowledge for Poverty Alleviation: A Framework for Design and Evaluation of Development Projects for Low-Income Communities”, Metro Manila, Philippines.

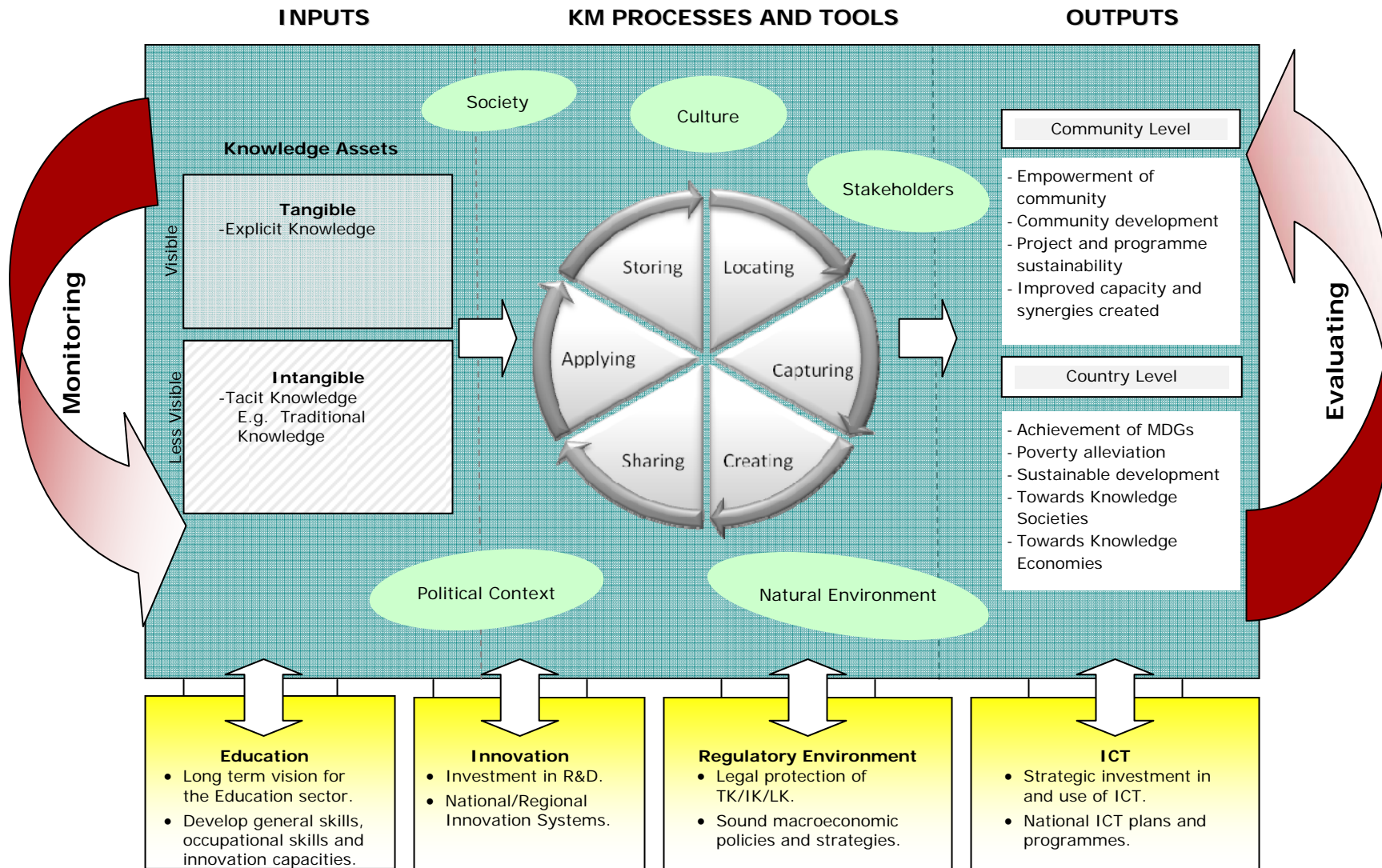
### **III. A KNOWLEDGE MANAGEMENT FOR DEVELOPMENT FRAMEWORK FOR THE CARIBBEAN**

Section I of the present report introduced the concept of knowledge management. It also discussed how, at a country level, knowledge could contribute to economic and social development as a capacity-building tool, as the driver of competitiveness and productivity and as a facilitator of welfare and environment.

Section II introduced the knowledge-based economy model of the World Bank and its four pillars followed by the social and natural value domains of sustainable development, as proposed by the ADB; and the operationalization of the ADB model or knowledge-based management at the community level through the KPA framework.

How do all these frameworks fit together, if at all, and how does a knowledge management for development framework for the Caribbean have the potential to contribute to the overarching goal of poverty alleviation? Figure 1 summarizes the framework advanced by ECLAC.

**Figure 1: Knowledge Management for Development Framework for the Caribbean subregion**





The knowledge management framework advanced by ECLAC considers six main elements: inputs, processes and tools, outputs, pillars (on which all the above are built), the environment or context in which this, like any other system, operates and the monitoring and evaluation of knowledge management initiatives.

### A. KNOWLEDGE MANAGEMENT INPUTS

Knowledge, like any other asset, is classified into the more visible ones or tangibles, and the less visible ones or intangibles. An example of tangible assets is the explicit knowledge of local communities and organizations/institutions (the know-how-to-do). An example of intangible assets is the tacit knowledge which is more difficult to formalize or articulate. Intangible assets could also include forms of traditional knowledge passed from generation to generation and which encompasses, in the case of the Caribbean subregion, a rich and diverse cultural heritage, as evidenced by the music, arts, traditional medicine, folklore and sustainable practices of tourism, to mention just a few.

**Table 5: Types of Knowledge<sup>15</sup>**

Type of Knowledge	Description	Examples
<i>Explicit knowledge</i>	It is articulated, codified and communicated in symbolic form and/or natural language.	<ul style="list-style-type: none"> <li>- An owner's manual accompanying the purchase of an electronic product. The manual contains knowledge on the appropriate operation of the product.</li> </ul>
<i>Tacit knowledge</i>	It is comprised of both cognitive and technical elements. The cognitive element refers to an individual's mental models consisting of mental maps, beliefs, paradigms, and view-points. The technical component consists of concrete know-how, crafts, and skills that apply to a specific context. Transfer of tacit knowledge takes place through social and interpersonal interactions.	<ul style="list-style-type: none"> <li>- Knowing how to network at a conference.</li> <li>- Best means of dealing with specific customer.</li> <li>- Individual's belief on cause- effect relationships.</li> <li>- Surgery skills.</li> </ul>

#### 1. Protecting and tapping into traditional knowledge and culture

The World Intellectual Property Organization (WIPO) proposes that traditional knowledge be defined as: "the content or basis of the knowledge regarding intellectual activity in a traditional context, particularly, specialized knowledge, skills, innovations, practices and teachings that form part of the traditional knowledge systems, and the knowledge involved in the traditional way of life of people or

<sup>15</sup> Alavi, Maryam and Dorothy Leidner, "Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues" (2001), MIS (Management Information Systems) Quarterly, Vol. 25 No. 1, pp. 110.

a community, or that is contained in codified systems of knowledge transmitted from one generation to the next. The term is not limited to any concrete ambit of the technique, and may include agricultural, environmental and medicinal knowledge, as well as all knowledge derived from genetic resources”.

In order to be legally protected, traditional knowledge must have an intergenerational nature, it must be linked objectively to the community of origin, and it must maintain an objective association within said community, so that it forms part of its own identity.

WIPO further defines protection as “the legal measures that limit the possible use of protected material by third parties, either by granting the right to absolutely impede its use (exclusive rights), or by establishing conditions for its authorized use (for example, subject to fair retribution or to a right of recognition)”. Intellectual property (IP) models that could be used to protect some forms of traditional knowledge are<sup>16</sup>:

- Invention patents: in the case of traditional knowledge, or its derivatives, to comply with the requirements of innovation, high level of creativity and industrial application
- Useful models: for original objects or handicrafts with a useful purpose
- Industrial designs: for original objects in their aesthetic form
- Denominations of origin and certification brands: for the identification of the origin and particular qualities of various products, especially agricultural and agro industrial products
- Protection of breeders of new plant varieties: to comply with the requirements of innovation, capacity to be distinguishable, homogeneity and stability
- Copyright: for the protection of expression when this has been physically set

The agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS) establishes minimum standards for IP. The agreement is an attempt to narrow the gaps in the way these rights are protected around the world, and to bring them under common international rules. It establishes minimum levels of protection that each government has to give to the intellectual property of fellow World Trade Organization (WTO ) members.<sup>17</sup>

International and regional organizations, such as the United Nations Environment Programme (UNEP), the Convention on Biological Diversity (CBD) and the United Nations Conference on Trade and Development (UNCTAD), have been working on individual initiatives towards protecting genetic resources and traditional knowledge in developing countries. Further work is being also advanced by the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Food and Agriculture Organization of the United Nations (FAO), the CBD and WIPO in preparing new instruments and guidelines to be introduced to countries in Latin America and the Caribbean.

WIPO assisted Caribbean member States in developing a harmonized framework for the protection of traditional knowledge, folklore, genetic resources, indigenous culture and national heritage. This was executed as part of policy action recommendations reflected in Article 66 of the Revised Treaty of Chaguaramas.<sup>18</sup>

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<sup>16</sup> World Intellectual Property Organization (WIPO) “Protection of traditional knowledge, traditional cultural expressions (folklore) and related genetic resources: SELA’s (Latin American and Caribbean Economic System) approach”, (2009), SP/RR-PCTEFRG-ALC/DT No 2-09.

<sup>17</sup> World Trade Organization (WTO), “ Intellectual property: protection and enforcement”, [online]<[http://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/agrm7\\_e.htm](http://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm7_e.htm)>

<sup>18</sup> WIPO (World Intellectual Property Organization), “Regional Expert Meeting on the Establishment of a Caribbean Framework for the Protection of Traditional Knowledge, Folklore/Traditional Cultural Expressions and Genetic Resources” (2008), Jamaica.

## 2. The role of traditional knowledge in development

Development interventions have failed (in the past) to induce people to participate because of the absence of instruments and mechanisms that enable them to use their own knowledge. Research has given valuable insights into how people use their own locally generated knowledge to change and improve, for example, natural resource management. Thus, research and evidence have spanned the interest on the role that locally-generated knowledge or traditional knowledge can play in truly participatory approaches to sustainable development. This interest is reflected in a myriad of activities generated within communities, national institutions and the overall development community. Communities are now recording their knowledge for use in their school systems and for planning purposes. Indigenous knowledge systems are presently considered an invaluable national resource. Within the development community, traditional knowledge is providing opportunities for the design of development projects, that emerge from priority problems identified, which have the potential to build upon and strengthen community-level knowledge systems and organizations.<sup>19</sup>

### 3. Best Practices Database on Indigenous Knowledge: The Management of Social Transformations Programme (MOST) and Nuffic-Centre for International Research and Advisory Networks (CIRAN) Programme

The aim of the database of best practices on indigenous knowledge and sustainable development is to encourage researchers and policymakers to incorporate indigenous knowledge into their project proposals, feasibility studies, implementation plans and project assessments, and to take indigenous knowledge and practices into account in all activities affecting local communities. 'Best practices on indigenous knowledge' refer to examples and cases that illustrate the use of traditional knowledge in developing cost-effective and sustainable survival strategies for poverty alleviation and income generation.<sup>20</sup>

The following are examples of best practices on indigenous knowledge in the Latin America and Caribbean region.

- **Best practice in Costa Rica**

#### Box 5: Chicken shed model: using local plants to house and feed chickens

**Indigenous Aspects:** Project staff made modifications to the shed size, nests, shed position, and chicken management practices. Indigenous aspects included: the basic model for the shed; the way the shed was built.

**Description:** A small shed is built of live poles (to prevent rotting), about 1.5m above the ground. The local *caña brava*, a type of cane that grows very tall, is used for the construction. A small number of nails and screws must be bought to assemble the building. The roof is made out of sheets of corrugated iron and plastic. The shed also contains nests, made from wood and cane, for the hens to lay their eggs in. Food and water are provided through a PVC pipe that has been cut in two; one half is used for water, the other half for food. The optimal number of chickens is usually at least four chicks, four medium-sized chickens, four productive hens, and one rooster (male chicken).

The shed is designed to shelter the chickens, and to stimulate and control the production of their eggs. The chickens are kept in the shed until about 11 a.m. By then, most of the hens have laid their eggs, and they are then turned loose to forage outside. The *guitite* poles are wrapped with a very thorny bark of the *pejiballe* (*Bactris gassipaes*), a palm cultivated in the village for its fruit, to prevent other animals and snakes from entering the shed at night.

<sup>19</sup> MOST (Management of Social Transformations Programme) and CIRAN (Centre for International Research and Advisory Networks) (1999), "Best Practices on Indigenous Knowledge", [online], [date of reference: October 2009]< <http://www.unesco.org/most/bpikpub.htm>>

<sup>20</sup> MOST (Management of Social Transformations Programme) and CIRAN (Centre for International Research and Advisory Networks) (1999), "Best Practices on Indigenous Knowledge", [online], [date of reference: October 2009]< <http://www.unesco.org/most/bpikpub.htm>>

Chicken feed is produced from the fodder of the *morera* plant, a type of mulberry that is planted as a live fence in the home garden. The *morera* fodder is mixed with whatever fruit, *Musa*, or *pejiballe* is available. The mixture of *morera* fodder and fermenting fruit is pressed in a plastic bag or bucket until most of the air is out. The mixture is then sealed and left to ferment for 15 days. After this, it can be used to feed the chickens. It is a very nutritious chicken feed. If kept sealed, the feed can be stored for up to six months.

**Sustainability:**

*Economic sustainability* is achieved because most of the materials used in construction are local and do not have to be purchased. If materials rot away it is very easy to substitute them. Producing the chicken feed is also economically sustainable because it does not depend on external resources. Once the live fences of *morera* have been introduced, all ingredients are available locally and the chickens do not need to 'compete' for food with humans. The excess eggs can be sold at nearby markets for further economic viability.

*Environmental sustainability* is achieved because the shed is constructed largely of plants that are part of the local ecosystem. The chicken feed is also made from floristic species and does not introduce foreign substances into the food chain. The excrement of the chickens is collected under the shed, and is used as a natural fertilizer in the home garden or the fields.

Other: Modifications were made to existing management practices. These are different in each setting. In one village, chickens are raised in a disorganized manner: there is no general habit of maintaining a unit, no control over egg production, and no special nests. In another village, a sleeping unit is generally maintained, and the nests are kept in the house or in a shed. The local participants modify the project according to their own wishes, making it very acceptable by local standards.

**It is considered to be successful because:** it was the result of a dialectical process, and because it has arisen a great deal of enthusiasm among village members. The building of the shed is very important as it was built with very abundant and easy-to-manage local materials: cane, live posts and bark of the *pejiballe*. Besides this, local building techniques include the use of very few nails which makes the building very easy to maintain and viable even for the poorest of the poor. No special tools are needed: everything can be achieved with just a machete (the local working knife) and a hammer.

**Potential for Replication:** This initiative can be replicated in other settings provided the model is adapted to both particular existing local conditions and management practices as well as some other conditions are met, such as the availability of both local materials and local chicken sheds.

**Source:** <http://www.unesco.org/most/bpik25.htm>

• **Best practice in Suriname**

**Box 6: Shamans and Apprentices Programme: promotion and integration of traditional medicine**

**The practice:** In Suriname, traditional healing practices are being revived among the Trio Amerindians of the communities of Kwamalasamutu and Tëpu, in the far south of the country.

The programme to breathe new life into traditional practices began at Kwamalasamutu in 1988, following recommendations from ethno botanist Mark Plotkin, President of the Amazon Conservation Team (ACT). He lamented the fact that the old shamans were dying and taking with them all their knowledge, without having transferred any of it to younger generations.

The traditional healers involved in the present programme are shamans of the Amerindian tribes of the Suriname Amazon. Shamans are inheritors of a great medical tradition that has its origins in the beginnings of civilization. In the social firmament of Amazonian tribes, shamans act as healer-priests, responsible not only for the health of their people but also for their spiritual welfare. In this capacity, shamans are the keepers of both tribal traditions and rites as well as the knowledge of medicinal plants.

It is customary for shamans to teach the next generation about medicinal plants, their belief systems, methods of diagnosis, and traditional concepts of illness. At Kwamalasamutu, this practice was greatly enhanced in July 2000 with the opening of a clinic for shamans and apprentices, and also with the opening of a training facility where youngsters aged about 12 received introductory training in traditional health care. The shamans and apprentices' clinic operates in conjunction with the clinic managed by the Medical Mission, the agency responsible for providing primary health care in the interior of the country. The aim is to establish structural cooperation between the two clinics. The aim is to expand the programme to cover the entire interior of the country. International exchange is also envisioned to foster the programme's further development.

**Content and Approach:** The purpose of the Shamans and Apprentices Programme is to improve health care in the community. Everyone involved in the programme is firmly convinced that the integration of traditional health care with western health care, as provided by the Medical Mission, will result in better health care for the community, and that the programme will eventually have a ripple effect, enhancing health care nationwide.

The Shamans and Apprentices Programme is an essential component of an effort to recover and conserve tribal culture, which in turn is part of an overall effort to achieve sustainable development.
<b>The method:</b> The components of the practice can be summarized as follows: transfer of knowledge, clinical skills and traditions from the traditional healers (shamans) to the apprentices and novices, related to medicinal plants and their uses; operation of a shamans and apprentices clinic; management of a medicinal plant garden; cooperation/coordination with the Medical Mission on the integration of traditional health care; exchange with other communities/tribes both national and international.
<b>The role of Indigenous Knowledge:</b> The practice is all about indigenous knowledge in action. The Shamans and Apprentices Programme is managed entirely by the indigenous community itself. Cooperation with the Medical Mission is aimed at achieving integration of the two forms of health care. The practice plays a vital role in the recovery and conservation of tribal culture. This will help the indigenous community to deal better with the outside world. The partnership with the Medical Mission will enhance the indigenous population's awareness that they have a valuable contribution to make, for their own benefit and for that of the outside world. This realization is expected to contribute greatly to their self-esteem, which in turn will encourage them to recover and conserve their own culture.
<b>Achievements and results:</b> The case described here is considered a best practice because it has proven to be successful and meaningful to the community. Besides the direct benefits to the community, there are the derived benefits related to cultural recovery and conservation and overall sustainable development. The activity is sustainable, cost-effective and locally manageable.
<b>Potential for replication:</b> The programme has already been replicated on a small scale. Following the opening of the clinic at Kwamalasamutu in July 2000, a clinic and training facility were built in the Trio community of Tëpu. These opened in August 2001. Another clinic is under construction in the Saramaka Maroon community of Kajana. These efforts are all part of ACT's Suriname Programme, involving partnerships with the Trio Indians and the Saramaka Maroons. ACT is engaged in similar efforts (shamans and apprentices programmes) in Colombia, Brazil, and Costa Rica.
<b>Source:</b> <a href="http://www.unesco.org/most/bpik18-2.htm">http://www.unesco.org/most/bpik18-2.htm</a>

The above examples illustrate how traditional knowledge and local knowledge could be used and replicated to produce immediate and greater impact on the society for sustainable livelihoods, income generation, poverty alleviation, community empowerment and inclusive and sustainable development.

Greater efforts, though, need to be deployed to strengthen the capacity of local people to develop their own knowledge base and to develop methodologies to promote activities at the interface of scientific disciplines and traditional knowledge.<sup>21</sup>

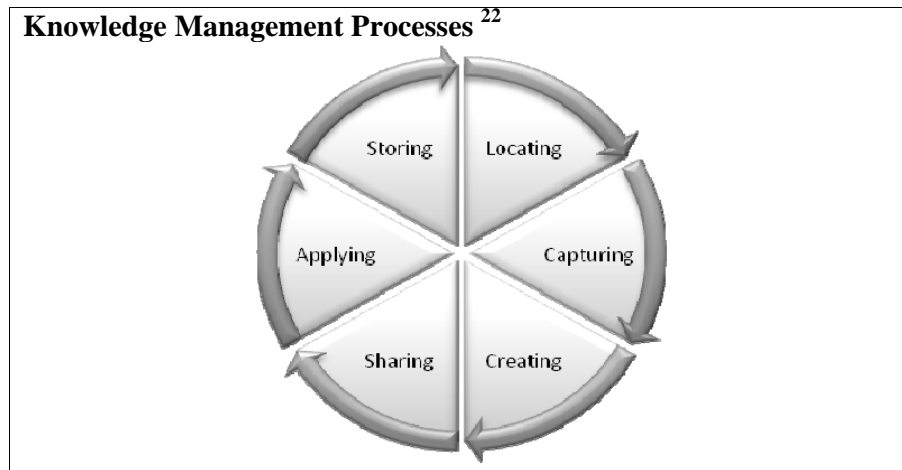
## B. KNOWLEDGE MANAGEMENT PROCESSES

The framework advanced by ECLAC proposes consideration of six highly intertwined and dynamic processes namely locating, capturing, creating, sharing, applying and storing knowledge.

- **Locating Knowledge:** identifying the relevant information, knowledge and expertise available
- **Capturing Knowledge:** gathering the existing and potential sources of information and knowledge
- **Creating knowledge:** creating knowledge through learning and innovation
- **Sharing knowledge:** disseminating knowledge with other parties
- **Applying knowledge:** using available information and knowledge

<sup>21</sup> MOST (Management of Social Transformations Programme) and CIRAN (Centre for International Research and Advisory Networks) (1999), "Best Practices on Indigenous Knowledge", [online], [date of reference: October 2009]< <http://www.unesco.org/most/bpikpub.htm>>

- **Storing knowledge:** using knowledge repositories to store and make information and knowledge available



How is information and knowledge located, captured, created, shared, applied and stored in the Caribbean subregion? Further research and investigation is necessary to thoroughly answer these questions. The following information provides some preliminary research questions that could be used for conducting such an assessment, which is typically known as a knowledge audit; it also highlights some of the challenges that may be confronted by policy/decision makers and stakeholders in the Caribbean when trying to implement knowledge management processes.<sup>23</sup>

### 1. Locating knowledge

Are stakeholders aware of available relevant knowledge and resources that could be used for development purposes and/or for evidence-based decision/policymaking? How is this information and knowledge located?

Possible challenges:

- Coping with either too little or too much information or data. For example: lack of statistical data to guide evidence-based policy and decision making
- Finding reliable (accurate and updated) information
- Finding useful information; information may be too general, superficial and/or not adapted to the reality of Caribbean countries
- Specific knowledge about a country or countries such as laws and procedures may be necessary and difficult to locate
- Lack of information and knowledge on key areas such as strategic project management: project planning, monitoring and evaluation, systematization of lessons learnt and

<sup>22</sup> Source: adapted from Probst, Gilbert, Steffen Raub and Kai Romhardt “Managing Knowledge. Building Blocks for Success” (1999).

<sup>23</sup> Camacho Tuckermann B., T. Haytayan and J. Hourcade-Bellocq (2008), “Developing a Regional Knowledge Centre in HIV/AIDS in Latin America and the Caribbean: a knowledge audit”, Knowledge Management for Development Journal 4(1):82-97.

Expert Group Meeting on “Knowledge Management for Development: towards a practical approach for the Caribbean” held at ECLAC, Port of Spain, Nov 2009.

communication, impact and financial aspects of programmes and projects implemented in different countries

## **2. Capturing knowledge**

What are the existing and potential sources of knowledge and how is information and knowledge captured?

Possible challenges:

- Internet is generally considered as one of the main tools for capturing knowledge and information, however, there may be problems related to the access and/or use of ICTs as such people in isolated/rural communities may not have (proper) access to it, not know how to (better) use it. In general, time may be wasted while searching for useful information
- Information on the Internet is neither classified nor organized
- Information is often collected but may not necessarily be linked to either qualitative and/or quantitative analysis for development purposes

## **3. Creating knowledge**

How is knowledge generated in the Caribbean subregion? What are the main issues stakeholders face to generate/create knowledge?

Possible challenges:

- Lack of relevant data and/or information
- Lack of capacities for research-based analysis and scientific experimentation
- Creating knowledge is a complex process which may embed other processes
  - - Lack of articulation and coordination among institutions and initiatives
- Creating knowledge may only be possible by destroying knowledge (inflexible archetypes) or by changing behavioural attitudes
- Lack of resources and a subregional culture that supports and enable innovation and creation of knowledge
- Lack of a subregional entrepreneurial culture; enterprises seen as enablers of knowledge creation and innovation

## **4. Sharing knowledge**

How is information and knowledge shared among stakeholders in the subregion? What are the existing mechanisms to support dialogue among countries, (non) governmental institutions/organizations, civil society and the population in general within and outside the subregion?

Possible challenges:

- Geographic distance and inefficient or expensive logistics.
- Differences in socio-political context.
- Different legal frameworks and national priorities.
- Poor communication strategies.
- Various languages and Creoles spoken in the subregion (Spanish, English, Dutch, papiamentu, sranan tongo, ndjuka, saramaccan, kromanti, kreyol, as well as Hindustani, Bhojpuri, Urdu, etc.)
- Subregion lacks 'give and take' culture.

- Other cultural differences: viewing knowledge as a source of power, different values and perceptions.

### 5. Applying knowledge

How is available knowledge applied in the subregion?

Possible challenges:

- Information and knowledge available is neither useful nor accurate and therefore could not be applied.
- There is not a 'reading culture' in the Caribbean as such information could not be neither captured nor applied.

### 6. Storing knowledge

What are the relevant knowledge repositories in the subregion? Is the knowledge stored in a way that is accessible to all stakeholders?

Possible challenges:

- Lack of capacity for systematization and documentation of experiences and lessons learnt for further learning
- Lack of resources (time, financial, capacity)
- Not consider a priority
- Cultural constraint: There is an 'oral culture' in the Caribbean as such it is more difficult to capture and store knowledge

## C. KNOWLEDGE MANAGEMENT TOOLS

Knowledge management tools that could be applied for each of the aforementioned knowledge management processes are proposed hereunder after reviewing the extensive literature available on the subject (primarily for business-oriented organizations) and after some careful consideration of their application for development purposes and the peculiarities of the Caribbean environment.<sup>24</sup>

**Table 6: Knowledge Management Tools**

<b>KM Processes</b>	<b>KM Tools and Techniques</b>
<b>Locating Knowledge</b>	<ul style="list-style-type: none"> <li>- Internet: provides vast amount of information</li> <li>- Content Expert: consulting a content expert who has experience in the field of interest.</li> <li>- Information coordinators: can point the key documents, Websites, databases and experts.</li> <li>- Workshops: create opportunities for face-to-face meetings and learn from one another.</li> <li>- Knowledge Fairs: provides a platform for identifying relevant knowledge and experiences.</li> </ul>
<b>Capturing Knowledge</b>	<ul style="list-style-type: none"> <li>- Physical resource centres where printed documents and physical material is available: clippings, bulletins and brochures.</li> </ul>

<sup>24</sup> Sources: KM Tools and Approaches MAQ Paper No 5: Managing Knowledge to Improve Reproductive Health Programmes, December 2004; Developing a Regional Knowledge Centre in HIV/AIDS in Latin America and the Caribbean: a knowledge audit. Knowledge Management for Development Journal 4(1):82-97; Expert Group Meeting on "Knowledge Management for Development: towards a practical approach for the Caribbean" held at ECLAC, Port of Spain, Nov 2009



	<ul style="list-style-type: none"> <li>- Electronic resource centres.</li> <li>- Digital libraries.</li> <li>- Identify sources and providers of information: peer organizations/institutions, donor agencies, universities.</li> <li>- Communities of practices that could act as subregional and local networks. They may serve as a 'pointer' of where to find knowledge, keep members informed and allow for peer exchange.</li> <li>- Formal and informal face-to-face interactions (quality conferences and forums, internships, exchanges, in situ training courses and specialized workshops).</li> <li>- After-action Review (AAR): periodic, structured and facilitated discussions at the end of activities/projects to review what happened and why.</li> <li>- Benchmarking: to identify better practices and analyze why.</li> <li>- Briefing/debriefing: allows capturing tacit knowledge and obtaining feedback about the effectiveness of an event/project.</li> <li>- Exit interviews and knowledge exchange: to document and avoid losing the critical knowledge developed and acquired by an individual when separates from an institution.</li> </ul>
<b>Creating Knowledge</b>	<ul style="list-style-type: none"> <li>- Destroying pre-conceived ideas and knowledge.</li> <li>- Adapting an existing tool or practice to local needs: could be more efficient than developing something new from scratch.</li> <li>- Design and development of a new marketable content, product, business idea and/or project.</li> <li>- Hiring of employees/team members who challenge 'conventional' wisdom or current processes and methods.</li> <li>- Conducting research-based analysis.</li> <li>- Experimentation based on scientific method.</li> </ul>
<b>Sharing Knowledge</b>	<ul style="list-style-type: none"> <li>- Establishing a technical committee to serve as a forum to discuss activities and share expertise.</li> <li>- Communities of Practice: a network of people with a common interest who come together to share problems, insights and to learn from one another.</li> <li>- Formal and informal face-to-face interactions which allows for socialization and interchange of new knowledge, information and experiences (quality conferences and forums, internships, exchanges, in situ training courses and specialized workshops).</li> <li>- Formal and informal electronic communities which allows for further collaboration and networking (e.g. Facebook, Twitter and Blogs).</li> <li>- Skills directory or 'yellow pages': a list of people, staff from institutions/organizations and their expertise, experience and interest along with their contact information.</li> <li>- Knowledge bank/repository: information and knowledge is organized in a library, resource center or online database. Explicit description of best practices with a pointer system that directs users to experienced practitioners willing to be contacted.</li> <li>- Information coordinators: can point the key documents, Websites, databases and experts.</li> <li>- Collect lessons learned and best practices within and outside a community project, government organization, institution, country or subregion.</li> <li>- Knowledge Maps: locates the sources of explicit and tacit knowledge and charts how knowledge flows to others within a community, project, organization, etc.</li> <li>- Story telling: stories about traditional knowledge, local practices and/or the way an organization works are developed and shared.</li> <li>- Induction: new staff/team member is introduced to the organisation, processes, resources and individual responsibilities.</li> </ul>
<b>Applying Knowledge</b>	<ul style="list-style-type: none"> <li>- Evidence-based guidelines and protocols: using information developed by experts and based on research findings.</li> </ul>

	<ul style="list-style-type: none"> <li>- Lessons learnt: before designing or launching an initiative/project/programme/strategy/policy.</li> <li>- Proven tools and practices: adapting information and knowledge (that have worked elsewhere) to the local settings.</li> </ul>
<b>Storing Knowledge</b>	<ul style="list-style-type: none"> <li>- Knowledge repositories: information and knowledge is organized in a library, resource center or online database. Explicit description of best practices with a pointer system that directs users to experienced practitioners willing to be contacted.</li> <li>- Intranet and extranet (web sites).</li> <li>- Skills directory or 'yellow pages'.</li> <li>- Information coordinator or expert: can point the key documents, Websites, databases and experts.</li> <li>- Further strategies to improve knowledge sharing and learning built on existing practices.</li> </ul>

The capture part of knowledge management tools can be used for identification, development and utilization of local knowledge/information as marketable content. Use of traditional medicines by the pharmaceuticals industry is perhaps the most well-known example of using local content to create a marketable product. Another example is the creation of a local cultural website. In such cases, the information content is often embedded in another product—such as an art or craft object.<sup>25</sup> Thus, local knowledge could be useful for successful design and implementation of a marketable product, business idea or project.

Furthermore, local knowledge can be the driver of the economic development of an activity by:

- Capturing and using local knowledge as an information product, in and of itself
- Using local knowledge to identify new entrepreneurial opportunities.

There are issues of importance and sensitivity associated with these activities and related to the usage rights of such local content. Using traditional medicine for the development of pharmaceutical products is a typical example of the difficulty in assessing and protecting ownership and usage rights of such local and scientific content. The same applies to the possible appropriation of cultural and native knowledge resources by outsiders especially when digital technologies allow for easy duplication, manipulation and communication of the recorded information. Other issues arise when the knowledge is generally known within a community and must be modified or augmented to create a commercial product.

The sharing of knowledge is generally developed, to some extent, in every organizational and community setting, and further strategies to improve knowledge sharing and learning should be built on existing practices. Examples of this could be the culture of storytelling in the Caribbean or systems for the sharing of indigenous knowledge. As culture and values differ amongst Caribbean countries, it may be necessary to consider the existing knowledge-sharing culture as the basis for knowledge management implementation.

The availability and accessibility of ICTs will inevitably affect the application of some knowledge management tools, and an awareness of the practical limitations of ICTs should be part of the process of its appropriate development. Low-tech solutions may need to be considered, wherever possible, and a number of methods of communication may be needed to keep everyone involved. Differences in language and culture may also need to be addressed before knowledge can be shared freely.

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<sup>25</sup> Jarboe, Kenan Patric "Knowledge Management as an Economic Development Strategy" (2001), Athena Alliance, US Economic Development Administration. Reviews of Economic Development Literature and Practice: No. 7. [online] <<http://www.athenaalliance.org/pdf/KM%20in%20ED.PDF>>

A useful way to start knowledge sharing may be by targeting small, subject focused groups and using success stories to build on. It is important to avoid jargon and adapt terminology to that used in the local context.

Annex V shows a print screen of the Caribbean Knowledge Management Centre (CKMC) Portal which is a fully-open source, client/server based system that is used for locating, storing and disseminating information and knowledge pertaining to economic, social and environmental issues within and outside the Caribbean subregion. The services provided by the CKMC can be used by policymakers, researchers, ECLAC staff, and other users of the web-based information services and by anyone interested in the development of Caribbean people.

By exploring the above-mentioned knowledge management processes and applying the right tools, organizations can systematically increase:

- **Efficiency:** by helping people quickly find the knowledge they need and avoid duplication of efforts.
- **Effectiveness:** by making people aware of lessons learned from research and experience and encouraging them to adopt best practices.
- **Creativity:** by exposing people to new ideas and approaches.
- **Empowerment:** by giving people the knowledge and confidence to make well-informed decisions.

Thus, knowledge management gets the right knowledge to the right people at the right time so they can work more efficiently and effectively<sup>26</sup>.

#### **D. KNOWLEDGE MANAGEMENT PILLARS**

Based on the knowledge economy model and its four pillars proposed by the World Bank, education, innovation, ICT and the economic and institutional regime are considered here as the foundation of the knowledge management for development processes. Knowledge management, at the same time, is acknowledged as a key contributing factor in the design and establishment of policies and strategies on each of aforementioned pillars. This relationship is thus graphically represented in the ECLAC framework as a two-way arrow (figure 1).

Annex II shows the Knowledge Economy Index (KEI) for selected Caribbean countries. The KEI is the aggregated index of a country on the four pillars. The KEI, in general, represents how well an economy uses and capitalizes on knowledge for its overall economic development and towards becoming knowledge economies. It is constructed as the simple average of the normalized values<sup>27</sup> of 12 knowledge indicators.

Annex III presents a snapshot of the KEI, contrasting selected Caribbean countries with more developed and least developed countries for which data is available.

The following graphs provide a basic assessment of some Caribbean countries' status with regards to each of the four pillars. These graphs have been prepared based on the Knowledge

<sup>26</sup> Source: MAQ (Maximizing Access & Quality) (2004), "Managing Knowledge to Improve Reproductive Health Programs", Paper No 5.

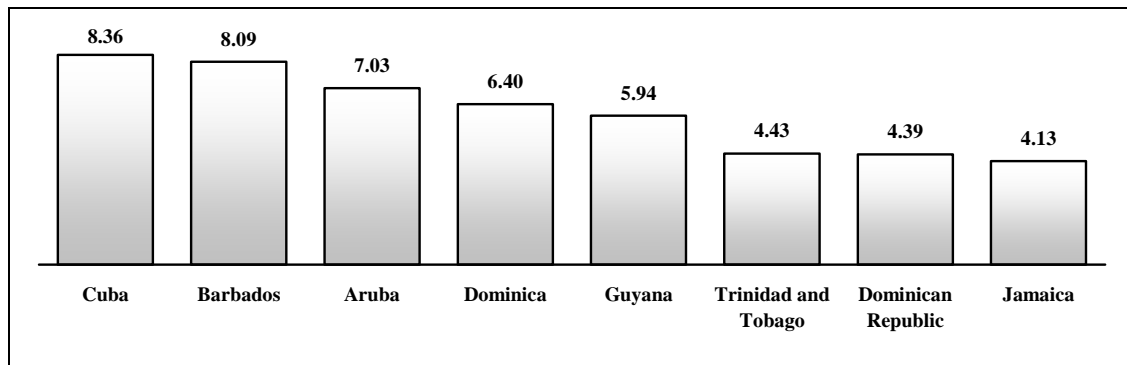
<sup>27</sup> The scores for every country are normalized according to their ranking and in relation to the total number of countries in the sample. Source: The World Bank, KAM.

Assessment Methodology (KAM) developed by the World Bank Institute. Annex IV further illustrates knowledge indicators (in absolute values) related to each of the aforementioned pillars.

### 1. Education

The education index is the simple average of the normalized scores of three key variables: adult literacy rate<sup>28</sup>, secondary enrolment and tertiary enrolment.

**Graph 1: Education<sup>29</sup>**



Source: ECLAC on the basis of data retrieved from the online database of The World Bank, Knowledge for Development (K4D) ([www.worldbank.org/kam](http://www.worldbank.org/kam))

Cuba, Barbados and Aruba are ranked high in the education index among other Caribbean countries for which data are available. The rate of Cuba, Barbados and Aruba is explained by the high overall score on the three indicators used to calculate the index. Dominica, Aruba and Guyana, however, showed the highest scores on the 'Secondary Enrolment' indicator in comparison with other Caribbean countries.

### 2. Innovation

The innovation index is the simple average of the normalized scores of three key variables: royalty payments and receipts<sup>30</sup>; Science & Engineering Journal articles<sup>31</sup> and patents granted<sup>32</sup> by United States Patent and Trademark Office (USPTO).

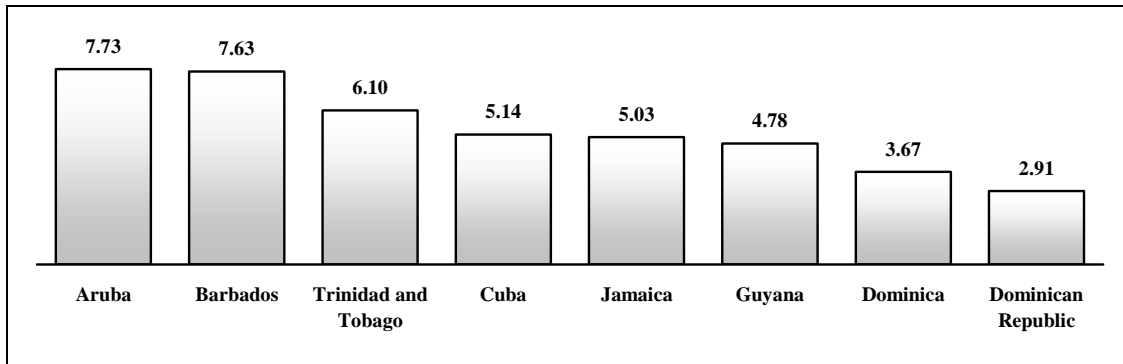
<sup>28</sup> (Percentage of age 15 and above), 2007

<sup>29</sup> Latest update of World Bank KAM Database is July 2009 however data can range from year 2002-2009.

<sup>30</sup> (US\$/population)2007

<sup>31</sup> Weighted by million population, 2005

<sup>32</sup> Weighted by million population, average 2003-2007

**Graph 2: Innovation**<sup>33</sup>

Source: ECLAC on the basis of data retrieved from the online database of The World Bank, Knowledge for Development (K4D) ([www.worldbank.org/kam](http://www.worldbank.org/kam))

Aruba, Barbados and Trinidad and Tobago ranked high on innovation among other Caribbean countries for which data are available. Barbados, Aruba and Guyana show higher scores on the ‘Royal Payments and Receipts’ indicator, whereas Barbados, Dominica and Trinidad and Tobago have higher scores on the ‘S&E Journal Articles’ indicator. In terms of the number of patents granted by USPTO, the countries with the highest rates are, respectively, Barbados, Aruba and Trinidad and Tobago.

The linkage between innovation and economic growth is doubtless. New products, new processes and new productive methods quantitatively and qualitatively affect the structure of an economy and society. How this linkage, translated into effective policies, stimulates the generation, dissemination and application of knowledge for economic growth is debatable.<sup>34</sup>

Two indicators are usually considered to assess the innovating efforts of an economy: investment in research and development and the number of patents associated with the development of a new method, process or product.

#### (a) **Research and development**<sup>35</sup>

Investment in research and development is one of the main indicators of the technological and innovating efforts of a nation. Generally speaking, there is a very high correlation between the investment in research and development and the GDP of an economy<sup>36</sup>. Examples of this positive correlation (more investment in research and development leads to more GDP) could be seen in the Nordic countries, the United States of America and Canada.

China’s research and development expenditure reached 1.42% of GDP in 2006, thanks to a rapid, decade-long increase in research and development expenditure. The government intends to reach 2% of GDP on research and development expenditure by 2010.<sup>37</sup>

<sup>33</sup> Latest update of World Bank KAM Database is July 2009 however data can range from year 2002-2009.

<sup>34</sup> Source: CEPAL (Comisión Económica para América Latina y el Caribe) (2008), “Espacios Iberoamericanos la economía del conocimiento”, Santiago, Chile. División de Desarrollo Productivo y Empresarial.

<sup>35</sup> Source: CEPAL (Comisión Económica para América Latina y el Caribe) (2008), “Espacios Iberoamericanos la economía del conocimiento”, Santiago, Chile. División de Desarrollo Productivo y Empresarial.

<sup>36</sup> The efficiency of investments in R&D depends also on other factors, such as, human resources, institutions - research centers and universities - productive specialization, among others.

<sup>37</sup> Source: OECD (Organization for Economic Co-operation and Development), “Science, Technology and Industry Outlook 2008”, pp. 168.

**Table 7: Distribution of investment in research and development as a percentage of GDP (2006) by groups of countries**

	<b>Countries</b>	<b>% of GDP</b>
Group 1	United States, the Republic of Korea, Japan and developed European countries	More than 2%
Group 2	Spain	Between 1 and 2%
Group 3	Mexico, Cuba, Brazil, Chile and Portugal	Between 0.5% and 1%
Group 4	Argentina, Costa Rica, Bolivia, Uruguay, Panama, Bolivarian Republic of Venezuela and Colombia	Between 0.2% and 0.5%
Group 5	Peru, Paraguay, El Salvador, Ecuador, Honduras, Nicaragua and Guatemala	Less than 0.2%

Source: CEPAL (Comisión Económica para América Latina y el Caribe) (2008), “Espacios Iberoamericanos la economía del conocimiento”

As seen from table 7, the investment in research and development in some countries of Latin America and Caribbean, for which data are available, does not surpass 0.5% of the GDP, with the exception of Brazil that invests around 1% of its GDP. The yield of this investment (more investment in research and development leads to more GDP) could not be clearly measured, though, as compared with other countries in Europe for which investment in research and development is around the same percentage.

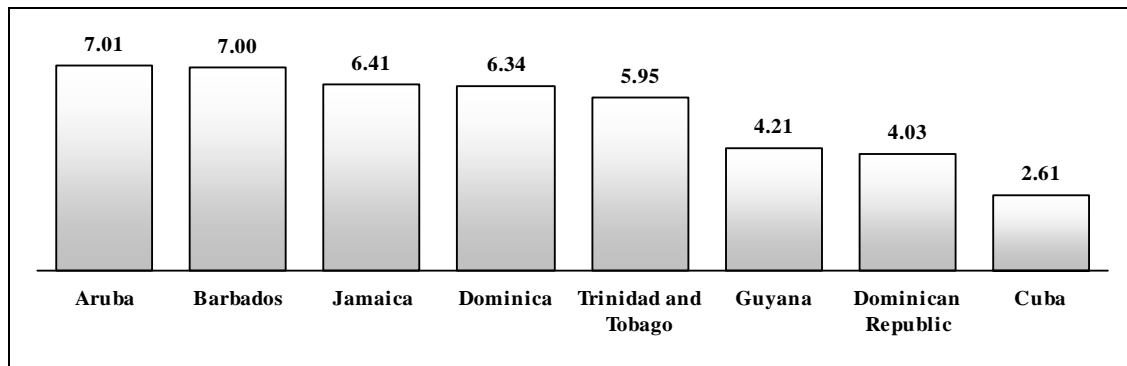
(b) **Patents**<sup>38</sup>

When considering the capacity of countries to translate their efforts in research and development into patents (effectiveness), there are three groups of countries amongst those selected in the referenced study. The first group is integrated by countries with great capacity to turn investments in research and development into new goods, services or processes that can be patented: Japan, the United States, Republic of Korea, Singapore, Canada and Finland. The second group is made up of countries with high effectiveness (but lower than the first group): New Zealand, Ireland, Australia and Norway. The third group comprises Latin American and emergent Caribbean countries, China and India, where investments in research and development are translated into fewer patents as compared to the first and second group. This is explained by a combination of factors, among them, less efficiency and the tendency to adapt and import technology.

### 3. ICT

The ICT index is the simple average of the normalized scores on three key indicators: telephone, computer and internet penetrations (per 1000 people).

<sup>38</sup> Source: CEPAL (Comisión Económica para América Latina y el Caribe) (2008), “Espacios Iberoamericanos la economía del conocimiento”, Santiago, Chile. División de Desarrollo Productivo y Empresarial

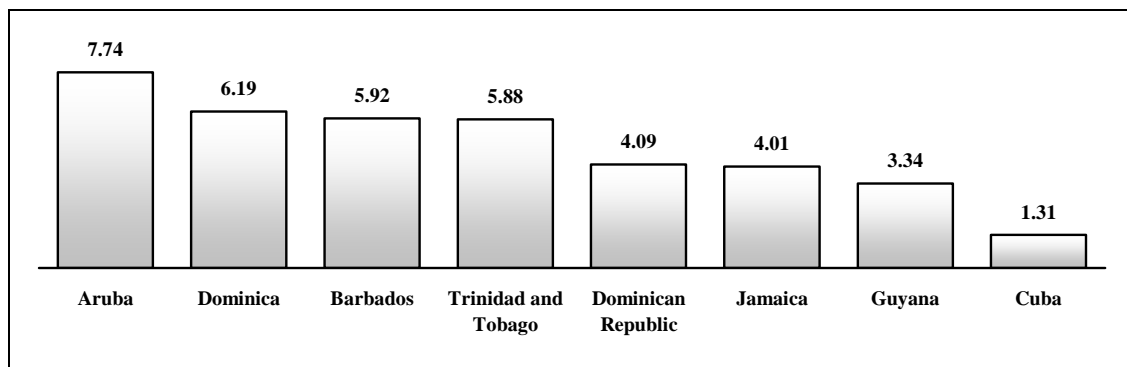
**Graph 3: Information and Communications Technologies<sup>39</sup>**

Source: ECLAC on the basis of data retrieved from the online database of The World Bank, Knowledge for Development (K4D) ([www.worldbank.org/kam](http://www.worldbank.org/kam))

Aruba, Barbados and Jamaica ranked the highest in the ICT index among Caribbean countries for which data are available. Aruba showed a high rate of telephone penetration in comparison with other Caribbean countries, followed by Trinidad and Tobago and Barbados. In terms of computer penetration, Dominica, Barbados and Trinidad and Tobago are leading the group. Internet penetration rate is high in Jamaica, Barbados and Dominica.

#### 4. The Economic and Institutional Regime

The Economic Incentive and Institutional Regime Index is the simple average of the normalized scores of three key indicators: tariff and non-tariff barriers<sup>40</sup>, regulatory quality<sup>41</sup>, and rule of law<sup>42</sup>.

**Graph 4: Economic and Institutional Regime<sup>43</sup>**

Source: ECLAC on the basis of data retrieved from the online database of The World Bank, Knowledge for Development (K4D) ([www.worldbank.org/kam](http://www.worldbank.org/kam))

<sup>39</sup> Latest update of World Bank KAM Database is July 2009 however data can range from year 2002-2009.

<sup>40</sup> This is a score assigned to each country based on its tariffs and non-tariffs barriers to trade, such as, import bans and quotas as well as strict labelling and licensing requirements. ([www.worldbank.org/kam](http://www.worldbank.org/kam))

<sup>41</sup> This indicator measures the incidence of market-unfriendly policies such as price controls or inadequate bank supervision, as well as perceptions of the burdens imposed by excessive regulations in areas such as foreign trade and business development. ([www.worldbank.org/kam](http://www.worldbank.org/kam))

<sup>42</sup> This indicator includes several indicators which measure the extent to which agents have confidence in and abide by the rules of society. This includes perceptions of the incidence of both violent and non-violent crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts. ([www.worldbank.org/kam](http://www.worldbank.org/kam))

<sup>43</sup> Latest update of World Bank KAM Database is July 2009 however data can range from year 2002-2009.

Aruba and Dominica, followed by Barbados and Trinidad and Tobago, ranked high among Caribbean countries for which data are available. The high rate of Aruba, Dominica and Barbados is influenced by the high scores on their national regulatory quality and rule of law indicators.

Regional and international agreements will also come into play when considering knowledge policies and strategies, for example, the main objectives of the CARICOM Single Market and Economy (CSME) are full use of labor (full employment) and full exploitation of the other factors of production (natural resources and capital); competitive production leading to greater variety and quantity of products and services to trade with other countries.<sup>44</sup> A subregional knowledge management framework as proposed by ECLAC could enable the full exploitation of knowledge assets and other (capital) resources by tapping into the existent (traditional) knowledge and creating and applying new knowledge to support the development processes of the Caribbean countries.

Further analysis is required to determine the status of Caribbean countries with regards to the above-mentioned pillars and how Caribbean economies could improve them. Section V of this report provides a succinct list of policy recommendations gathered from this first round of research and analysis and the Expert Group Meeting on “Knowledge Management for Development: towards a practical approach for the Caribbean” held in Port of Spain, November 2009.

## **E. THE KNOWLEDGE MANAGEMENT ENVIRONMENT**

Knowledge management for development processes are unequivocally influenced by the socio-political context of the country or region where these processes take place: culture values of the (group of) communities, stakeholders’ perception, natural environment and other externalities.

### **1. Culture**

Some aspects of the Caribbean culture that could enable and/or disable<sup>45</sup> knowledge management process are listed below.

#### **(a) Enabling factors**

- Diversity and rich cultural heritage prevalent in the region
- Creativity
- Culture of excelling in education systems at foreign international universities and being able to secure jobs in the same locations after graduating
- Sense of community belonging
- Thrust towards CSME
- Recent initiatives to capture and store valuable cultural information linked to seeing the value of such information gathering

#### **(b) Disabling factors**

- Lack of long-term visioning/ “the one-day-at-a-time” thinking
- A “laissez-faire” approach
- A culture of dependency and lethargy which impedes the ability to innovate
- Tolerance of low standards and the lack of consequences for poor performance

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<sup>44</sup> Source: Caribbean Community (CARICOM) Secretariat  
[online]<[http://www.caricom.org/jsp/single\\_market/single\\_market\\_index.jsp?menu=csme](http://www.caricom.org/jsp/single_market/single_market_index.jsp?menu=csme)>

<sup>45</sup> Expert Group Meeting on “Knowledge Management for Development: towards a practical approach for the Caribbean” held at ECLAC, Port of Spain, Nov 2009.



- Inability to learn from mistakes - “doing things the same way while expecting a different outcome”
- Lack of political will with respect to cultural development
- Inadequate storage and protection of information

Some of the disabling factors could be also seen as enablers and vice versa, for example, the “laissez-faire” approach could be used to foster innovation and creativity; on the other hand, cultural diversity could represent a challenge for effective communications and capturing and sharing information and knowledge.

Some additional barriers to enabling a knowledge sharing culture include:<sup>46</sup>

- People not realising they have information or knowledge of value to others
- People storing knowledge – because ‘knowledge is power’ – rather than sharing it.

## **2. Natural environment**

The experience illustrated in box 7 shows how social innovative practices together with effective partnerships could enable the environmental and sustainable management practices of a community’s natural resources and ecosystem, the ecosystem which the community itself relies on for living. Thus, this experience illustrates how social innovation could support the development of practices for sustainable development.

The project “Experiences in Social Innovation” is an ongoing initiative of ECLAC with the support of W.K. Kellogg Foundation. The goal of this initiative is to identify, evaluate and give recognition to the most ground-breaking experiences in social innovation in the Latin American and Caribbean region.

The project “Freshwater Cup Environmental Football League” was the winner of the 2007-2008 rounds. The details of the project are further described.

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<sup>46</sup> Inside Knowledge, “KM culture” [online]<  
<http://www.ikmagazine.com/xq/asp/txtSearch.CoP/exactphrase.1/sid.0/articleid.0CC1D2AB-59A6-4B25-9819-DAB59F012A12/qx/display.htm>>

### Box 7: Freshwater Cup Environmental Football League – Belize

<p><b>Mission:</b> In 2005, the NGO Toledo Institute for Development and Environment (TIDE) initiated the programme, Freshwater Cup Environmental Football League. The TIDE has the mission to encourage the participation of the community in the viable handling of the ecosystem “<i>Corredor Marino de la Montaña Maya</i>” (MMMC) in the south of Belize.</p>
<p><b>Who participates?</b> Communities with less than 1000 inhabitants involved in fishing, hunting and agriculture.</p>
<p><b>Environmental Issues:</b> Rapid increase, in size and number, of companies that use chemical fertilizers and pesticides. Another issue is the over exploitation of fishing resources and deforestation which have had vast environmental impact. Additionally, inadequate handling of residues and waste common of the MMMC ecosystem which affects the quality of drinking water and, therefore, health conditions of their inhabitants.</p>
<p><b>Method:</b> The TIDE takes advantage of the passion for soccer in this Caribbean country to create incentives and change communities’ attitude towards the environment. A soccer league reunites teams of assisted communities, and an annual competition is organized. Two leagues participate: one of adults and another one of children. For the younger league, schools participate guiding the teams and the environmental projects. Teams can qualify to participate in the competition after presenting an environmental project to be executed in their community and after paying a registration fee.</p> <p>The project themes are on control of erosion, watershed river protection and clean-up, promotion of a healthier lifestyle, among others. Projects are monitored and evaluated by a team based on a points system. The project is discussed between the TIDE team and the community members who desire to register. The Institute offers technical support and lends buses, boats, prints tickets and donates trees to help achieving the initiatives of the community. The community contributes with manpower and, in some cases, with raising funds to buy tools for the project.</p> <p>Once the project is defined, each community develops a work plan with the objectives, tasks and due dates for each task. TIDE has an expert group who visits the projects once a month to support and follow-up the implementation. Soccer matches take place in Punta Gorda, an accessible town with the necessary soccer venues and facilities for the competition.</p> <p>At the end of the season, prizes are given accordingly to a combination between the results of the matches and the development of the project. The first prize, in 2007 was of \$3,000. The prizes include provisions for schools to encourage continuous education.</p>
<p><b>Social innovation:</b> Through soccer, the Institute teaches the community sustainable practices for sustainable agriculture, forestry and fishing. It also, through presentation schemes, raises awareness and facilitates the understanding of norms and regulations for protected areas and threatened species of the singular and unique ecosystem of the MMMC.</p>
<p><b>Source:</b> <a href="http://www.cepal.org/dds/innovacionsocial/e/proyectos/be/medio/">http://www.cepal.org/dds/innovacionsocial/e/proyectos/be/medio/</a></p>

### 3. Institutional capacities

Institutional capacities relate to the resources and capacities available to drive the knowledge management processes. Some elements to be considered under this subject are: the infrastructure systems, processes and procedures, technologies and financial support for knowledge management initiatives.

### 4. Political context

Political context involves the political will to promote and embrace change or not and the political structures and processes established in each country that would impact the effective use of knowledge management processes for the development of the Caribbean subregion.

### 5. Stakeholders

The implementation of a knowledge management for development framework requires collaboration and commitment across different institutions in the Caribbean subregion and strong cooperation with regional partners. Lack of synergies and different attitudes in the subregion towards knowledge management could adversely affect its processes.

## F. KNOWLEDGE MANAGEMENT OUTPUTS

### 1. Cost implications and benefits of implementing knowledge management initiatives

In general, some cost elements to be evaluated when budgeting for the implementation of a knowledge management initiative are:

- Research and development
- Evaluation and assessment costs
- Consultants and experts fees
- Field missions
- Participation in and/or organizations of knowledge fairs/markets, seminars, workshops and training on knowledge management
- Investments on information and communication technologies
- Personnel and other administrative costs
- Legal costs associated to the protection of IP rights
- Other costs (time, financial, human and others)

Some tangible and intangible benefits that could be derived from the implementation of a knowledge management initiative at the organizational level are:

- Reduced loss of intellectual capital due to people leaving the organization
- Reduced costs by lowering the number of times the organization must repeatedly solve the same problem
- Reduced costs associated with carrying out activities that were conducted in the past (re-inventing the wheel)
- Increased productivity by making knowledge available more quickly and easily
- Improved processes (tacit knowledge that may have otherwise been lost)
- Increased flexibility of employees
- Increased employee satisfaction by enabling greater personal development and empowerment
- Reduced costs of training employees
- Improved problem-solving and decision-making
- Increased competitive advantage on the market place

Other tangible and/or intangible benefits that can be derived from the implementation of a knowledge management initiative at the community level are:

- Created/increased synergies among institutions, governments, countries
- Participation, development and empowerment of communities (social empowerment)
- Project and programme sustainability
- Sustainable economic, social and environment development

Other tangible and/or intangible benefits that can be derived from the implementation of a knowledge management initiative at the national/regional level are:

- Poverty alleviation
- Achievement of the Millennium Development Goals
- Knowledge societies
- Knowledge economies

## 2. The Millennium Goals and knowledge management initiatives

At the country level, Caribbean countries have made significant improvements towards the achievement of the Millennium Development Goals, particularly related to the following targets:

- Full enrolment in primary education.
- Reduction in the proportion of children under 5 suffering from malnutrition.
- Highest share of women in paid employment outside agriculture after the CIS countries and enrolment in primary education.
- Empowerment of women as evidenced by the highest number of seats occupied by women in national parliaments.

Remaining challenges are considerable, among them:

- Incidence of HIV/AIDS particularly on the working group age of 15-49 years old
- Access to reproductive health
- Mortality of children under the age of 5
- Maternal mortality ratio for some countries namely, Haiti, Guyana and the Dominican Republic.

Annex 1 illustrates the status of Latin American and Caribbean countries towards the achievement of the Millennium Development Goals by the year 2015.

Three examples related to the above-mentioned challenges facing the Caribbean subregion will be introduced here to shed more light on the critical and important role and the positive changes that knowledge management for development initiatives could bring about.

### Box 8: The World Health Organization Knowledge Management Strategy

<p><b>Rationale:</b> The fragile health of populations in developing countries, increasing resources for international health aid and growing demand to improve health services.</p> <p>It is understood by the WHO that many of the solutions to health problems of the poor exist, but are not applied, leading to what is called the "know-do" gap: the gap between what is known and what is done in practice. This gap contributes to huge health inequalities, such as unacceptably high levels of child and maternal mortality, the high incidence of infectious diseases, and the spread of chronic conditions across the developing world. To bridge this gap and help achieve the Millennium Development Goals for health, a new balance in the creation, sharing, translation and application of knowledge is required.</p>
<p><b>Mission:</b> To bridge the know-do gap in global health by fostering an environment that encourages the creation, sharing, and effective application of knowledge to improve health.</p>
<p><b>Strategic Directions:</b></p> <ul style="list-style-type: none"> <li>- <b>Improving access to the world's health information.</b> Access to information and knowledge is inequitable, while information overload is widespread. WHO is promoting access to high-quality, relevant, targeted information products and services.</li> <li>- <b>Translating knowledge into policy and action.</b> Health inequalities persist despite known, effective interventions and steadily increasing investment in research. WHO is building evidence and capacity on KM approaches to address priority health needs in countries.</li> <li>- <b>Sharing and reapplying experiential knowledge.</b> Knowledge management methods and tools offer new opportunities for WHO and public health. WHO is providing guidance and facilitating the adoption of KM methods so that experience is reapplied and built upon in practice.</li> <li>- <b>Leveraging e-Health in countries.</b> Information and communication technologies offer great potential to improve health services and systems. As well as incorporating ICT in its technical work, WHO is supporting country health systems through advocating evidence-based policies, monitoring e-Health trends, identifying good practice, facilitating networks of expertise, promoting norms, standards, and the integration of ICT into health workforce training and practice.</li> <li>- <b>Fostering an enabling environment.</b> Creating an environment for the effective use of knowledge is vital to achieving WHO's mission. WHO is strengthening organizational capacity, advocating adoption of KM in the</li> </ul>

field of public health, and improving capacity for implementing KM at country level.

**Source:** World Health Organization Knowledge Management Strategy 2005. WHO/EIP/KMS/2005.1  
<http://www.who.int/kms/about/strategy/en/index.html>

### Box 9: Nutrinet.org “Para erradicar el hambre y la miseria en América Latina y el Caribe”

<b>Portal:</b> Nutrineg.org to eradicate extreme poverty and hunger in Latin America and the Caribbean
<b>Background:</b> Nutritet.org is a joint effort of the United Nations World Food Programme (WFP), PROCOSI and PLAN. It is a platform of regional governments, agencies, institutions, ONGs and professionals to facilitate the sharing of experiences, access to relevant information and support to the south-south and triangular cooperation. Nutrinet.org was created upon request of the governments of the region.
<b>Purpose:</b> To inform and support, through Knowledge Management, food-related national policies, programmes and effective interventions. Nutritet.org works towards supporting the fight against hunger and child malnourishment in Latin America and the Caribbean.
<b>Strategy:</b> The portal is organized in four sections: thematic areas, knowledge bank and national portals. The thematic areas are maternal and child nutrition, vitamins and minerals and school meals. For each thematic area, information is available on best practices, comprehensive and relevant documents and programmes, database, statistics and tools to support the sharing and dissemination of information and specialized services for the design and implementation of related national and local interventions. The national portal section provides opportunities for the local government and institutions to showcase their local status and structures according to their national priorities.
<b>Lessons learned:</b> Through a concerted effort of national, regional and international agencies, relevant information could be organized and managed in such a way to provide access to meaningful and relevant information and knowledge for the design and implementation of national/ local interventions for development purposes. To eradicate extreme poverty and hunger is one of the MDGs.
<b>Source:</b> Nutritet.org Website <a href="http://nutrinet.org/">http://nutrinet.org/</a>

Figure 2: Nutrinet.org “Para erradicar el hambre y la miseria en América Latina y el Caribe”

The screenshot shows the Nutrinet.org website interface. At the top, there is a logo for NUTRINET.org with the tagline "Para erradicar el hambre y la desnutrición en América Latina y el Caribe". Below the logo is a navigation menu with links: Inicio, ¿Quiénes somos?, Áreas Temáticas, Banco de Conocimiento, and Portales Nacionales. The main content area is titled "Nutrición Materno Infantil" and features three numbered cards: 1. LACTANCIA MATERNA (maternal lactation), 2. ALIMENTACIÓN COMPLEMENTARIA (complementary feeding), and 3. RETARDO DEL CRECIMIENTO (growth retardation). Each card has a brief description and a "Leer Más..." link. On the right side, there is a search bar labeled "Buscador" with a search button and a link to "informacion@nutrinet.org".

### Box 10: Developing a Regional Knowledge Centre in HIV/AIDS in Latin America and the Caribbean

<b>Countries:</b> Latin America and the Caribbean
<b>Objective:</b> Development of a Knowledge Management Centre to promote access and efficient use of knowledge of HIV/AIDS so as to improve the design, management and evaluation of programmes in Latin America and the Caribbean.
<b>Rationale:</b> Existence of high level of technical ability in the region and communities that the Regional HIV/AIDS Alliance has worked with, expertise of many people in civil society, considerable accumulation of knowledge of HIV expressed in manuals, tools, virtual data bases and in the experiences of those organizations and networks working on the theme. Despite this depth of existing knowledge, it was discovered that very often the location or even existence of distinct types of knowledge was unknown which meant that processes were inevitably being duplicated unnecessarily. Moreover, ignorance of the existence or location of various experiences, resources or information about HIV meant that such knowledge was not being used to improve the HIV programs. Furthermore, access and use of knowledge of HIV/AIDS for the design, management and evaluation of HIV/AIDS programmes in Latin America and the Caribbean is limited.
<b>Methodology:</b> In 2007 the International HIV/AIDS Alliance conducted a Knowledge Audit in order to investigate what sources and types of knowledge of HIV/AIDS exists in the region and assess the gaps in capacity and systems. Amongst its key findings, the audit highlighted the need to improve access to information on HIV/AIDS prevention, care and treatment, and the need to build the capacity of various stakeholders in knowledge management. It also highlighted the need for donor agencies and international NGOs to support this process and promote south to south cooperation in the region. In light of the findings and recommendations of the Knowledge Audit, the International HIV/AIDS Alliance was to launch a series of implementations in 2008, including the development of a knowledge management portal accessible for civil society.
<b>Source:</b> Camacho Tuckermann B., T. Haytayan and J. Hourcade-Bellocq (2008), "Developing a Regional Knowledge Centre in HIV/AIDS in Latin America and the Caribbean: a knowledge audit", Knowledge Management for Development Journal 4(1):82-97, [online] < <a href="http://journal.km4dev.org/index.php/km4dj/issue/view/12">http://journal.km4dev.org/index.php/km4dj/issue/view/12</a> >

Likewise, explicit knowledge on disaster management, education, sustainable development and the application of what has worked elsewhere could serve as the basis of pragmatic approaches to support strategies and policies towards achieving several, if not all, the Millennium Development Goals. This will need to be complemented by a deep knowledge of the idiosyncrasies of the Caribbean society in which policy measures could be implemented.

It could, therefore, be stated that the establishment of an environment that encourages the collection, creation, dissemination and effective application of knowledge could be significant in helping developing countries achieve the overarching goal of poverty reduction. Knowledge management methods and tools undeniably offer new opportunities to share countries' experiences, practices, expertise as bases for development.

Other positive results that could result from a knowledge management framework, thereafter, are a country ability to advance towards a knowledge-based society and further on to a knowledge-based economy.

### 3. Knowledge Management and Information Societies

*"... improve access to information and communication infrastructure and technologies as well as to information and knowledge; build capacity; increase confidence and security in the use of ICTs; create an enabling environment at all levels; develop and widen ICT applications; foster and respect cultural diversity; recognize the role of the media; address the ethical dimensions of the Information Society; and encourage international and regional cooperation".*

(Tunis Commitment: <http://www.itu.int/wsis/docs2/tunis/off/7.html>)

One of the driving forces of the World Summit on the Information Society (WSIS) was the need to “turn the digital divide into a digital opportunity for all, particularly for those who risk being left behind and being further marginalized”. For the first phase in Geneva (2003), 9 Caribbean countries joined with 166 other nations of the world to come up with a common vision: “to build a people-centred inclusive and development oriented Information Society”. To achieve this vision by 2015, 11 action lines were established at the Geneva Plan of Action, which were intended to serve as a global reference for national and regional e-strategies.

The eLAC efforts (plan of actions eLAC 2007 and eLAC 2010) have sought to further distil the goals set out by the WSIS into a framework of objectives and targets, which are more in line with the needs and realities of the subregion. Some of the main findings of a report recently prepared by ECLAC on the monitoring of the implementation of eLAC 2010 in the Caribbean subregion are as follows:

- In the Caribbean, countries are at varying stages of the development and implementation of their national ICTs plans.
- ICT indicators, particularly on usage and the impact of ICT on human and economic development, are, generally, not readily available on the Caribbean.
- On the education theme, access to and use of ICTs in the delivery of curriculum is a consistent theme that is seen in national ICT plans and strategies of Caribbean governments. Increasingly, schools and institutions at all levels of the education system are being equipped with ICT infrastructure and capabilities. However, at the primary and secondary levels, in particular, access to and the use of ICT in the teaching process is not at the desired level needed to make the transformational changes necessary and to adequately and consistently provide the labour market with the skilled workforce needed for information societies.
- The Caribbean subregion enjoys pervasive access to mobile telephony, with some countries having over 100% penetration. However, internet broadband penetration levels are in single digits. A range of factors, such as price and capacity limitations, contribute to this. To provide citizens (particularly vulnerable groups) with access to broadband and other ICTs, developing and maintaining community access points is a common strategy used throughout the subregion. However, robust information on the number of citizens being served and the impact that these centres are making is not readily available.
- In the area of disaster management, through the work of the Caribbean Disaster Emergency Management Agency (CDEMA), ICT is increasingly being used in this area.
- In the health sector, ICT applications tend to be more related to management information systems and/or patient management information systems. The subregion, as a whole, is yet to incorporate ICT in the delivery of health services in a way to make any marked impact on service delivery.
- In terms of the development and implementation of action plans needed to streamline and drive the progress towards reaching the goal of sustainable information societies, both at the national and subregional levels, there are many projects (some long standing) that have yet to be fully implemented and deliver on goals and objectives. There are a number of challenges that need to be addressed to improve the effectiveness of these efforts.

Throughout this report, ICT is seen as an enabling factor or pillar within the Knowledge Management for Development Framework proposed by ECLAC. ICT is not considered as an “end” but rather as a “means” to help developing economies achieve their development agendas. Furthermore, while technology can enable and expedite knowledge management (as argued by the World Bank), for it to be effective and efficient it must be integrated with the way people work, address their real needs, and be appropriate to the particular cultural and local settings, in this case those of the Caribbean subregion.

The above-mentioned assumptions are compatible with the WSIS provision to encourage global participation in the process of incorporating the developments of information and communication technologies into the mainstream of the global social and economic development.

#### **G. MONITORING AND EVALUATION OF KNOWLEDGE MANAGEMENT INITIATIVES**<sup>47</sup>

Monitoring is a continual and systematic process of collecting and analyzing data to measure the performance of (knowledge management) projects, programmes and other initiatives that contribute to any specific outcome.

Evaluation assesses how and why outcomes are or are not being achieved. It may also help to clarify underlying factors affecting the situation, highlight unintended consequences (positive and negative), recommend actions to improve performance in future (knowledge management) interventions, and generate lessons learnt.

Monitoring and evaluation are aimed at the systematic collection and analysis of information to track changes from baseline conditions to the desired outcome and to understand why change is or is not taking place and take appropriate (corrective) actions or base decision-making processes.

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<sup>47</sup> Source: UNDP (United Nations Development Programme) “ Handbook on Monitoring and Evaluating for Results” [online]<<http://www.undp.org/eo/documents/HandBook/ME-HandBook.pdf>>



## IV. POLICY RECOMMENDATIONS TO ENABLE KNOWLEDGE-BASED MANAGEMENT FOR DEVELOPMENT AND CARIBBEAN KNOWLEDGE-BASED ECONOMIES

This section of the report highlights the main declarations and agreements on knowledge and innovation adopted recently by Ibero-American and European countries at intergovernmental gatherings. The recommendations captured in this report and a recently convened Expert Group Meeting on Knowledge Management for Development are summarized to provide policy/decision makers in the Caribbean with recommendations to enable knowledge-based management and knowledge-based economies using the framework of Knowledge Management for Development proposed by ECLAC.

### A. INTERGOVERNMENTAL AGREEMENTS ON KNOWLEDGE AND INNOVATION

#### 1. I Ibero-American Ministerial Meeting on Innovation and Knowledge, held at Estoril, Portugal, November 2009

The main topic of discussion during the I Ibero-American Ministerial Meeting was the need to give priority to innovation and the scientific and technological developments as the main drivers of economic and social development. The following is an extract of the Final Declaration agreed by ministers gathered at this meeting.

#### **Box 11: Extract of the Final Declaration<sup>48</sup> of the Ibero-American Ministerial Meeting on Innovation and Knowledge.**

##### **Investment in R&D**

- Recognize that, in the current economic crisis, investment in science, technology, innovation and knowledge is an essential element for economic and social development, making the current situation into an opportunity to increase levels of cohesion and development of the region.
- Reinforce scientific and technological developments and public and private efforts to increase investment in R&D, as well as training and retention of talented and qualified human resources in Science, Technology and Innovation, to support education at all levels aiming to secure the open functioning of national systems of science and technology and promote scientific quality at the highest level. In this regard it is important to develop initiatives to offset or prevent the drain of talent from less developed countries and to encourage social inclusion and gender equality through active policies.

##### **Knowledge assets**

- Promote the recognition, appreciation and incorporation of traditional knowledge and local innovation processes, where appropriate.

##### **Cooperation**

- Encourage greater cooperation among the academic sector, public and private companies and other research institutions, promoting the transfer of knowledge, exploring new opportunities and responding more effectively to economic and social needs.
- Promote partnership among Latin America governments taking advantage of their many synergies and complementarities, and respecting their national characteristics.
- Encourage cooperation among organizations, networks or programmes, regional or international, in the fields of science and technology, innovation and higher education, in order to strengthen the international role of Ibero-America by promoting centers of excellence at the postgraduate level, technology-based firms and science and technology parks. Supporting communication networks and academic use as a form of cooperative work among Latin American scientific communities, and access to scientific and technological information and promoting recognition to the value of innovation in the region.
- Strengthen international collaboration in Science, Technology and Innovation and ensure academic freedom as an essential source of a democratic culture and innovation.

<sup>48</sup> Source: OEI (Organización de Estados Iberoamericanos para la Educación, la Ciencia y la Cultura) [online]<[http://www.oei.es/divulgacioncientifica/noticias\\_121.htm](http://www.oei.es/divulgacioncientifica/noticias_121.htm)>

<p><b>Human Resources</b></p> <ul style="list-style-type: none"> <li>• Reinforce the training of talents and human resources in scientific and technological innovation to attract more young people into scientific careers and promote scientific literacy, outreach and education in environmental science, technology and gender equality.</li> </ul>
<p><b>Innovation in Public Policy</b></p> <ul style="list-style-type: none"> <li>• Make the necessary effort to incorporate innovation in public policy with the aim of improving the quality and efficiency of the services the state provides to society in general.</li> <li>• Encourage strategies that promote entrepreneurship and economic recovery of scientific and technological research in universities, research institutes and enterprises for well-being and social inclusion.</li> <li>• Emphasize the role and responsibility of the State in creating conditions for innovation strategies based on knowledge, particularly in the production of new knowledge.</li> <li>• Strengthening innovation programmes within national development strategies of respective countries in long-term public policies directed at agents of innovation and knowledge (companies, mainly SMEs, universities, R&amp;D centers, post-graduate centers, technology-based companies, scientific and technological parks, government bodies, socio-productive innovation networks, and social sectors) for the encouragement of widespread social appropriation of a scientific and technological culture.</li> </ul>
<p><b>Technology transfer</b></p> <ul style="list-style-type: none"> <li>• Encourage the exchange and transferring of technology between companies and public entities amongst countries of the region, according to the concept of innovation, promoting the cutback of imbalances in scientific and technological development and innovation in Ibero-America.</li> <li>• Develop and promote programmes to ensure technology transfer, especially in the Ibero-American space, aiming to contribute to the solution of economic, environmental and social issues of the region. Develop sustained efforts to improve conditions of access to scientific information and technology in Ibero-America, in particular to scientific publications and patent databases in a cooperative and network-like manner.</li> </ul>

## 2. The Lisbon Agenda 2000

The Lisbon Agenda is an action and development plan for the European Union. It aims to make the European Union "the most dynamic and competitive knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment by 2010". It was set out by the European Council in Lisbon in March 2000.<sup>49</sup>

Achieving this goal requires an overall strategy aimed at:<sup>50</sup>

- Preparing the transition to a knowledge-based economy and society by: (a) better policies for the information society and research and development; (b) creating a friendly environment for starting up and developing innovative businesses, especially SMEs; (c) stepping up the process of structural reform for competitiveness, innovation and a complete and fully operational internal market;
- Modernizing the European social model, investing in people and combating social exclusion;
- Sustaining a healthy economic outlook and favorable growth prospects by applying an appropriate macroeconomic policy mix.

The implementation of this strategy was to be achieved by improving the existing processes, introducing a new open method of coordination at all levels, coupled with a stronger guiding and coordinating role for the European Council to ensure more coherent strategic direction and effective monitoring of progress<sup>51</sup>.

<sup>49</sup> Source: Wikipedia.

<sup>50</sup> Source: European Parliament, "Lisbon European Council 23 and 24 March 2000, Presidency Conclusions" [online]< [http://www.europarl.europa.eu/summits/lis1\\_en.htm#a](http://www.europarl.europa.eu/summits/lis1_en.htm#a)>

<sup>51</sup> Source: European Parliament, "Lisbon European Council 23 and 24 March 2000, Presidency Conclusions" [online]< [http://www.europarl.europa.eu/summits/lis1\\_en.htm#a](http://www.europarl.europa.eu/summits/lis1_en.htm#a)>

## B. POLICY RECOMMENDATIONS

The following is a summary of the main policy recommendations considered for each of the Knowledge Management for Development Framework elements as proposed by ECLAC:

**Table 8: Policy Recommendations for each of the KM framework elements**

KM Framework Elements		Policy Recommendations
<b>Inputs</b>	Knowledge Assets	<p>Policy recommendations with regards to Knowledge Assets, including Traditional Knowledge:</p> <ul style="list-style-type: none"> <li>• Promote the recognition, appreciation and incorporation of traditional knowledge and local innovation processes, where appropriate.</li> <li>• Strengthen the capacity of local people to develop their own knowledge base and develop methodologies to promote activities at the interface of scientific disciplines and traditional knowledge.</li> <li>• Develop capacities for creating local/regional knowledge as well as global knowledge.</li> <li>• Develop a long term vision for enabling creating and applying knowledge with social and economic value from both traditional and non-traditional knowledge.</li> <li>• Use traditional knowledge to develop and implement social innovative practices with long-term sustainability and benefits for the community.</li> <li>• Develop formal and informal schemes to transfer (traditional) knowledge to younger generations.</li> <li>• Develop and adopt a multidisciplinary bottom-up approach at the community, national and regional level to deal with traditional knowledge and intellectual property issues.</li> <li>• Consider intellectual property as a means to protect (traditional) knowledge.</li> </ul>
<b>KM Processes</b>		<p>Policy recommendations with regards to enabling knowledge processes:</p> <ul style="list-style-type: none"> <li>• Prioritize development challenges and design knowledge management interventions.</li> <li>• Develop an effective regional collaborative mechanism for knowledge management.</li> <li>• Use knowledge management tools adapted to the local conditions to capture, create, use, store, disseminate and protect both traditional and non traditional knowledge.</li> <li>• Implement measures to overcome geographic barriers for the capturing, sharing and storing of knowledge.</li> <li>• Support communication networks among scientific communities and access to scientific and technological information.</li> <li>• Implement appropriate ICT solutions to support knowledge management processes.</li> </ul>

<b>KM Pillars</b>	Education	<ul style="list-style-type: none"> <li>• Prioritize medium- and long-term development challenges related to education.</li> <li>• Ensure full primary school enrolment and literacy.</li> <li>• Provide wider access and opportunities for secondary and tertiary education.</li> <li>• Reduce/eliminate disparities in the accessibility of services and education due to gender and other socio-economic backgrounds.</li> <li>• Consider incorporating traditional knowledge into formal and informal school curriculum and activities.</li> <li>• Focus not only in outreach (quantity) but quality of education.</li> <li>• Facilitate the transferring of knowledge by improving the education system (new tools and methods) within and outside the formal education systems.</li> <li>• Promote access and usage of appropriate ICTs among students, teachers, workforce and the general public.</li> <li>• Increase impact and coverage of educational programmes through public-private partnerships.</li> <li>• Develop and improve quality of management schools and scientific and research institutions.</li> <li>• Foster academic institutions -industry research collaboration.</li> <li>• Foster partnerships and collaboration with academic, scientific and technological global institutions.</li> <li>• Facilitate training and retention of talented and qualified human resources in science, technology and innovation to attract more young people into scientific careers and promote scientific literacy.</li> <li>• Foster opportunities for returning citizens to share knowledge and experiences acquired while studying or working abroad ('brain drain' to 'brain gain').</li> <li>• Develop long-term vision and strategic planning of the education sector to foster innovation which could include all of the above plus sustained investment to further develop general skills, occupational skills and/or innovation capacities.</li> </ul>
	Innovation	<ul style="list-style-type: none"> <li>• Increase investment in science, technology, innovation, research, development and knowledge at national level.</li> <li>• Foster a culture of innovation and promote recognition to the value of innovation in the country/region.</li> <li>• Promote National Innovation Systems and Programmes targeted at agents of innovation and knowledge (SMEs, universities, research and development centers, post-graduate centers, scientific and technological parks, government bodies and social networks).</li> <li>• Provide research and development support for Small and Micro-scale Enterprises (SMEs).</li> <li>• Promote centers of excellence at the postgraduate level, clusters, technology-based firms and science and (high) tech parks.</li> <li>• Develop and strengthen public-private partnership for research and development and exchange/transferring of technology: E.g. Universities and research institutes asked to engage in market-related research.</li> </ul>
	ICT	<ul style="list-style-type: none"> <li>• Develop a holistic approach to develop and implement national ICT plans and programmes for development.</li> <li>• Strategic investment in ICT and other technologies.</li> <li>• Promote nation-wide affordable access to ICT.</li> <li>• Develop private-public partnerships to promote wider access and use of ICT.</li> <li>• Foster innovative government practices to deliver more efficient citizens services (e-Government) in pre-identified key areas.</li> </ul>
		<ul style="list-style-type: none"> <li>• Develop medium- and long-term plans and enabling legislation in education, health, environment and other identified country priorities.</li> <li>• Enable macroeconomic policies and overall investment climate conducive to innovation, entrepreneurship development and</li> </ul>

	Economic and Institutional Regime	<p>knowledge-based activities.</p> <ul style="list-style-type: none"> <li>• Establish policy reforms to remove/reduce drains in tangible/intangible community resources (natural, human, fiscal, financial and other resources), for example, resource extraction activities deplete natural resources with little or not tangible benefits for the local community.</li> <li>• Provide/sanction/formalize access rights of existing and new knowledge.</li> <li>• Facilitate the transferring and use of remittances for entrepreneurial activities and innovation purposes.</li> <li>• Encourage social inclusion and gender equality through active policies.</li> </ul>
<b>Environment</b>	Natural environment, political context, society and culture	<p>Policy recommendations to enable a conducive knowledge-based environment:</p> <ul style="list-style-type: none"> <li>• Provide strong leadership support, long-term vision, and increased communication in the design of sustainable national policies and knowledge management strategies.</li> <li>• Foster regional synergies among countries of the Caribbean</li> <li>• Promote extraregional integration and collaboration as a means to be part and reap the benefits of the global economy.</li> <li>• Foster a knowledge sharing culture and embrace change: capitalize on enabling aspects of culture and act upon disabling aspects (behaviour change).</li> <li>• Empower community participation through outreach programmes and other strategies.</li> </ul>

## V. Conclusions

This report endeavours to contribute to raising awareness and igniting discussion among development practitioners and policy makers on this relatively new paradigm of knowledge management for sustainable development in the Caribbean.

Firstly, building on past and existing initiatives, frameworks and studies, the framework on Knowledge Management for Development in the Caribbean, advanced by ECLAC, outlines the key elements such an approach should consider, namely knowledge inputs or assets, knowledge management processes and tools, the foundation or pillars on which the aforementioned elements should be built, the surrounding environment of which the role of stakeholders, as the main actors of this milieu, could have on the expected outputs, and the necessary monitoring and evaluation considerations.

Secondly, knowledge management processes and tools efficiently organized within the context proposed could lead to the inclusive and sustainable development of Caribbean communities and countries at large, thus contributing to the achievement of the Millennium Development Goals and the overarching goal of poverty alleviation.

Thirdly, knowledge management processes and tools within the context proposed could contribute to empowering communities and the development of the subregion by providing a framework to uncover, further develop and unleash the creative, traditional and rich cultural heritage and traditional knowledge of the Caribbean.

Finally, the knowledge management framework advanced by ECLAC could be considered both in the design and implementation of national policies and strategies and community-level projects. Further discussion, research and analysis is necessary, though, to evaluate and further develop the proposed framework that could be used by policy makers on how to use knowledge management for the inclusive and sustainable development of the subregion.

## Annex I

### **The Millennium Development Goals: achievements and remaining challenges<sup>52</sup>**

The progress made so far by the Latin America and the Caribbean region in selected Millennium Development Goal targets is as follows<sup>53</sup>:

#### ***Goal 1 Eradicate extreme poverty and hunger***

TARGET: Halve, between 1990 and 2015, the proportion of people whose income is less than \$1 a day.

Latin America and the Caribbean made progress in the fight against extreme poverty from 1999 to 2005, with a reduction from 10.9% to 8.2% of people living on less than \$1.25 a day. It is projected, though, that in 2009, the number of people living in extreme poverty will be higher than anticipated before the financial crisis, which might dampen the positive trends observed so far in the subregion. The encouraging trend in the eradication of hunger since the early 1990s, when the proportion of people living in hunger decreased from 12% in 1990-1992 to 8% in 2004-2006, was halted in 2008 largely as a result of higher food prices.

TARGET: Achieve full and productive employment and decent work for all, including women and young people.

For millions in the Latin American and Caribbean region, jobs provide little relief from poverty because the pay is so low. Employed persons living in a household where each member earns less than \$1 a day are considered the ‘working poor’. In Latin America and the Caribbean over 8% of employed people fall in this category, an improvement from 11.6% in 1997.

TARGET: Halve, between 1990 and 2015, the proportion of people who suffer from hunger.

The subregion has made progress in reducing the proportion of children under 5 suffering from malnutrition, and if trends observed between 1990 (13%) and 2007 (8%) had continued uninterrupted, the subregion would have been close to reaching the target of cutting the proportion of underweight children by half. But progress is likely to be eroded by high food prices and economic turmoil.

#### ***Goal 2 Achieve universal primary education***

TARGET: Ensure that, by 2015, children everywhere will be able to complete a full course of primary schooling.

Impressive strides have been made towards achieving universal primary school education, with 94.9% of children enrolled; a few countries in the Caribbean were below this average, though

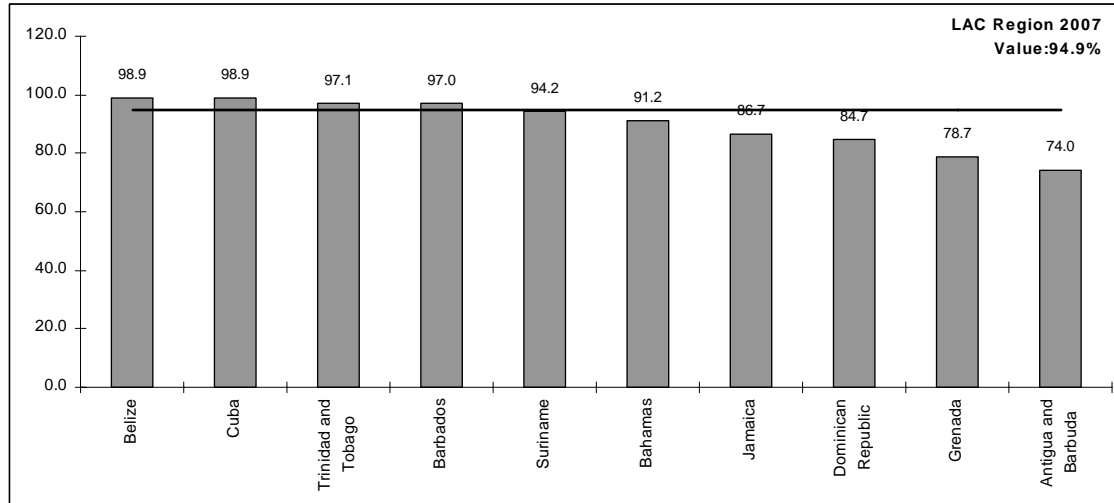
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<sup>52</sup> The Millennium Development Goals are eight goals to be achieved by 2015 that respond to the world's main development challenges. The Goals are drawn from the actions and targets contained in the Millennium Declaration that was adopted by 189 nations-and signed by 147 heads of state and governments during the UN Millennium Summit in September 2000. Source: UNDP [online]< <http://www.undp.org/mdg/basics.shtml>>

<sup>53</sup> According to “The Millennium Development Goals Report 2008” compiled by an Inter-Agency and Expert Group on Millennium Development Goal Indicators led by the United Nations Department of Economic and Social Affairs and “The Millennium Development Goals Report 2009” issued by the United Nations Department of Public Information – DPI/2539G – July 2009. Data is also based on the MDG Indicators database, maintained by the United Nations Statistics Division, in close collaboration with agencies and organizations within and outside the United Nations system.

(graph 1). Also for the entire Latin America and Caribbean region, reaching those children still out of school has proven to be a challenge, as progress over the last few years has been slow.

**Graph 5: Percentage net enrolment ratio in primary education (both sexes) as of year 2007**



Source<sup>54</sup>: ECLAC on the basis of data extracted from the United Nations Millennium Development Goals Indicators website and the Millennium Development Goals Report 2009 published by the United Nations

### ***Goal 3 Promote gender equality and empower women***

**TARGET:** Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education, no later than 2015.

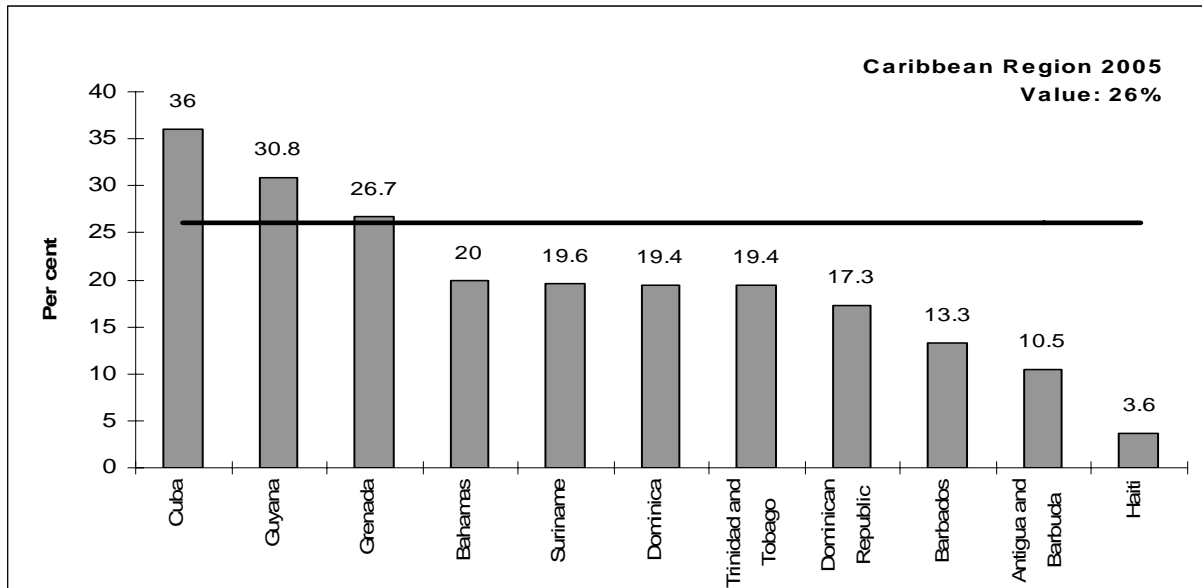
Latin American and Caribbean girls' primary enrolment in relation to that of boys decreased slightly from 99% in 1991 to 97% in 2000. However, up until 2007, the ratio remained fairly constant at 97%.

The subregion is also leading the way among the developing world in efforts towards achieving gender parity in parliamentary representation—with 22.2% of seats held by women in 2009, up from 14.9% in 2000. Four countries in the Caribbean, namely Cuba, Guyana, Grenada and Suriname, are well above the average seats held by women of the subregion as could be seen in the graph 6 below.

The Latin America and Caribbean region has also already reached the target of gender parity in education. As it relates to employment, in 2007, women accounted for 42.7% of employees in paid employment outside agriculture.

<sup>54</sup> The value for the LAC (Latin America and Caribbean region) was taken from the official United Nations site for the MDG Indicators. Statistical Annex: Millennium Development Goals, Targets and Indicators, 2009. <http://mdgs.un.org/unsd/mdg/Resources/Static/Data/2009%20Stat%20Annex.pdf> >



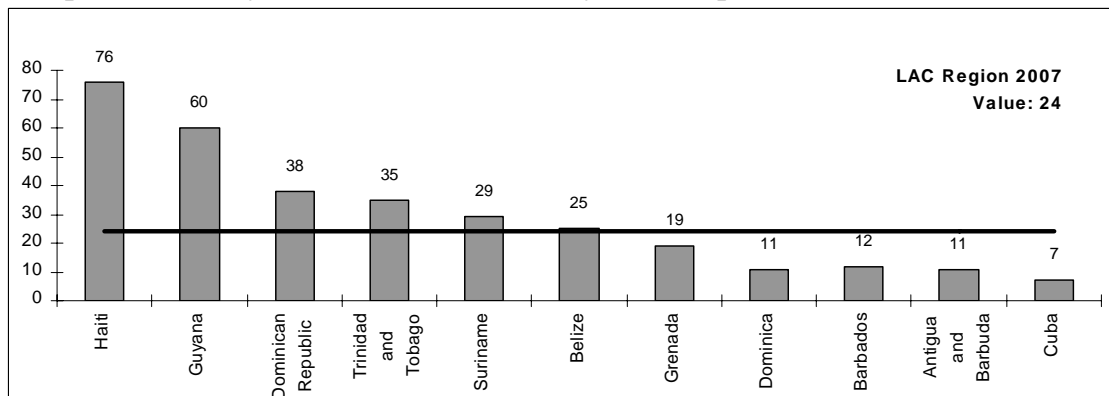
**Graph 6: Percentage seats held by women in national parliament as of year 2005**

Source<sup>55</sup>: ECLAC on the basis of data extracted from the United Nations Millennium Development Goals Indicators website and the Millennium Development Goals Report 2009 published by the United Nations

#### **Goal 4 Reduce child mortality**

**TARGET:** Reduce by two thirds, between 1990 and 2015, the under-5 mortality rate

The subregion has reduced the death rate of children under 5, and is on track to reduce by two thirds the mortality rate by 2015. The rate decreased from 54 deaths per 1,000 live births in 1990, to 24 deaths in 2007. The rate of some countries in the Caribbean subregion namely Haiti, Guyana, Suriname, Trinidad and Tobago and Dominican Republic, are, however, above average for the subregion as can be seen in graph 7 below.

**Graph 7: Mortality rate of children under 5 years old (per 1,000 live births) as of 2007**

Source<sup>56</sup>: ECLAC on the basis of data extracted from the United Nations Millennium Development Goals Indicators website and the Millennium Development Goals Report 2009 published by the United Nations

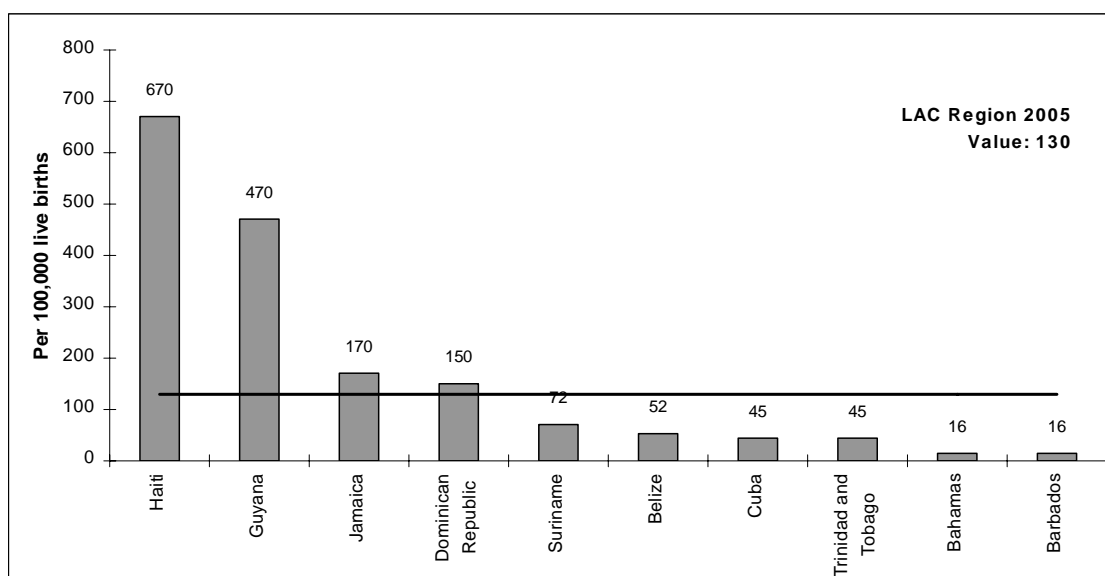
<sup>55</sup> The value for Caribbean region was taken from the official United Nations site for the MDG Indicators. Statistical Annex: Millennium Development Goals, Targets and Indicators, 2009.  
<http://mdgs.un.org/unsd/mdg/Resources/Static/Data/2009%20Stat%20Annex.pdf>

### Goal 5 Improve maternal health

TARGET: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio

Fallout from the global financial situation may include compromised funding for programmes to improve maternal health, the goal towards which there has been least progress so far. Most developing countries have already experienced a major reduction in donor funding for family planning on a per woman basis since the mid-1990s. In Latin America and the Caribbean, maternal mortality is moderate (with some exceptions, like Haiti and Guyana in the Caribbean subregion, as could be seen in graph 8), nevertheless, progress observed between 1990 (180 deaths per 100,000 live births) and 2005 (130 deaths per 100,000 live births) was slow.

**Graph 8: Maternal deaths (per 100,000 live births) as of year 2005**



Source<sup>57</sup>: ECLAC on the basis of data extracted from the United Nations Millennium Development Goals Indicators website and the Millennium Development Goals Report 2009 published by the United Nations

It is encouraging, however, that access to antenatal care has increased significantly over the same period and that, with 83% of women receiving at least four antenatal visits during their pregnancy (as recommended by the World Health Organization (WHO)), the subregion has now the highest percentage among all developing regions.

TARGET: Achieve, by 2015, universal access to reproductive health

Less positive is the fact that the subregion has a very high adolescent fertility rate. The number of births per 1,000 women aged 15-19 is the second highest among all developing regions, after sub-Saharan Africa.

<sup>56</sup> The value for the LAC (Latin America and Caribbean region) was taken from the official United Nations site for the MDG Indicators. Statistical Annex: Millennium Development Goals, Targets and Indicators, 2009.

<<http://mdgs.un.org/unsd/mdg/Resources/Static/Data/2009%20Stat%20Annex.pdf>>

<sup>57</sup> The value for the LAC (Latin America and Caribbean region) was taken from the official United Nations site for the MDG Indicators. Statistical Annex: Millennium Development Goals, Targets and Indicators, 2009.

<<http://mdgs.un.org/unsd/mdg/Resources/Static/Data/2009%20Stat%20Annex.pdf>>

### Goal 6 Combat HIV/AIDS, malaria and other diseases

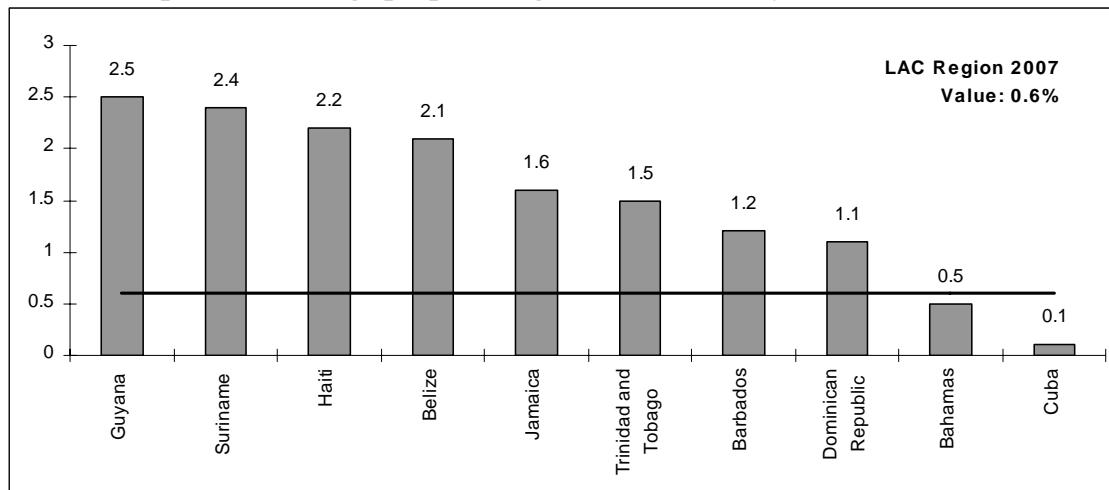
TARGET: Have halted by 2015 and begun to reverse the spread of HIV/AIDS

According to the Joint United Nations Programme on HIV/AIDS (UNAIDS) (Source: 2008 report on the global AIDS epidemic), an estimated 230,000 people were living with HIV in the Caribbean in 2007 (about three quarters of them in the Dominican Republic and Haiti), while an estimated 20,000 people were newly infected with HIV and some 14,000 people died of AIDS.

HIV surveillance systems are still inadequate in several Caribbean countries according to the above-mentioned report, however, available information indicates that, although HIV/AIDS remains a big challenge for the subregion, the epidemic has stabilized, while in urban areas of some countries it has declined. This declining trend is especially evident in the Dominican Republic and Haiti. In the Dominican Republic, for example, HIV prevalence declined from 1.0% in 2002 to an estimated 0.8% in 2007.

The incidence of HIV has remained stable within the population range of 15 to 49 years, with the exception of Honduras, Bahamas, and Dominican Republic where, between 2001 and 2007, a reduction in the incidence of HIV of 22.2%, 15.4% and 3.2%, respectively, was observed.<sup>58</sup>

**Graph 9: Percentage people living with HIV: 15-49 years old as of 2007**



Source<sup>59</sup>: ECLAC on the basis of data extracted from the United Nations Millennium Development Goals Indicators website and the Millennium Development Goals Report 2009 published by the United Nations

TARGET: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

The incidence of malaria in Latin America and the Caribbean is far below that of the more affected regions in the world. Incidence of malaria exists in 9 countries that share the Amazonian forest and in 8 countries of Central America and the Caribbean, totaling 21 countries where the disease is endemic.

<sup>58</sup> Source: CEPAL Comisión Económica para América Latina y el Caribe [online][date of reference: October 2009] <[http://www.eclac.cl/mdg/obj\\_6\\_es.html](http://www.eclac.cl/mdg/obj_6_es.html)>

<sup>59</sup> The value for the LAC (Latin America and Caribbean region) was taken from the official United Nations site for the MDG Indicators. Statistical Annex: Millennium Development Goals, Targets and Indicators, 2009. <<http://mdgs.un.org/unsd/mdg/Resources/Static/Data/2009%20Stat%20Annex.pdf>>

According to 2003 data, most countries in the region reduced the incidence of malaria as compared to 1990; this was particularly the case for Nicaragua, Honduras and Belize. Guyana and Suriname were among those countries where the incidence of malaria (30% in 2003) has actually increased during the past few years.<sup>60</sup>

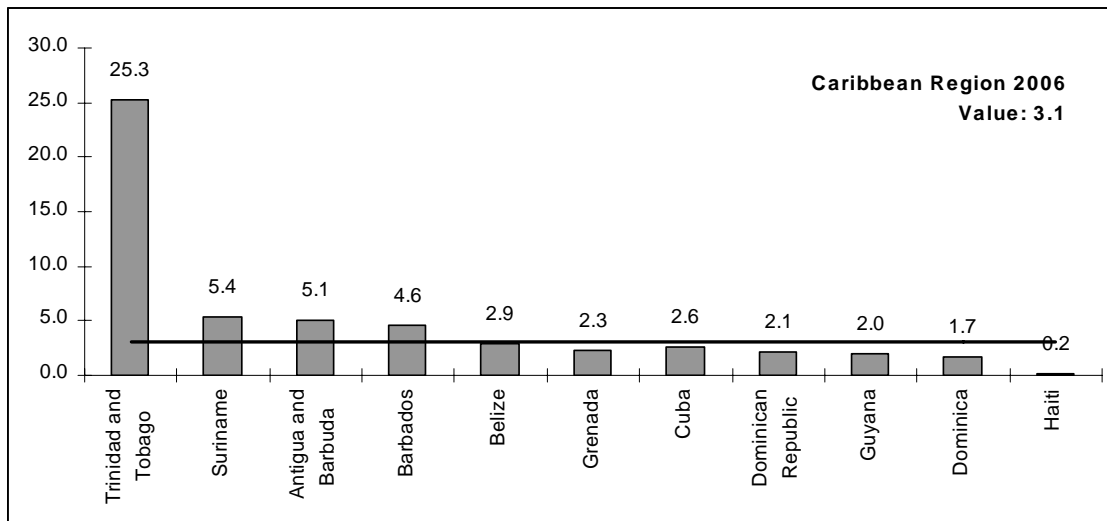
### **Goal 7 Ensure environmental sustainability**

**TARGET:** Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.

Carbon dioxide emission is currently the greenhouse gas contributing most significantly to climate change. Emissions of carbon dioxide have actually increased from 1.3 billion to 1.4 billion metric tons from the year 2000 to 2005.

The following illustrates carbon dioxide emission per capita for some Caribbean countries.

**Graph 10: Carbon Dioxide emissions per capita (metric tons) as of 2006**



Source<sup>61</sup>: ECLAC on the basis of data extracted from the United Nations Millennium Development Goals Indicators website and the Millennium Development Goals Report 2009 published by the United Nations

**TARGET:** Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

The Latin America and Caribbean region has already met the target of halving the proportion of people without access to safe drinking water. However, huge disparities remain between urban and rural populations. In 2006, only 73% of people in rural areas use an improved water source, compared with 97% of urban dwellers.

<sup>60</sup> Source: CEPAL Comisión Económica para América Latina y el Caribe [online][date of reference: October 2009] <[http://www.eclac.cl/mdg/obj\\_6\\_es.html](http://www.eclac.cl/mdg/obj_6_es.html)>

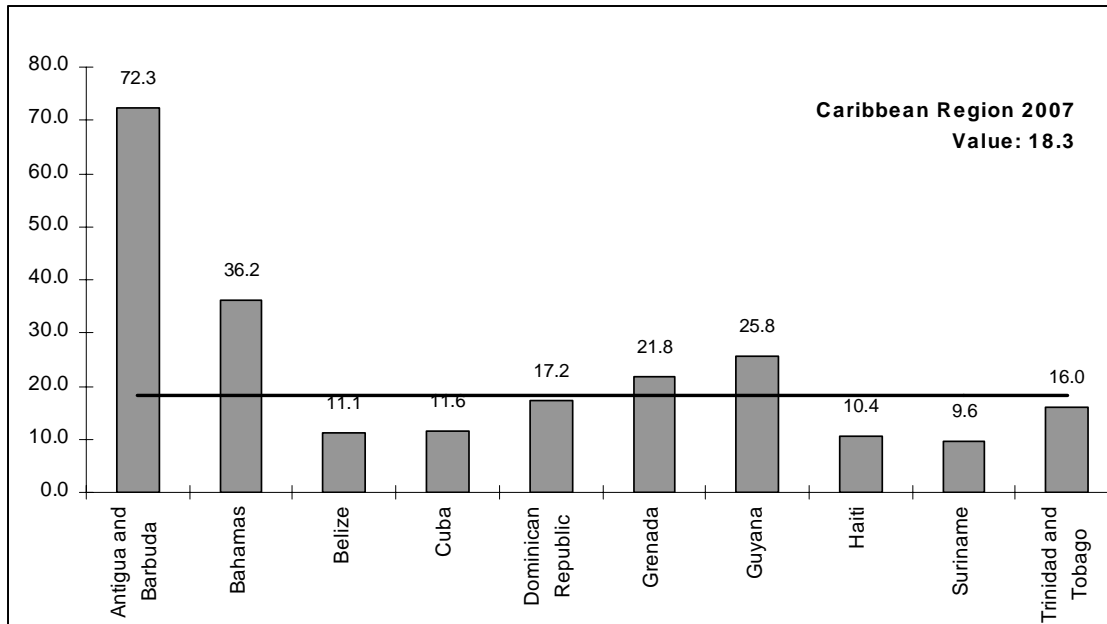
<sup>61</sup> The value for the Caribbean region was taken from the official United Nations site for the MDG Indicators. Statistical Annex: Millennium Development Goals, Targets and Indicators, 2009. <<http://mdgs.un.org/unsd/mdg/Resources/Static/Data/2009%20Stat%20Annex.pdf>>

**Goal 8 Develop a global partnership for development**

**TARGET:** In cooperation with the private sector, make available the benefits of new technologies, especially information and communications.

The number of cellular subscribers in the Caribbean subregion jumped from 6.6 to 42.9 (per 100 people) between 2000 and 2007, whereas the number of fixed telephone lines (per 100 people) decreased from 11.6 to 10.9 in the same period. Internet users (per 100 population) increased rapidly in the subregion from 2.9 in year 2000 to 18.3 in 2007.

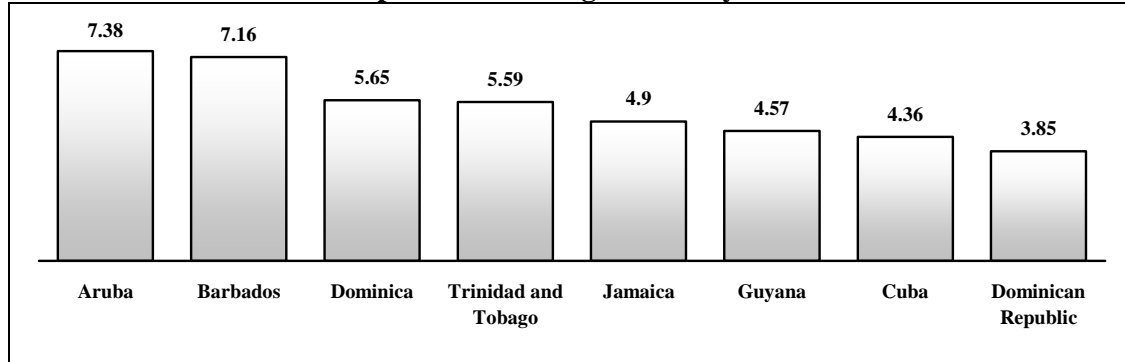
**Graph 11: Internet users (per 100 population) as of year 2007**



Source<sup>62</sup>: ECLAC on the basis of data extracted from the United Nations Millennium Development Goals Indicators website and the Millennium Development Goals Report 2009 published by the United Nations

<sup>62</sup> The value for the Caribbean region was taken from the official United Nations site for the MDG Indicators. Statistical Annex: Millennium Development Goals, Targets and Indicators, 2009. <http://mdgs.un.org/unsd/mdg/Resources/Static/Data/2009%20Stat%20Annex.pdf>

## Annex II

**Knowledge Economy Index (KEI) of selected Caribbean countries<sup>63</sup>****Graph 12: Knowledge Economy Index**

Source: ECLAC on the basis of information retrieved from the online database of The World Bank, Knowledge for Development (K4D) ([www.worldbank.org/kam](http://www.worldbank.org/kam))

The graph illustrates the Knowledge Economy Index (KEI) for eight selected Caribbean countries, namely Aruba, Barbados, Dominica, Trinidad and Tobago, Jamaica, Guyana, Cuba and Dominican Republic.

The normalized values range from a minimum value of 0 to a maximum value of 10, with 10 being the top score. Thus, a higher rank implies that the country is better positioned in terms of the knowledge economy<sup>64</sup>.

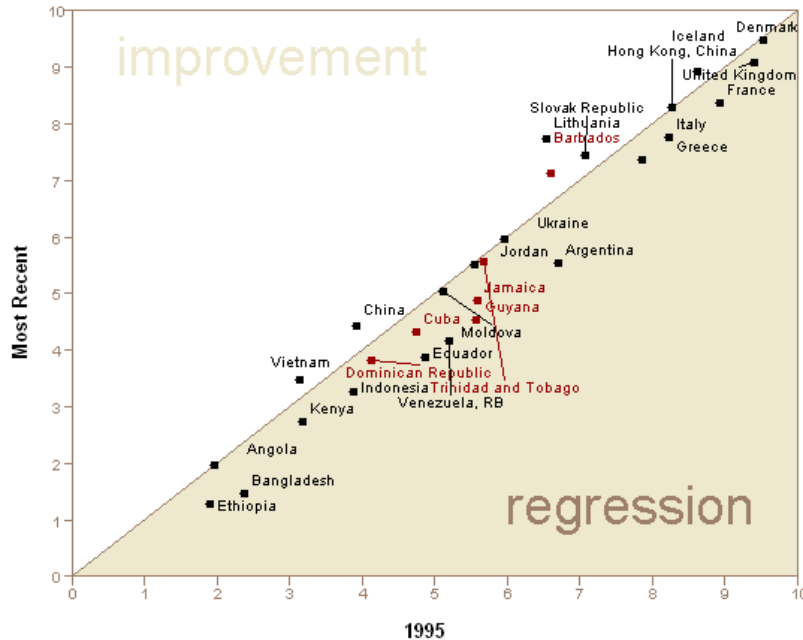
Aruba and Barbados, followed by Dominica and Trinidad and Tobago, rank high among other Caribbean countries for which data are available. In the case of Aruba, it is due to its strong performance in terms of 'Innovation' and 'Economic Institutional Regime', in the case of Barbados it is because its strong performance on the 'Education' and 'Innovation' indexes. Likewise, Dominica scores high on 'Education' and 'ICT' and Trinidad and Tobago on 'Innovation' and 'ICT'. Thus, based on this graph, Aruba, Barbados, Dominica and Trinidad and Tobago are the countries in the subregion with overall more potential for using and capitalizing on knowledge towards development and becoming knowledge economies.

<sup>63</sup> Latest update of World Bank KAM Database is July 2009 however data can range from year 2002-2009.

<sup>64</sup> Source: The World Bank, Knowledge for Development (K4D) ([www.worldbank.org/kam](http://www.worldbank.org/kam)).

## Annex III

## Knowledge Economy Index Comparison

Graph 13: Knowledge Economy Index Comparison <sup>65</sup>

Source: The World Bank, KAM (Knowledge Assessment Methodology), Knowledge for Development (K4D)

The graph shows that countries such as Denmark, Finland, and Sweden are leading the group while lagging behind are predominantly sub-Saharan African countries with Haiti being rated last in the group.

It could be stated that those Caribbean countries that are around the center of the scattered diagram are midway in their transition to becoming knowledge economies. From a list of 146 countries for which data are available, Aruba is ranked 39, Barbados 41, Dominica 55, Trinidad and Tobago 57, Jamaica 74, Guyana 80, Cuba 83 and Dominican Republic 96.

<sup>65</sup> The countries or regions that are plotted below the 45 degree line indicate a regression in their performance throughout time. The countries or regions that are marked above the line signify improvement. The regression may be due to two reasons: the country either actually has lost ground in absolute terms over time, or improved slower than the comparative group. (Source: The World Bank, KAM). Latest update of World Bank KAM Database is July 2009 however data can range from year 2002-2009.

## Annex IV

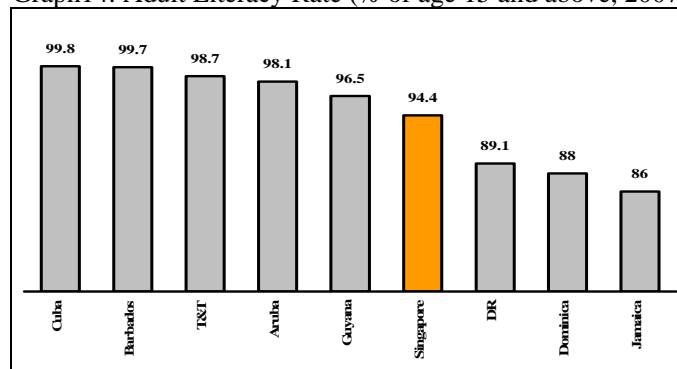
### Knowledge Economy Index Indicators

The following comparative graphs of selected Caribbean countries and Singapore are based on absolute values available for each country on the World Bank (Knowledge Assessment Methodology (KAM) database.

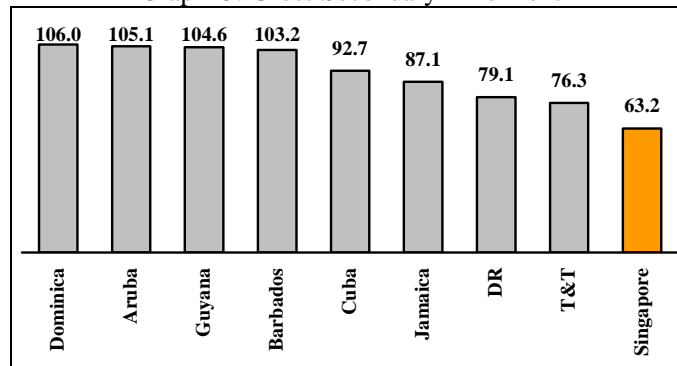
Singapore is used in the graphs as a benchmark due to some similarities with Caribbean countries. Singapore is an island economy with 710 sq km, GDP per head of US\$ 35,956 (year 2007) and a population of 4.5 million inhabitants (year 2007)<sup>66</sup>. Singapore currently ranks 23 in the Human Development Index and 19 in the Knowledge Economy Index<sup>67</sup> among 146 countries.

- **Education Index Indicators:**

Graph14: Adult Literacy Rate (% of age 15 and above, 2007)



Graph15: Gross Secondary Enrolment

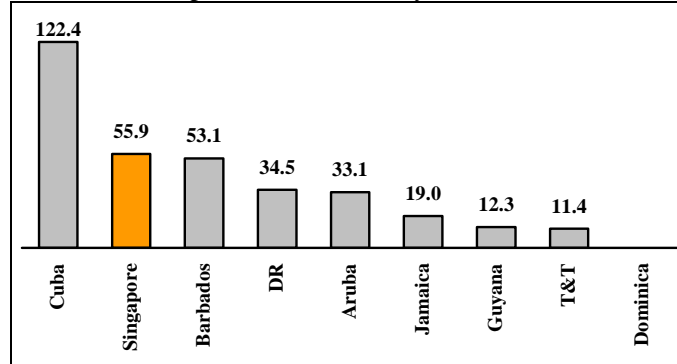


<sup>66</sup> Source: EIU (Economist Intelligence Unit), Singapore Country Profile 2008.

<sup>67</sup> Source: KAM (Knowledge Assessment Methodology) developed by the World Bank Institute.

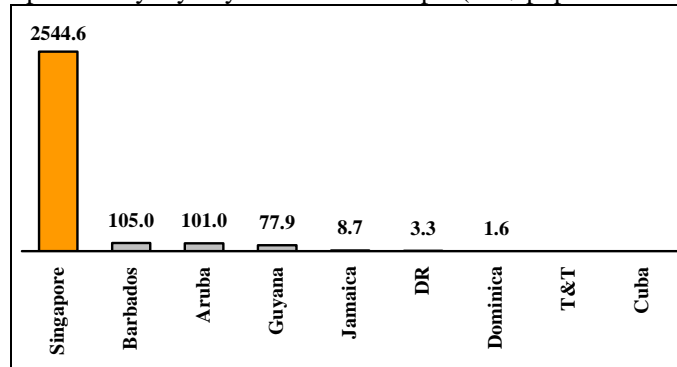


Graph 16: Gross Tertiary Enrolment

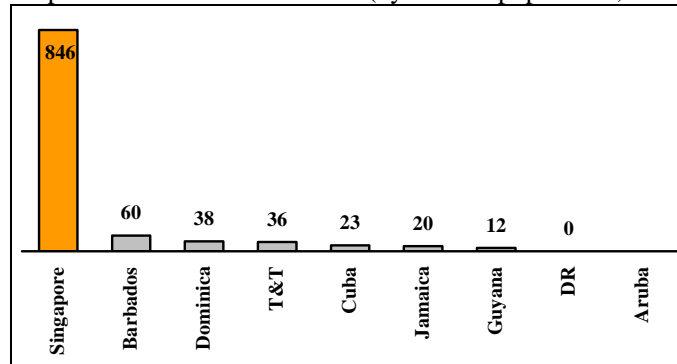


- Innovation Index Indicators

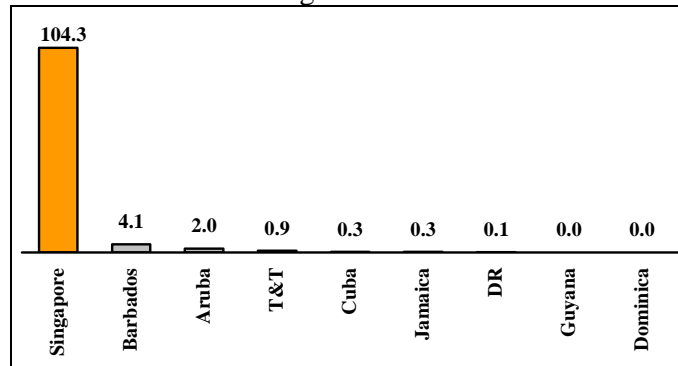
Graph 17: Royalty Payments and Receipts (US\$/population 2007)



Graph 18: S&amp;E Journal Articles (by million population, 2005)

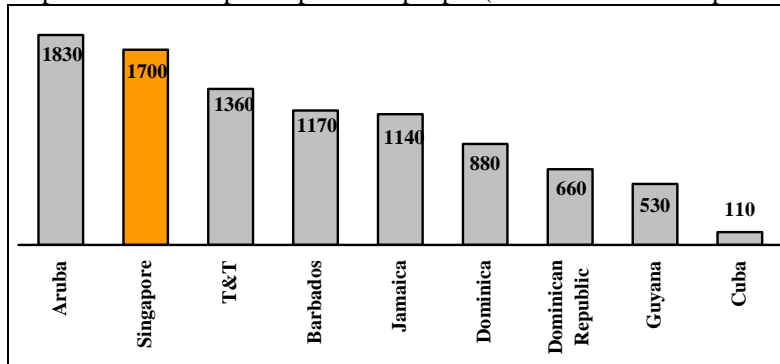


Graph 19: Patents granted by USPTO (by million population, average 2003-2007)

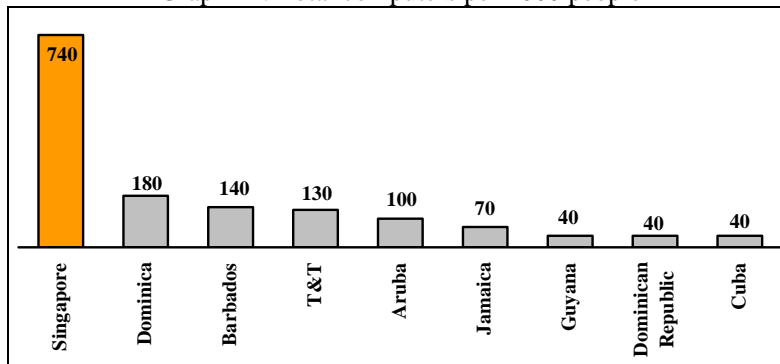


### • ICT Index Indicators

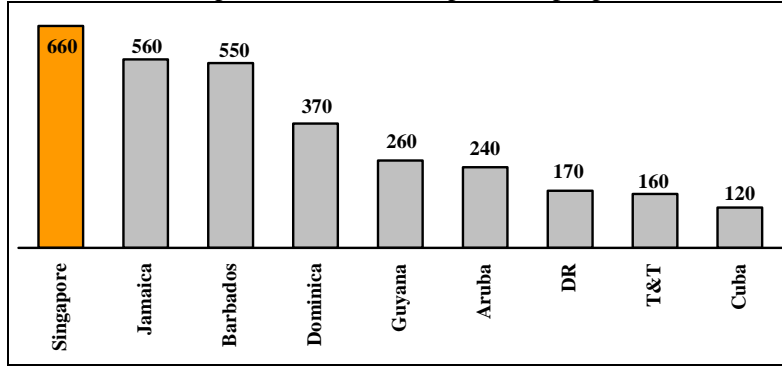
Graph 20: Total telephone per 1000 people (mainlines + mobile phones)



Graph 21: Total computers per 1000 people

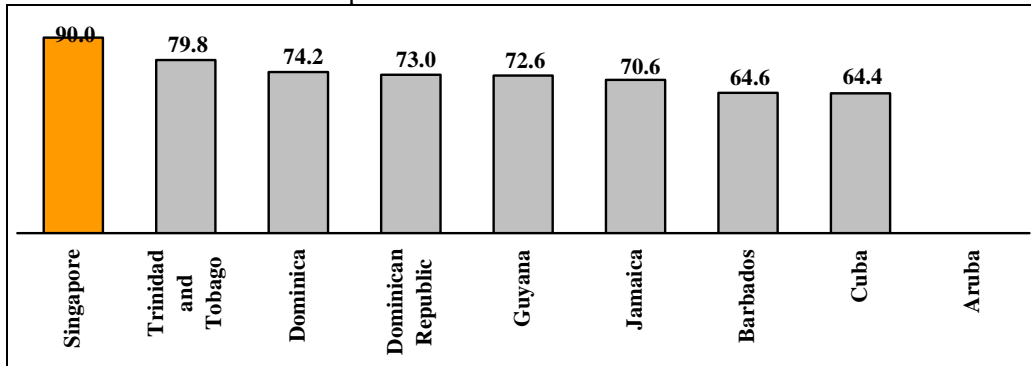


Graph 22: Internet users per 1000 people

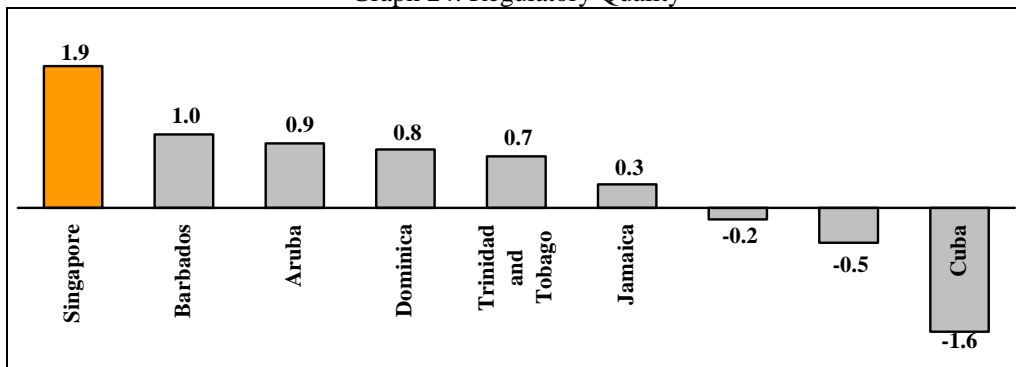


• Economic and Institutional Regime Indicators

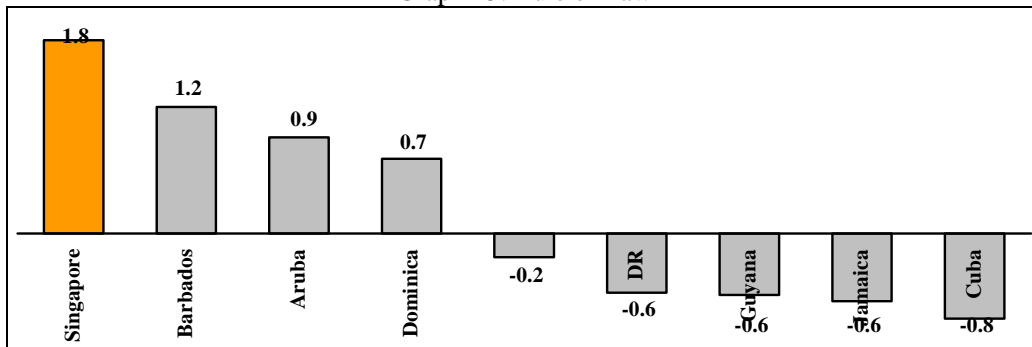
Graph 23: Tariff and non-tariff barriers



Graph 24: Regulatory Quality

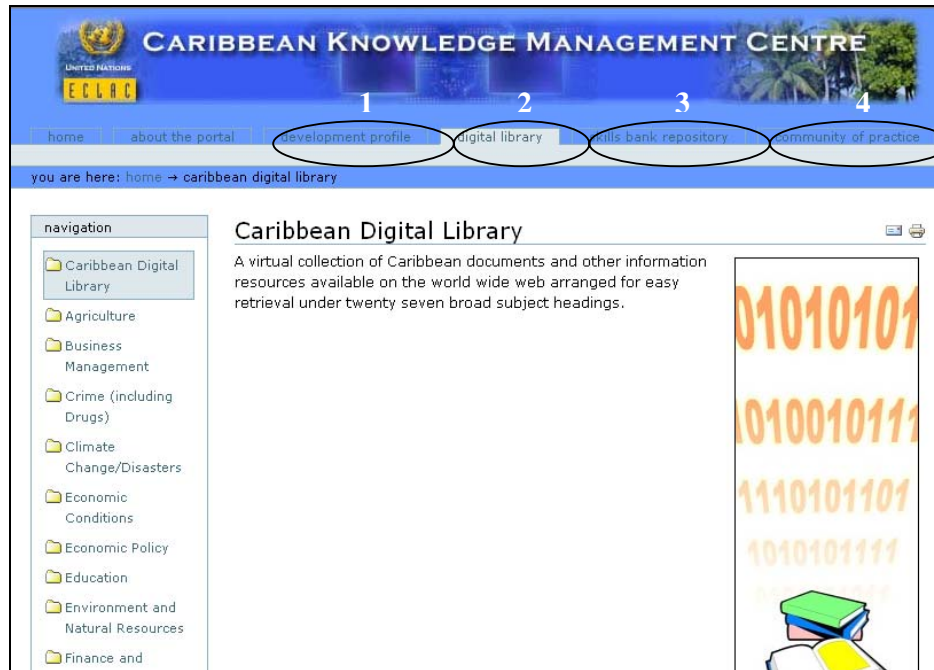


Graph 25: Rule of Law



## Annex V

### CKMC (Caribbean Knowledge Management Centre) Portal



**1 Caribbean Development Profiles** A virtual instrument which assists in the assessment of the progress towards the MDGs in CDCC member states, through the packaging and presentation of development data, indicators, analyses and reports.

**2 Caribbean Digital Library** A web-based resource of Caribbean content on priority areas, including websites, reports, and other publications.

**3 Caribbean Skills Bank** A web-based virtual environment, which brings together the regional expertise and skill, sets to bear on the development challenges and priorities facing CDCC member states.

**4 Communities of Practice** A platform which connects experts and other regional stakeholders, allowing them to collaborate, exchange information and experiences, and facilitate the sharing of best practices on development issues.

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