Knowledge-Base Benchmarking for Belize Education, Science & Technology (BEST) Park

IC² Institute · The University of Texas at Austin · November 2004

About our Cover: The *diamond graphic* is a representation of the Maya Universe and the four corners of the earth. The color white symbolizes north, which is the source of rain. Red represents east, for the sunrise. The south is symbolized by yellow, the color of corn -- the staple of life – for the southerly winds bring growing season. Black symbolizes west, for the night comes with the setting of the sun. The center is bluegreen, the color of heaven, water, and growth. This is the place where mankind thrives. The *oblong graphic* is taken from the design of a woven Maya bracelet, which uses most of these symbolic colors.

The *photograph,* "Girl with flowers: Mérida, Mexico" was taken by a member of the IC² research team in April 2004. The child in the photograph (either Maya or Mestizo) wears the Maya colors, which are also reflected in the flowers that she holds, and even the colors of her surroundings. The Maya culture was "high tech" in 500 A.D., with world-leading skills in mathematics and astronomy. Astrological star charts created 1,500 years ago to project eclipses and planetary orbits continue to be astoundingly accurate. Today, the Maya people live largely apart from the high technology world, and in some areas their infant mortality rate[1] is estimated at 500 per 1,000 live births (1:2).

[1] Guy Garcia Palenque, with reporting by Laura Lopez/San Cristobal de las Casas. www.indians.org/welker/maya.htm

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IC² Institute
The University of Texas at Austin

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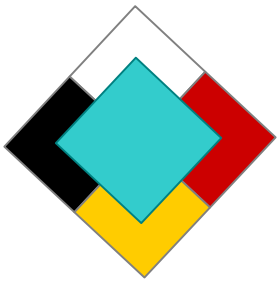

IC² Institute
The University of Texas at Austin

Innovation, Creativity, Capital [www.ic2.org]

Photograph ã 2004 by Margaret Cotrofeld, IC² Institute Research Team

IC² Institute is recognized globally as a "think and do" research center at The University of Texas at Austin. IC²'s mission is to engage in cutting edge research that will enhance the solving of unstructured problems related to market economies, growth, and prosperity. This mission is carried forward with experiments in the Institute's research laboratories and within the context of the "real world," to facilitate technology transfer that impacts economies at home and abroad.

A key resource of the Institute is The IC² Fellows Global Knowledge Network that includes 217 academics, scientists, managers and public sector leaders from a broad range of institutional backgrounds and professional disciplines. The Fellows bring their expertise to Institute education and training programs, research activities, conferences and workshops, and consulting projects.

A major focus of the Institute's research and implementation activities is to partner with local business, academic and government leaders, at home and abroad, to accelerate wealth creation, sustainable development, and prosperity sharing through technology-based growth. In addition to the IC² Institute Fellows program, other IC² initiatives with national and global reach include:

- Austin Technology Incubator [http://IC2-ati.org]
- Digital Media Collaboratory (DMC) [http://dmc.ic2.org/]
- Kozmetsky Global Collaboratory
- Masters of Science in Science and Technology Commercialization Degree Program [http://msstc.IC2.org]
- Visiting Scholars Program

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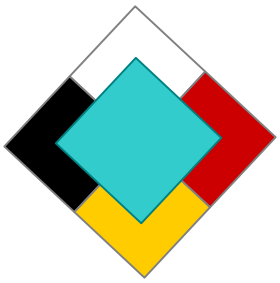
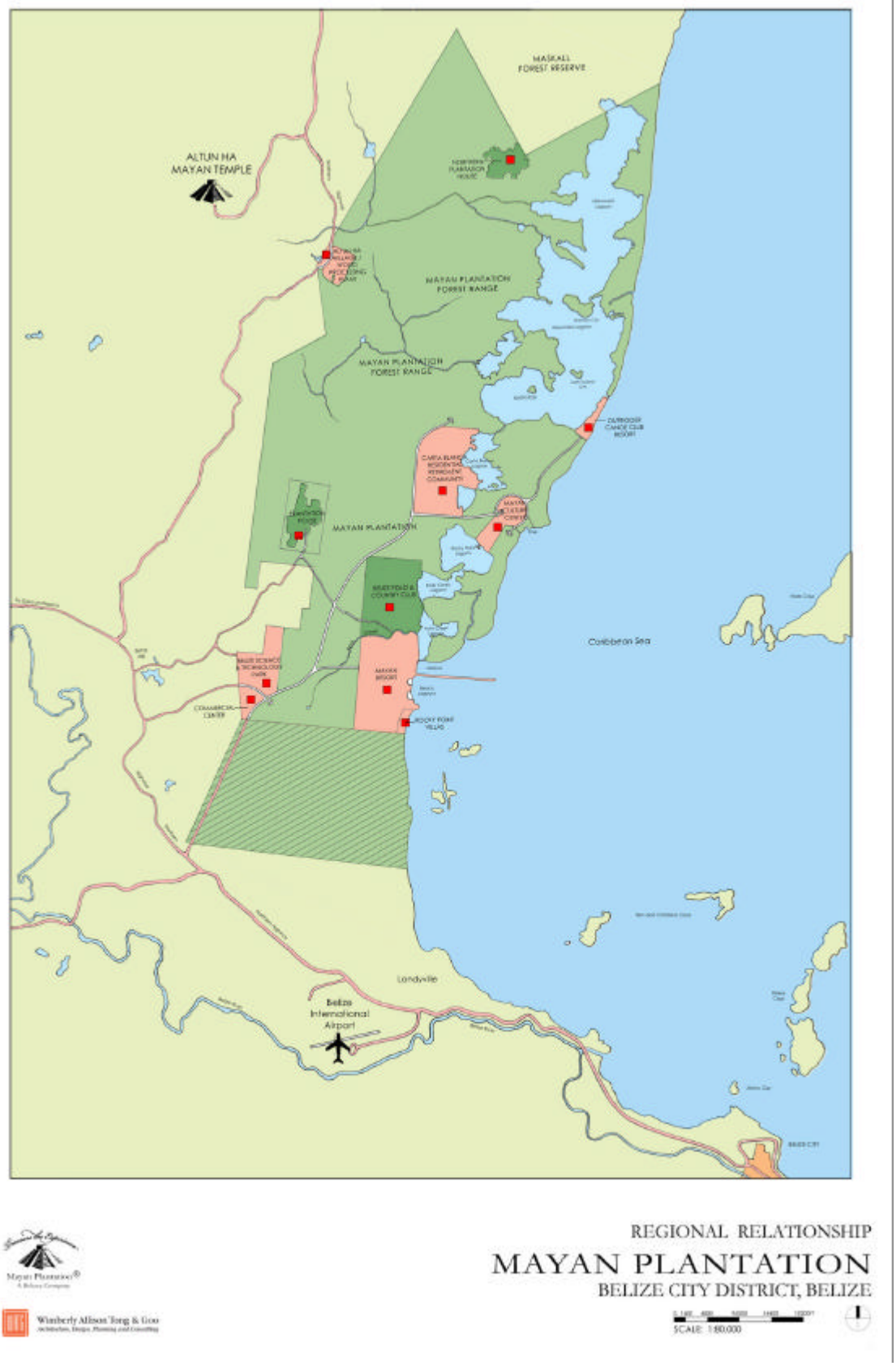


This report was designed and formatted by Margaret Cotrofeld.

Figure 1. Land Use Plan of BELIZEA's "Mayan Plantation" in Belize



Source: BELIZEA Corporation

I. INTRODUCTION

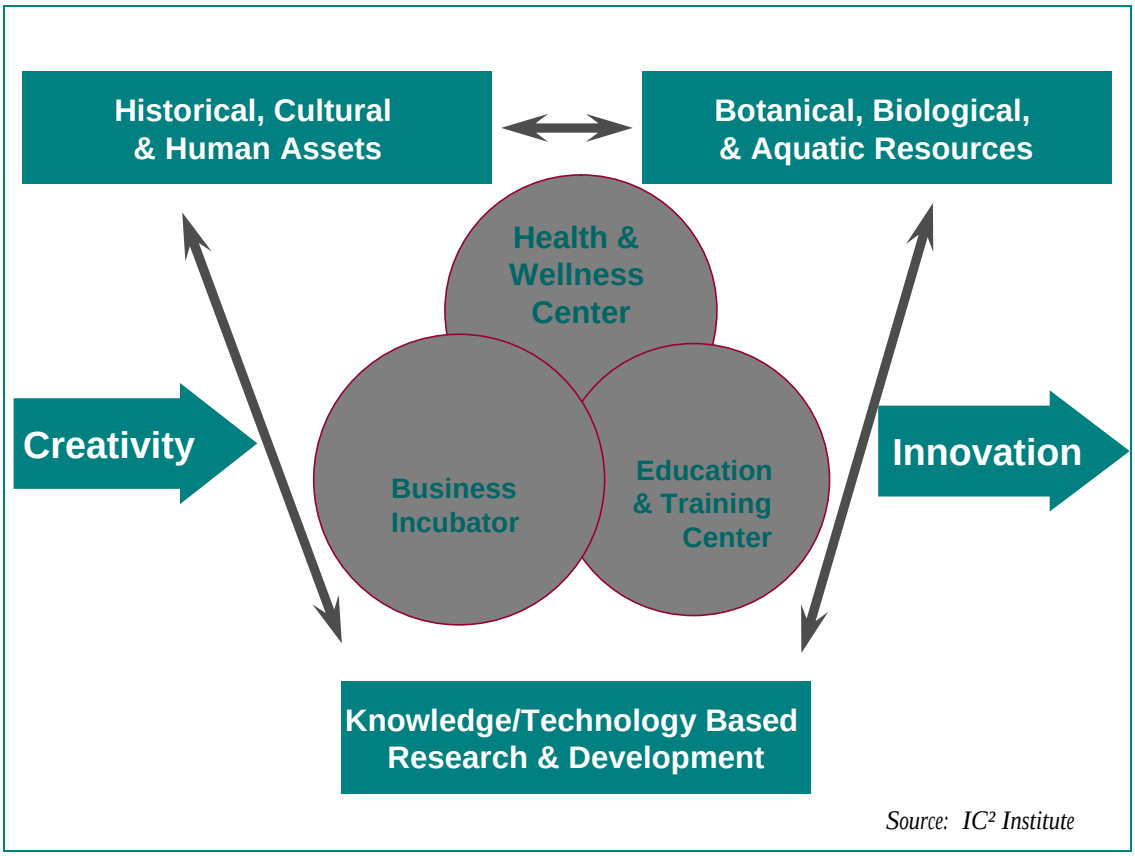
BELIZE EDUCATION, SCIENCE & TECHNOLOGY (BEST) PARK

Located about fifteen minutes north of Belize City, BELIZEA is a 400-year-old Plantation with tropical hardwood forests, fruit, and ranch operations, and fourteen unexcavated Mayan ruins. It encompasses fifty square miles of land, including fifteen miles of lagoons, Figure 1 (http://www.belizea.com/). This report examines the assets and challenges for accelerated technology based development in the Mesoamerican (Caribbean/Central American) region to determine the feasibility of creating a sustainable education, science, and technology (BEST) park in BELIZEA.

In the near term, BEST Park development will focus on a Health and Wellness Center, Technology Incubator, and Education & Training Center to facilitate research and education as well as the commercializing of new knowledge, Figure 2. *The Mayan Health & Wellness Center* will use indigenous and global knowledge to promote wellness and health for international clientele. The plan includes a world class spa, conference center, and cosmetic arts & surgery center. The *BEST Education & Training Center* will offer educational and research opportunities for degree and non-degree programs related to health and wellness as well as programs most suited to Belize's socio-economic conditions. The *BEST Business Incubator* will provide business strategy, guidance, and infrastructure to early stage businesses to help them succeed in the global market. The initial partner for development of the BEST Park is IC² Institute at The University of Texas. A major focus of the Institute's research and implementation activities is to accelerate wealth creation, sustainable development, and prosperity sharing through technology-based growth, at home and abroad.

IC² Institute, Austin Texas. Photograph ã 2004, by Coral Franke, IC² Institute staff

Figure 2. BEST Park: Sustainable Development for the 21st Century



While BEST Park is not a tourism venture, it will be closely linked to the tourism facilities to be established on the BELIZEA plantation. The vision is of a creative and innovative science park based in a world-class vacation resort. With this in mind, BELIZEA is developing a scaled three phase plan that includes hotels, golf courses, eco-tourism facilities and a living museum to illustrate the history, arts, culture, and crafts of Mesoamerica. The objective of BEST is to develop this unique resource as "living laboratory" for the biosciences, anthropology, archaeology, and other research and education initiatives. Environmental and human development of Belize is a primary consideration at every phase of development of BEST and BELIZEA.

Austin Connections

IC² Institute, as a research organization at The University of Texas at Austin, has a history to operate as a bridge between business, academic, and government sectors. IC² seems to be uniquely situated to offer assistance to promote sustainable economic development at a regional level, and to catalyze nation-to-nation and project-to-project connections.

In the course of conducting this and other research in the Mesoamerican and Caribbean region, IC² Institute noted a high incidence of coinciding research and relationships based out of Austin, Texas. Various departments of The University of Texas at Austin (in addition to IC² Institute) have performed research in the nations studied by this quicklook (including

***One Austin Connection**: Local artist Philippe Kleinfelter has made several extended visits to Belize, and expresses high interest in the "future" development of Maya artistry. Intrigued by Maya designs and the symbolism inherent to them, he bases his artistic designs on modern applications and extrapolations of ancient Maya work. Philippe is interested in working with Maya artisans in Belize, to explore new avenues of creativity to help the average craftsman create higher quality artwork. The present model for Maya craftsmen is to reproduce a handful of ancient designs in mass quantities, rather than produce unique pieces that explore new (and ancient) expressions of Maya thought. Such work could provide the artists with a higher income, while serving the enlarging tourism market with higher quality artwork. Photograph ã 2004, by Margaret Cotrofeld, IC² Institute Research Team.*

the nations of the statistical comparison in Section VI); and many ongoing research projects and agreements are currently in place. In addition to these connections to UT Austin, other Austin interests in the Caribbean region seemed to be at first coincidental; and then remarkable; in the high occurrence of similar interests and potential partnerships. Reviewing the region through this quicklook has confirmed that a large synergistic momentum seems possible through coordination of similar interests toward similar goals.

A Model of Sustainable Human and Economic Development

The challenges that Belize faces in establishing this model of sustainable human and economic development are common among many developing nations and regions in the Caribbean:

- Widespread poverty with limited education and career opportunities
- Inadequate infrastructure to support technology growth
- The need to preserve diminishing and irreplaceable natural resources
- The need to diversify from tourist-based economies

BELIZEA and BEST are intended to serve as models for other developing regions worldwide in using indigenous knowledge and know-how to facilitate accelerated human and economic development – while at the same time protecting and enhancing the region's natural environment of fragile botanical and biological resources. The goal is to foster the development of self-sustaining educational and research organizations that promote development that complements the existing fragile ecological systems: To build a new model for balanced human-economic development.

Research and Development will be encouraged on BELIZEA's fifty square miles of "living laboratory" plantation and at the Health and Wellness Center. The Education and Training center will work with student teams in residence in Belize as well as digitally linked to global

partners, to assess these technologies to market new products. The most promising businesses would be incubated in Business Incubator.

This concept of research-to-product onsite at a facility with rainforest, cave, lagoon, and coral reef resources, with a diverse indigenous and developing culture is a new vision for the 21st Century global economy. This concept will also promote indigenous ownership of the products and processes for wealth creation produced from the region's unique natural resources. For example, using knowledge and technologies generated in the local environment, farming medicinal plants in their native climate can eliminate over-harvesting, and help secure the preservation of valuable species which are becoming endangered worldwide. The creation of indigenous industries is intended to diminish the economic disparity indicative of a tourism-based economy.

THE QUICKLOOK STUDY & WORKSHOP

Methodology

In April 2004, research teams from IC² Institute, The University of Texas at Austin, traveled to Central America to assess key aspects and challenges for knowledge-based economic development in:

- Belize City, Belize
- San Jose, Costa Rica
- Kingston, Jamaica
- Cancún and Mérida, Mexico (The Yucatán Peninsula)
- Panama City, Panama
- Port of Spain, Trinidad

These locations were chosen because of a geographical proximity to Belize, paired with a regional vision and activities for knowledge-based growth. The teams were composed of two to four members from IC² staff, visiting scholars, and students and alumni of its Master of Science in Science and Technology Commercialization (MSSTC) degree program. They collected archival data and conducted interviews in business, government, and academic sectors. Secondary research was conducted prior to the interviews to assess demographics, education quality and availability, existing industry clusters, civic and local infrastructure presence, natural resources, and historical cultural heritage. Teams conducted primary research with interviews, photography, and personal observations. In addition to this knowledge based benchmarking, research teams collected data on the tourism industry and related fields of historical heritage, natural resources, and indigenous peoples; particularly in the emerging industry subset of eco-tourism.

The Workshop

Following primary data collection in the targeted regions, the research teams met at San Pedro, Belize on April 20, 2004, to conduct a workshop to compare findings and formulate recommendations on the feasibility of the Belize Education Science & Technology (BEST) Park with a focus on:

- Challenges common to the Caribbean and Mesoamerican region
- Regional models of success against specific challenges
- Possible partnerships to promote mutual benefit
- Recommendations towards success of the BEST Park
- Recommendations toward the positive development of Belize


REGIONAL
ASSESSMENT
- BELIZE

The workshop took place in the Barefoot Conference Room at Journey's End Resort in San Pedro, Ambergris Caye, Belize; and provided a venue to share information between teams, BEST founders, and key government leaders of Belize. *Photographs ã 2004, by IC² Institute Research Team.*

The Report

The information collected during the Quicklook Study & Workshop was used to produce "Knowledge-Base Benchmarking for Belize Education, Science & Technology (BEST) Park." The material is organized as follows:

Facing Page

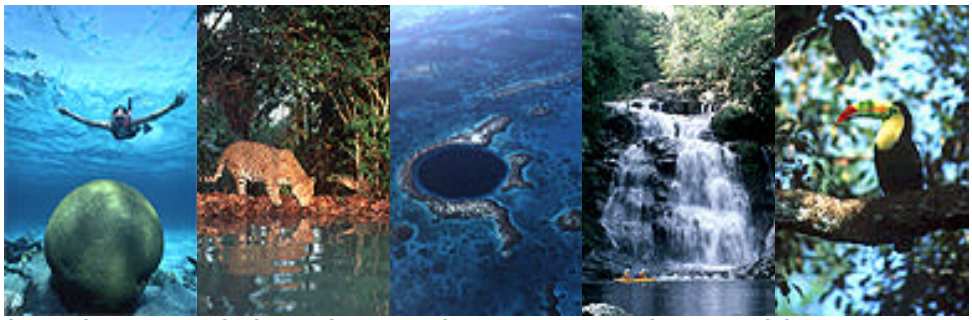
Upper: Gerhart Walch *(CEO of BEST Park and BELIZEA Corporation)*, Christeen Walch *(MSSTC Candidate '05)*, Nancy Atmospera-Walch *(President of Health Care Education Association, and Director of BEST Park "Mayan Health & Wellness Center.")* *Photograph ã 2004, by Keith Crawford, IC² Institute Research Team.*

Lower: *The IC² Institute Research Team in Belize City, Friday April 16. Top Row, Left to Right:* Derek Eckert, Keith Crawford, David Gibson, Christeen Walch, Dale Morris, Doug Voorhis. *Bottom Row*: Vanessa Morgan, Jeremy Stroup, Careem, Elin Oftedal, Mark Gipson, Hans Rijckenberg, John Green. *Photograph ã 2004, by Margaret. Cotrofeld, IC² Institute Research Team.*

Figure 3. Belize is located south of Mexico's Yucatán Peninsula: Atlantic Coast

II. WHY BELIZE: Advantages for Belize Location

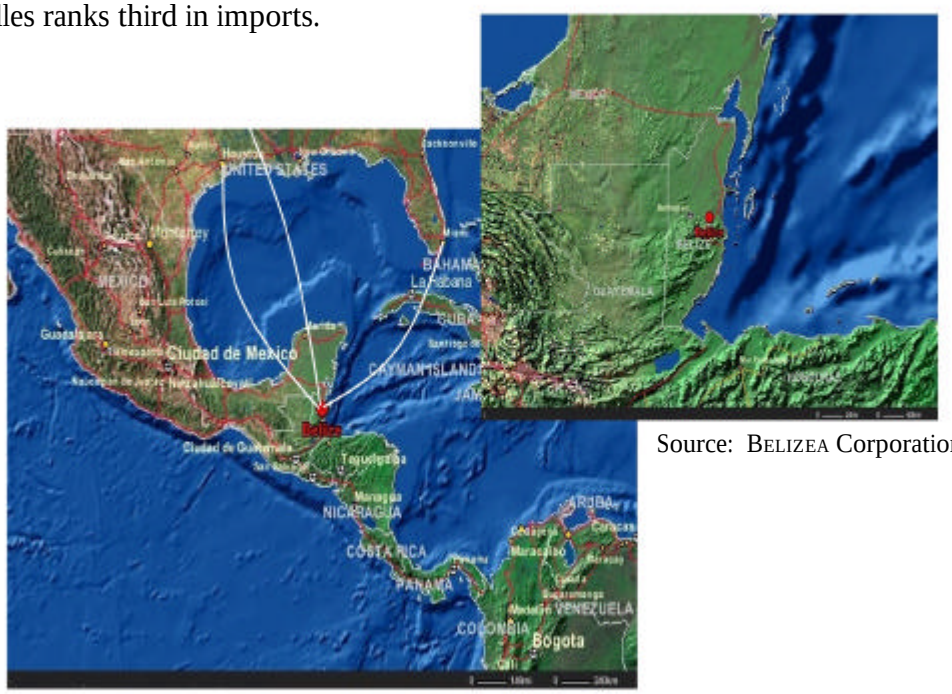
Belize has remarkable natural assets. Its extreme environments, rich culture, and proximity to both North and South America, make it an attractive and accessible location not only for tourism, but for scientific research, education and training, conferences, and business development.



Photographs © Tony Rath Photography, source Belize Tourism Press Kit http://www.belizetourism.org/images.html

Overview

Belize's assets are especially marketable because of its close proximity to the U.S. – a two hour flight from Houston. English is the national language. The Belizean dollar has a fixed exchange rate of 2:1 to U.S. dollars. For any purchase, you may pay with U.S. dollars, and receive Belizean dollars as change. The U.S. is its number one trade partner in both imports and exports. The U.K. ranks second in export trade with Belize; and the Netherlands Antilles ranks third in imports.



Source: BELIZEA Corporation

A Pair of Red-lored Parrots, Photograph ã 2004, by Keith Crawford, IC² Institute Research Team

Belize shares common cultural and historical roots with the U.S. and other Caribbean nations. Violence and crime are low. Belize's two-party government was founded in 1981 when it gained political independence from the United Kingdom. As a small nation emerging in the global community, Belize has the advantage of relatively small bureaucracy and complexities in its political, economic, and legal systems and structures.

Extreme Environments

Belize's coast presents 185 miles of barrier reef – the longest in the Western Hemisphere, including areas declared World Heritage sites. These coral reefs are currently the most unspoiled in the world, and are home to about 70 different types of coral and over 400 species of fish. Belize has three major offshore atolls, and clusters of coastal islands called cayes (pronounced "keys"). Sea turtles, manatees, dolphins, and other sea creatures abound. The coast itself offers mile after mile of beach and lagoons.

The mainland offers mountains, caves, and rain forests teeming with an abundance of unique plant life including over 1,000 species of plants used for food, construction, fiber, oil,

resin, and medicine.[1] Animal life is colorful and diverse; the broad range of mammals and reptiles includes the giant tapir, leopards, crocodiles, and anacondas.

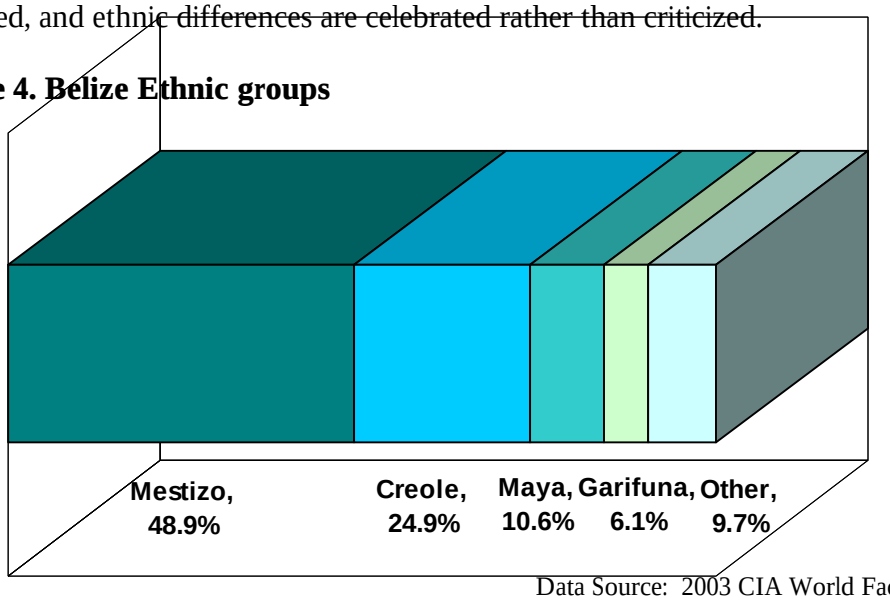
Acknowledging gaps in scientific documentation, Belize is known to environ: "571 species of birds; 162 species of mammals, 121 species of reptiles, 43 species of fresh water fish 117 species of total inland fish, 157 mollusks, 1 crustacean, 43 species of amphibians, 288 species of Lepidoptera [butterflies or moths], 176 species of Odonata [dragonflies or damselflies], and 2 other terrestrial invertebrate. There are also two amphibians and one reptile species documented as endemic [found only in Belize]… Belize is estimated to have roughly 4,000 species of native flowering plants (Angiosperms) of which 2,500 are dicots (Dweyer and Spellman 1981) and 1,500 are monocots (Spellman et al. 1975). The latter include 317 species of bromeliads/orchids (B. Adams, pers. Comm.). Approximately 740 species of native trees are reported for Belize, representing 331 genera in 87 plant families… There is very little data available on plant species which are endemic to Belize."[2]

Diverse Cultures and an Inclusive Society

The largest ethnic group in Belize is the Mestizo population (48.9%) with mixed Maya and European heritage The Mestizo consistently express pride in their Maya heritage, at both the collective and individual level. While only 10.6% of the population is indigenous Maya, if these two groups are considered together (59.5%), the majority of the population is of Maya descent, Figure 4.

Almost 25% of the population is Creole (African and European mix), and 6.1% is Garifuna (African and Amerindian Caribs mix). Nearly 10% of the population is listed as "other." This diversity of cultural and racial backgrounds gives a broad base for a creative and eclectic culture. It is also indicative of an inclusive society in which interracial marriage is readily accepted, and ethnic differences are celebrated rather than criticized.

Figure 4. Belize Ethnic groups



Data Source: 2003 CIA World Factbook

[1] Arvigo. Rosita, and Michael Balick, *Rainforest Remedies,* p. xvii.

[2] *Belize's Interim First National Report, Submitted to The Convention on Biological Diversity.* The Government of Belize, with the assistance of The National Biodiversity Committee, under the coordination of the Ministry of Natural Resources. January, 1998. p. 24, 25.

Local children on Ambergris Caye assist IC² research team members Keith Crawford & John Green.
Photograph ã 2004, by Derek Eckert, IC² Institute Research Team.

Broad Research Potential

Belize's natural, cultural, and human assets offer a region attractive to a range of academic sciences including anthropology, archaeology, and biology. Research possibilities for the pharmaceutical industry are considerable; for while Belize contains the Central American rainforest's array of plant life, its distinct cultural and ethnic groups also provide a wide spectrum of traditional medicines and medical folklore: Maya peoples of Mopan, Kekchi, and Yucateca descent; East Indians; Garinagu, Creole, Spanish people from the surrounding Central American countries, Mennonites, English and Spanish expatriates, Jamaicans, Cubans, and more.[1]

Table 1. Overview: BEST Park's Research & Development Potential

Sustainable Environment	Business and Technology
Traditional Medicine / Natural Healthcare	Pharmaceuticals / Health & Beauty Products
History / Archeology	Hotel & Resort Management
Astronomy / Mathematics	Business / Entrepreneurship
Anthropology / Sociology	Manufacturing
Botany / Forestry	Agribusiness
Biology / Zoology / Entomology	Food Technology
Aquaculture / Oceanography	New Materials / Textiles
Environmental Ecology	Green building

[1] Rosita Arvigo, D.N. and Michael Balick, Ph.D., "Rainforest Remedies" p. 2.

Enlarging Tourism Industry

Visitor arrivals continued to break records in 2004. According to statistics from the Belize Tourist Board, both overnight and cruise arrivals surged during the first two months of 2004. Arrivals at the Philip Goldson International Airport, the country's main port of entry, increased 9% in January and 17% in February compared to the same period in 2003. Fourteen out of the last fifteen months have seen record tourist arrivals. Cruise ship arrivals increased 67% in January and 82% in February.

Belize First Magazine
July 8, 2004
http://www.belizefirst.com/current.html

Belize's tourism industry is growing steadily. Table 2 shows Belize's total tourist arrivals by purpose of visit from 1998 to 2002. This rise in tourism is recognized by the Belize government as a significant component of their nation's future. The "Strategic Vision for Belize Tourism in the New Millennium" (page 34) states clearly the nation's targeted tourism markets as: *responsible tourism, aimed at marine activities, natural history, and adventure markets.*

Boats: San Pedro, Belize. *Photograph ã 2004, by Keith Crawford, IC² Institute Research Team.*

Table 2. Total Tourist Arrivals by Purpose of Visit

CATEGORY	1998	1999	2000	2001	2002	2003
Tourist Visitor	166,743	172,292	186,883	185,705	186,097	207,930
Business Visitor	8,285	7,412	7,604	8,768	11,766	10,063
Official Visitor	1,026	1,091	1,279	1,482	1,658	2,581
TOTALS	**176,054**	**180,795**	**195,766**	**195,955**	**195,521**	**220,574**

Data Source: Belize Tourism Board
www.belizetourism.org/arrival.html

Belize is the prime diving and snorkeling location in the western hemisphere, if not the world. Add to that the beautiful beaches, and the mystery of the rainforests and the Mayan mystique, and tourists' attractions increase. Tour possibilities range from eco-tours with tent lodging to elaborate beach resorts and jungle spas. The cities of Belize have a Caribbean flavor.

Maya Interest Increasing

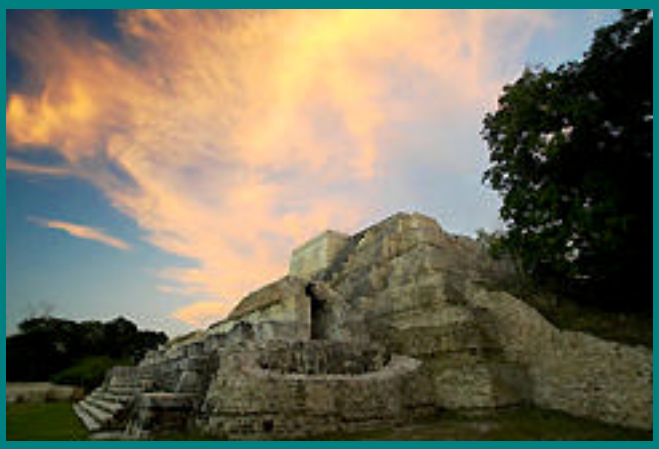
In the heart of the Maya territories, indigenous Mayas continue to live in keeping with their traditions. Remote villages are filled with artisans: weavers, painters, and carvers. The Belize Tourism Board has published statistics that show the number of visitors to Maya archaeological sites in Belize more than tripled since 1998, and more than doubled in the two year time span from 2001 to 2003.

Table 3. Visitors to Maya Sites in Belize

MAYAN SITES	1998	1999	2000	2001	2002	2003
Altun Ha	17,626	19,826	23,279	26,599	58,175	96,861
Cahal Pech	10,944	7,259	8,004	6,002	13,089	15,492
Lamanai	19,720	17,740	21,499	18,274	19,524	25,085
Xunantunich	23,818	27,614	28,911	31,697	40,311	44,874
Caracol	3,972	4,579	4,705	4,769	6,151	8,652
Santa Rita	1,705	1,712	1,206	934	closed	closed
Nim Li Punit	1,552	1,917	2,451	2,755	2,231	3,469
Lubaantun	2,271	2,491	2,447	2,952	2,014	3,570
Cerros	468	362	274	672	502	494
El Pilar	453	1,593	3,014	5,101	1,309	1,005
Caves Branch	N/A	N/A	N/A	N/A	19,278	65,993
Barton Creek	N/A	N/A	N/A	N/A	N/A	1,760
Tunichil	N/A	N/A	N/A	N/A	N/A	1,941
TOTALS	**82,529**	**85,093**	**95,790**	**99,755**	**162,584**	**269,196**

Data Source: Belize Tourism Board
www.belizetourism.org/purpose.html

BELIZEA plans to place a Maya Tourist Center on the Old Northern Highway (Figure 2, p. 8) where it crosses the property about 7 miles from Altun Ha – the most visited Maya site in Belize. The rising interest in Maya culture also increases the potential of the 14 unexcavated Maya archaeological sites on the BELIZEA plantation property (from both the researchers' and the tourists' point of view).



Sunset at Altun Ha, photograph ã Belize: A Virtual Tour. http://www.belizeexplorer.com/cgi-local/explorer.cgi?db=explorer&uid=default&Category=Mayan+Sites&view_records=1&nh=11&mh=1

Altun Ha, while not the largest archaeological site in Belize, is the most excavated site, and the most visited.

The largest Maya jade artifact discovered to date was found in Altun Ha's main temple: a large jade head representing the sun god Kinich Ahau.

This artifact has become the national symbol of Belize and its image is placed on the corner of every Belizean banknote.

The jade head of *Kinich Ahau* from Tomb B-4/7, Mac Phase, ca A.D. 600; side view. Height 14.9 cm. *Drawing ã by David Findlay.* http://www.belizecubadigs.com/altun-ha.html

Reef 3, photograph ã 2004, by Jeremy Stroup, IC² Institute Research Team.

III. BELIZE: Challenges of a Developing Country[1]

The challenges for economic development in Belize are classic for most developing nations worldwide. Extreme poverty is at the heart of the overriding need for education, water and sanitation infrastructure development, and preservation of the natural environment and human dignity.

Poverty Statistics

Findings of the Poverty Assessment Report show that in 1995 (based on the absolute poverty line) 33% of the population of Belize was poor. The incidence of poverty was higher in the rural areas (42.5%) than in the urban areas (20.6%), and higher among female heads of households (30.5%) than among the male heads (23.6%); among the general female population, 33.1% were considered poor, compared to 32.8% of the male population.

Education

Belize's Primary Education Development Project (PEDP) was started in 1992, funded by the Government of Belize jointly with the World Bank and the British Government Overseas Development Administration. The project has three major objectives:

- Improve the management, operation and efficiency of the education system
- Increase the planning capacity of the Ministry of Education
- Improve management and financing of primary schools and other levels of education

According to the National Human Development Report for Belize (1997) education in Belize continues to face major problems relating to quality, access, efficiency, the state of facilities, and financing at both the primary and secondary levels. The quality of educational output, as measured by both student and teacher exams, has declined over recent years. To a large extent, this is the result of deficiencies in teacher preparation, curriculum, and learning materials. Low quality at the primary level translates into poor achievement at the secondary level, as evidenced by low CXC pass rates in core subjects. While the Primary Education Project has had a positive impact on teacher preparation and curriculum, achievement remains low and repetition remains high.

Water and Sanitation Infrastructure

The source of water for Belize is mostly running streams, creeks or rivers, and not safe for drinking. Water and sewage treatment are minimal, even in large cities. Belize's increasing tourism industry – with its large influx of non-resident population – overburdens the present water and sanitation infrastructures. And while a tourist may experience this system stress as a temporary inconvenience, the local population experiences it as a continual decrease in

[1] Elin Oftedal provided the basic research for this chapter from the National Human Development Report for Belize (1997). Elin was a visiting researcher at IC² Institute from September 2003 to May 2004, and took part in the Quicklook Study and Workshop. She is a native of Norway, which ranked *first* in the United Nations' Human Development Index in the years 2001, 2002, and 2003. Ms. Oftedal is currently employed as a University Lecturer with the College of Stord & Haugesund, Norway.

their standard of living. Annual outbreaks of cholera (and other diseases caused by inadequate water and sewage treatment) are a genuine concern.[1]

Environment

Belize must deal with many complex environmental challenges to secure sustainable economic growth[2]. Because of Belize's relatively small and highly interconnected geographic area, these ecological challenges become more critical, rather than less, and include:

- Deforestation
- Degradation of fish resources, both sea and fresh water, from over fishing
- Dumping of chemicals and other waste
- Ocean current variations due to global warming, which cause detrimental changes in the ecology of the barrier reef
- Continuous degradation of land under cultivation
- Contamination and degradation of water resources

Specific challenges include:

- High population growth placing increasing pressure on natural resources
- Outdated systems of property rights and land tenure
- Bimodal agricultural production system
- Industrial development versus the depletion of natural resources
- Unplanned rural - urban migration

While depletion of natural resources is often seen as an unavoidable product of modern economic development, *poverty* is often the *result* of such environmental degradation. Soil erosion, deforestation, and water pollution all have adverse consequences on the production capacity of individuals and societies, resulting in varying degrees of poverty. For society as a whole, poverty is equivalent to a reduction in the stock of natural resources and to an increase in the cost of alleviating the adverse effects.

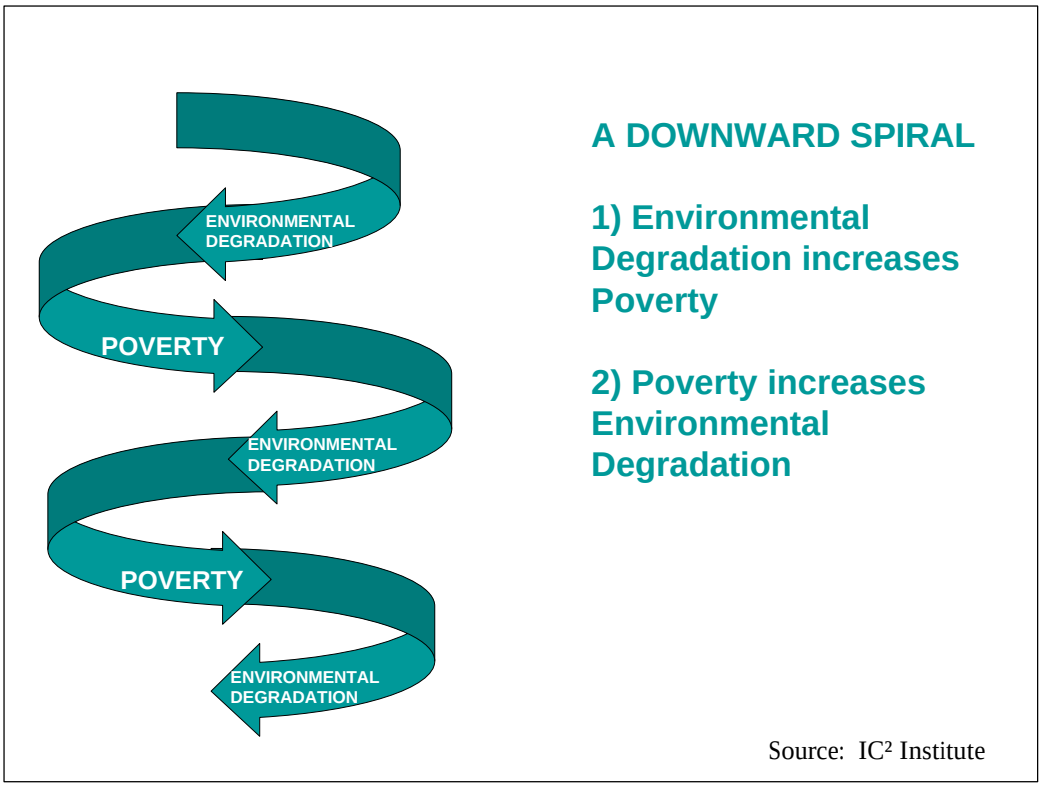
In turn, poverty is often a *cause* of environmental degradation. Extreme poverty often means limited knowledge and lack of resources to make the investment required to protect the environment. This is especially true in developing countries if policies are not instituted to protect natural resources, and the result is often a vicious cycle in which poverty and environmental degradation can have a devastating affect on the local quality of life, Figure 5.

This two-way causality between increased poverty and increased environmental degradation is very important. Environmental degradation contributes to poverty by adversely affecting health and by reducing the supply of those resources upon which the poor depend. At the same time, poverty limits the poor to act in ways that damage the environment.

[1] Belize Development Trust, Report #310 June 2000; Report #587 January 2003. http://www.ambergriscaye.com/BzLibrary/trust.html

[2] International concern continues to increase over the adverse environmental effects of economic growth. Environmental damages range from global warming and destruction of the ozone layer to denudation of important watersheds, desertification, extinction of certain species, and the destruction of tropical forests.

Figure 5. Interconnectedness of Poverty & Environmental Degradation



A cycle of poverty and deforestation exists especially among the small farmers of Mayan and Central American origin in rural areas of the Cayo and Southern districts. It is estimated that more than 70% of the land cultivated by small or subsistence farmers is ecologically fragile. Most of these farmers practice *slash-and-burn* or *milpa* cultivation: a rotating cultivation technique in which trees are cut down and burned in order to clear land for temporary agriculture; the land is used until its productivity declines at which point a new plot is selected and the process repeats; this practice is sustainable while population levels are low and time is permitted for regrowth of natural vegetation; conversely, where these conditions do not exist, the practice can have disastrous consequences for the environment.[1]

While the farmers practice this method in order to turn the nutrients from the plants into ash for fertilizer, it has several immediate negative impacts:

- destruction of the forest canopy
- large amounts of carbon-laden smoke are released into the atmosphere
- the land is exposed to water and wind erosion

Methods should be facilitated to the local population that are less destructive to the fragile ecology of their region, and are sustainable to support a larger population. While traditional practices in agriculture and manufacturing previously had little or no impact on the environment, the implementation of modern technology to some of these methods has devastating side effects. The exploitation on a large scale of natural resources by forestry,

[1] CIA World Factbook, definitions: slashandburn cultivation.

fishery and mining has brought modern tools (like chainsaws and toxins) within the reach of commercial, non-sustaining activities.

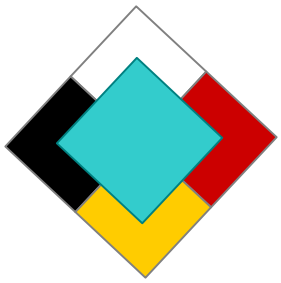
If human development is about enlarging people's choices, the existence of poverty implies that choices and opportunities basic to human development are being denied: namely, to lead a healthy and creative life and to enjoy a decent standard of living with freedom, dignity, self-respect and the respect of others. A solution for the hazardous impact of large-scale poverty on the environment lies in sustainable development. At the micro-scale of local communities and families, individuals need to be enabled to live in harmony with nature and in respect with their own culture.

Development of Service Exports in Belize

The National Human Development Report for Belize (1998) proposes that the nation concentrate on developing a service export industry cluster which excludes tourism, but includes professional and technical services, information processing services, financial brokerage and management services, and health services. They list the benefits of service export development as:

- Creation of employment for a range of skill levels
- Retention of qualified professionals and graduates
- Reduced vulnerability of the economy to external shocks
- Increase in foreign exchange and tax revenue
- Economic growth

The success of BEST Park would promote the growth of service exports toward these goals.



IV. MODELS FOR SUCCESS

Targeted for Local Economic Development
The balanced approach to developing BEST Park and the BELIZEA plantation is focused toward a sustainable development of the local economy. Economic diversification is promoted by the BEST Park facilities to provide balance to BELIZEA Plantation's tourism and agricultural ventures. BELIZEA's tourism facilities will help to promote an international reputation, while its living laboratory for academic research provides new technologies to BEST Park for technology commercialization.

HEALTH & WELLNESS CENTER: The Vision
The Mayan Health & Wellness Center will encompass a Spa, Conference Center, and Cosmetic Arts & Surgery center. A center Atrium will feature native medicinal plants and flowers of Belize, and a natural water well. A decompression chamber (for treating divers with decompression sickness) is planned to be housed here. This is a regional need, given the Great Barrier Reef which runs the length of the Belize coast, and the high number of diving that takes place there.

The ground floor Spa will merge traditional nurturing and healing philosophies from around the world, with special emphasis on the Maya culture. Time-honored techniques and therapies will be offered including facials, massages, wraps, and scrubs. A salon will offer hair and nail care, waxing and make-up services. A state-of-the-art fitness center will feature aromatic steam baths, dry sauna, whirlpools, traditional showers, large lanai with pool, and a juice bar.

On the second floor, a Conference Center would offer space for large events, with break-out-rooms. On the top floor, a Cosmetic Arts and Plastic Surgery Center will feature all necessary facilities and equipment to facilitate the highest quality medical care to its patients.

A ROLE MODEL for MAYAN HEALTH & WELLNESS CENTER: Dr. Rosita Arvigo

It took Rosita Arvigo, Chicago-born naprapath-herbalist-activist, to create the model of how to use the rainforest to save the rainforest. In June of 1997, Dr. Arvigo and exclusive importer Rose Botanicals of Lake Zurich, Illinois, introduced Rainforest Remedies in the United States. Initially, nine select herbal products are being made available through alternative practitioners and at health food stores across the country. The product line comes from Dr. Arvigo's ten-year study of traditional healing with one of the world's oldest Mayan healers, Don Elijio Panti. "Fifty percent of all sales will go to help save the rainforest in Belize," Dr. Arvigo tells us.

"Unlike other herbal products on the market, Rainforest Remedies are unique because they are developed by people who live in the rainforest; people who were trained by authentic Mayan healers," notes Santosh Krinsky, president of Lotus Brands. Indeed, many mainstream medicines are derived from plants indigenous to rainforests of Central America, including cortisone and birth control pills, not to mention alkaloids exhibiting cytotoxicity against some forms of cancer, leukemia, the flu, Hodgkin's disease, polio virus II, etc.

Dr. Arvigo… is searching the plant world for leads that can influence the pharmaceutical industry in the fight against diseases. In this search, she is working with Dr. Michael Balick, ethnobotanist at the New York Botanical Gardens, and with the National Cancer Institute to find remedies for cancer and AIDS. Shaman Pharmaceuticals (SHMN - NASDAQ) has contracted with her to collect rainforest herbs for anti-diabetes, anti-fungal and anti-retro-viral research.

As if influencing the financial and pharmaceutical industries weren't enough, Dr. Arvigo is intent on proving that farming these healing herbs organically is more lucrative than leveling the forest to make room for crops and livestock. To make the point, she contacted a local farmer who was about to clear 50 acres of rainforest. Arvigo convinced him to cultivate four medicinal plants instead. Today, the farmer's land abounds with the four healing plants which are drought-resistant annuals requiring no pesticides. Rainforest Remedies funded the farmer, supplied the plants and arranged for Austin, Texas-based ARUM — manufacturer of professional hair care products — to buy the farmer's yearly output for $10,400 (the average annual income in Belize is $600).

Dr. Arvigo's persuasive powers also were successful in having the Belizean government set aside 6,000 acres of rainforest as the first and only bio-medicinal rainforest reserve. Initially funded by Shaman Pharmaceuticals, the reserve was named Terra Nova by Dr. Arvigo. There she educates everyone from pharmacists to children about the healing powers of plants.

More recently, Arvigo founded the Traditional Healers Foundation, which acts as a fund to help compensate Belizean healers for intellectual property rights on their participation in the National Cancer Institute search for healing plants. She established the Ix Chel Tropical Research Foundation to promote organic cultivation as a substitute for rainforest destruction. As the bulldozers prepare to raze precious rainforest, Dr. Arvigo's farmers and Kids at Risk (some on loan from prisons) rescue baby plants for transplanting to nurseries and salvage mature plants for use in healing and the Rainforest Remedies product line. The intensive labor of this undertaking has proven to be a successful work program for at-risk youth sponsored by Shaman Pharmaceuticals.

Condensed from
"The Monthly Aspectarian"
http://www.lightworks.com/MonthlyAspectarian/1998/May/0598-07.htm

Models for Success: Health & Wellness Spas

⇨ ***Maximizing unique location***

Tabacón Hot Springs Resort & Spa (www.tabacon.com) is the most famous resort and spa in Costa Rica. The Iskandria Spa, *"Arising from the warm currents of the Tabacón River, in the lap of the spectacular Arenal Volcano, Iskandria,"* features mineral hot springs, waterfalls, 12 mineral pools and indoor jacuzzi. Each pool varies in temperature and depth, and some vary in mineral count. The Iskandria spa offers 8 massage therapy treatments including a volcanic stone massage; body polish and volcanic body wrap; and more.

Source: Tabacón Website www.tabacon.com

⇨ ***Maximizing Market Potential by offering Vacation Packages***

Olas Spa & Health Club (www.olasspa.com)in San Juan, Puerto Rico offers packages that range from ten assorted "Day Spas" to four "Spa Vacations" including 4- or 6-Day Ocean Detox, and 4- or 6-Day Sea Waves. These packages include massages, and more. The spa menu includes body treatments, facials, hair salon, and hands & feet.

⇨ ***Specializing in Fitness and Weight Loss Programs***

Mountain Trek (www.hiking.com) at Ainsworth Hot Springs, British Columbia, Canada Mountain Trek is a super natural fitness spa specializing in mountain vacations, weight loss programs, hiking, yoga, biking, kayaking, supervised fasting, spa cuisine, and massage, all in a spectacular setting in southeast British Columbia, Canada, the Pacific Northwest.

Dr. Rosita Arvigo with mentor, Don Elijio Panti, an internationally celebrated Mayan healer and shaman. Dr. Arvigo apprenticed with Don Elijio for ten years until his death at age of ninety-six in 1996. Her work continues today as she brings the wisdom of traditional healing methods into the realm of modern health and pharmaceutical applications. Photograph ã by Guido Verweyen.

EDUCATION & TRAINING CENTER: The Vision

The Education & Training Center is planned to facilitate educational training including degree programs, and non-degree programs (including executive education, small business management, and vocational & technical training for local inhabitants). Special emphasis will be placed to implement programs that teach entrepreneurial values and skills including technology transfer & commercialization and international business strategies. Graduates of these programs will be encouraged to submit quality business plans for entrance to the Business Incubator. Working with the Business Incubator, the Education and Training Center could also provide a centrifuge for Belize economic workshops and focus groups: a place to bring together business, academic, and government interests for regional visioning toward economic cluster development. This concept is central to the IC² Institute model.

Models for Success: Education Programs

⇨ ***Degree education in technology commercialization***

Masters of Science in Science & Technology Commercialization (MSSTC), IC² Institute, The University of Texas at Austin. (www.msstc.ic2.org, www.ic2.org, www.utexas.edu) Based on action learning, student teams work on real technologies and projects to:

- Assess technologies for their commercial viability and profitability
- Develop strategies to commercialize technologies
- Enhance R&D (Research and Development) and ROR (Return on Research)

The program is designed as an executive education program, to complement student employment situations. Some companies send teams of individuals, and provide these teams with company technologies to develop through their MSSTC experience. The program is available as an online program, and international online teaming occurs. Classes are held about every other weekend, and the degree is earned in one year. Each team provides a business plan for their technology by the year's end; and the best business plan is provided one year's free tenancy in IC²'s Austin Technology Incubator. This program has provided the base model for the BEST education and training center.

⇨ ***Non-degree executive education in technology commercialization, entrepreneurship, and global business management***

IC² Institute also provides non-degree executive education through workshops, seminars, and conferences on subjects ranging from incubation management to technology transfer, and global networking. These programs are highly individualized to provide targeted content for each situation. Some of these programs are based on portions of the MSSTC curriculum; others are based on requests by companies seeking specific educational goals.

BEST education and training center plans to follow this general model, yet move beyond it to provide executive education "retreat and vacation" packages. New and exotic locations and experiences can increase the capacity for learning, and Belize's eco-tourism and extreme environments should prove to be a favorable plus – especially for company executives who recognize the important role of informal networking in building team relationships.

BUSINESS INCUBATOR: The Vision

Belize Business Incubator is intended to provide business strategy, guidance, and sufficient infrastructure to early stage businesses to help them attain the momentum to succeed in the global market.[1] As these businesses mature, alumni business leaders will be asked to invest some of their time to mentor incoming businesses; and to invest a percentage of their profits back into BEST Park to help defray operational costs. Specific services to be offered would include: business counsel, networking assistance, assistance in seeking capital, management training, and office space with access to standard business machines. The goal of this center is to nurture indigenous industries and promote general economic development in Belize.

Models for Success: Business Incubators

⇨ ***Global Business Incubation***

Austin Technology Incubator (ATI) was initiated as an experiment by IC² Institute in 1989, to help early stage companies get started and grow. Since then, it has graduated over 70 companies, created over 2,500 jobs, and launched five IP0s and 17 acquisitions. This success has generated over $1.5 billion in revenue in Austin and attracted more than $720 million in investment. Both the incubator, and the companies it has nurtured have won many prestigious awards over the years. ATI's new model focuses on the convergence of wireless, software, IT, and semiconductor companies. Current focus is to "Go Global on Day One," via a virtual Online network of international companies networked with ATI.

⇨ ***Entrepreneurial Support Networks***

In 1989 IC² also conceived of and launched **The Capital Network** (now renamed CN Group), which grew to become one of the largest and most successful "Business Angel" networks in the U.S. The Capital Network introduction services facilitated more than $75 million in investments. Additionally, ATI works with an extensive network of angels, mentors and venture capitalists. ATI and IC² also take a leadership role in fostering associations that promote entrepreneurship and technology commercialization. IC² established the **Austin Software Council** (now the Austin Technology Council), and houses other not-for-profit associations.

A proposed organization with potentially high impact on BEST Park is **Global Access,** with the goal to initiate a strong network between existing incubators around the world. Linked to local technology sources, knowledge services and business networks, a global network of technology incubators could dynamically increase the international flow of technology, entrepreneurs, capital, ideas and know-how. Such a network would form a "virtual" industry cluster to provide international market access and partnering for start-ups and SMEs. The current proposal, initiated by IC²'s visiting research staff of spring 2003, suggests that IC² Institute and Austin Technology Incubator (ATI) be the main hub of this network.

[1] While there is expected to be close connectivity between the Business Incubator and the Education Center, attending the Education Center as a student would not be prerequisite to submitting a business plan to the incubator.

BELIZEA PLANTATION RESEARCH FACILITIES: The Vision

The rich assets of the BELIZEA Plantation include acres of lagoons, Maya temple ruins, and unspoiled rainforest. Plans include housing scientists here for purposes of archaeological excavation, and research in the biosciences. It is also planned to create a Maya "Living Museum" for educational tourism.

Models for Success: Living Laboratories and Living Museums

⇨ ***Research Institute housed in a tropical "living laboratory"***

Barro Colorado, (www.stri.org/), an island in the Panama Canal is populated by scientists at work for the Smithsonian Institution's Tropical Research Institute (STRI). The tropical forest on the island is one of the most intensively studied preserves on the planet. The island's 3,700 acres[1] of tropical rainforest are a biological reserve that also includes five surrounding peninsulas on the Panama mainland. Scientists at Barro Colorado study many aspects of the tropics – from he Pacific and Atlantic Oceans, but are now separated by the Isthmus of Panama. Since 1923, Barro Colorado has been dedicated exclusively to scientific research. The Institute stewards a unique resource in this untouched rainforest, currently providing 40 scientists with a living laboratory in which to test their theories. *(L. Peat O'Neal for National Geographic News, April 24, 2003).*

The tropical forest on Barro Colorado offers a unique environment to perform research, including a current project investigating fungi. Photograph ã by Christian Ziegler, www.stri.org/

⇨ ***Living Museum as educational tourism model***

Genesee Country Museum (www.gcv.org/), located in Mumford NY, is one of the largest living museums in the U.S. Sixty-eight historic buildings were purchased and reconstructed into a 19th Century Country village that includes a working blacksmith shop, tinsmith shop, and twelve heritage gardens. Daily exhibitions include spinning, weaving, quilting, pottery-making, and open-fire cooking. Also on the property is the John L. Wehle Gallery of Wildlife & Sporting Art, a Carriage Museum, and a 175-acre Nature Center featuring hiking trails through woodlands, wetlands and meadows. A two-year calendar of special events is provided that includes musical, educational, cultural and holiday events.

Photograph ã by Genessee Country Museum, www.gcv.org/

[1] This acreage (figured at 160 acres per square mile) is less than half the size of the BELIZEA Plantation property.

THE TOURISM INDUSTRY

Cancun

Cancun's tourist economy was non-existent before the 1970s, when two IT specialists chose this location for targeted government investment with the desire to create another Acapulco. Cancun's success as a tourist resort supports the general philosophy "if you build it they will come."

However, Cancun's economy is so singly focused on tourism that it becomes problematic. Most of the population only receives a marginalized income in the resulting skewed economy. In addition, fierce competition must be overcome to attain this marginalized income. From the moment one arrives at the airport, it is obvious that as a tourist, your wallet is the main economic driver of the region.

One of the "conveniences" of Cancun is its close proximity to the U.S. One can usually conduct business in English and with U.S. dollars. But while this lends a social buffer for the most casual tourist, it can diminish the experience for those who desire cultural interaction that is more authentically Mexican.

In the long-term, Belize offers an even more "convenient" tourism environment with its close proximity to the U.S., its 2:1 U.S. Dollar exchange, and with English as the national language. Further, these conveniences are not city-wide, but nationwide: this *is* Belize. No "false face of culture" is presented here. At the same time, Belize "outdoes" Cancun in the realm of extreme natural environments for adventure-based tourism. While tourists might tire of Cancun after one visit, Belize has larger potential to receive repeat tourism business. As Cancun's tourism market spreads south toward Belize, it should be considered a "friendly competitor" in the Caribbean Tourism Cluster industry.

Hawaii

One of the most successful models for global tourism today is Hawaii. At the end of World War II, Hawaii faced many of the challenges of developing nations today: high poverty, lack of educational facilities, lack of sustainable industries, and geographic isolation from import/export markets. During the postwar years Hawaii diversified its economy with tourism development, military expenditure, specialized agriculture, and other industries.

In the year 2000, Hawaii had 71,506 hotel and condominium units, and was visited by nearly seven million tourists (6,948,595). Its major export industries in 2000 were Visitor expenditures ($10.9 billion), Federal defense spending ($4.4 billion), and Sugar and pineapple ($276.1 million).

The State of Hawaii is committed to diversifying its economy through science and technology, film and television production, sports, ocean research and development, health and education tourism, diversified agriculture and floral and specialty food products.[1]

[1] Hawaii Department of Business, Economic Development & Tourism
http://www2.hawaii.gov/DBEDT/index.cfm?section=statistics_and_economic_information431

STRATEGIC VISION FOR BELIZE TOURISM IN THE NEW MILLENNIUM

Belize's vision is to develop the tourism sector as a national priority, with a primary focus on responsible tourism, aimed at marine activities, natural history, and adventure markets. Development and promotion of the industry will be carried out to encourage a strong "eco-ethic" to ensure environmental and socio-cultural sustainability, to promote equitable distribution of economic benefits, and to develop a strong, positive image for Belize. As a lead sector of our economy, a competitive tourism industry will be a major force with respect to the future economic development efforts of the Government of Belize.

The strength of tourism in Belize lies with the diversity of natural and cultural attractions. The tourism strategy plan for Belize has been prepared with the expectation of stimulating economic growth, while protecting the country's environmental and heritage resources, and ensuring benefits to the local people. The Government of Belize's Ministry of Tourism has adopted a policy focused on responsible tourism.

Responsible tourism will be the key guiding principle for tourism development in the future. Rather than attempting to define a "type" of tourism, responsible tourism refers to an ethic and a set of practices that chart a sensible course for all types of tourism, ranging from what may be called "deep eco-tourism" at one end of the scale to more conventional "mass tourism" at the other. It can be defined as a way of carrying out tourism planning, policy and development to ensure that benefits are optimally distributed among stakeholders and that tourism resources are managed to achieve optimum benefits for all Belizeans.

Target markets include those interested in marine activities (diving, snorkeling, fishing), soft adventure (archaeology, hiking, birding, caving, natural history), families, retirees, cruise ship passengers, gaming, honeymoon/wedding, incentive/small meeting.

The challenges facing Belize's tourism industry include the need to strategically develop and upgrade its product, the need to maintain the pristine quality of its environment, the need to market effectively to high-potential, high-yield, niche markets, and the need to forge stronger linkages between the public and private sectors, non-governmental organizations and communities around the country.

Tourism holds excellent potential as a catalyst for economic growth. For this reason, tourism must be considered a national priority. The tourism industry has strong linkages with many other sectors, drawing on inputs from transportation, food production, utilities, energy, construction, real estate, retail sales and many others. The industry is labor intensive, and is also a major source of government revenue. Tourism means business!

Tourism Policy
The Belize Tourism Board
www.belizetourism.org/policy.html

From regional artwork and handicrafts to pineapples and chocolate-covered macadamia nuts, Hawaii has established local artists and local industries to serve the needs of the tourism market. This tourism model has contributed to a wide base for a sustainable economy.

Belize

The "Strategic Vision for Belize Tourism in the New Millennium," published by the Belize Tourism Board articulates the clear priority of retaining its natural resources as its tourism industry grows.

While Hawaii cannot be considered a perfect model for Belize tourism, Belize can look to Hawaii for "best practices" in establishing a tourism-based economy, such as:

- Establishing a strong brand in the name "Belize"
- Promoting unique cultural assets
    - Maya culture: both historical and modern
    - Caribbean culture
    - Creole culture
    - Belize's history as a pirate's refuge
- Local production of "Belize" brandable products
    - Chocolates
    - Healing herbs
    - Hot sauce
    - Calendars & astronomy data
    - Woven goods (cloth, hammocks, hats, and more)
    - Educational materials/modules on rainforests, etc.
    - High quality paintings, sculptures, and craft items
- Promoting general and targeted diversity in the economy

Belize's increasing tourism statistics are proof that these practices are being implemented at certain levels. The "next step" for the tourism industry in Belize would seem to be to target the local production of high-value specialty products and foods. The government-endorsed maxim to protect the natural environment is essential to the sustainability of the region. Therefore, the directive to create fewer products with higher value should generally be more productive than creating many products with lesser value. The "most valuable product" with "least consumption" of all natural resources should be considered and pursued. But this simple quality-over-quantity concept can take time to implement into a culture, as the market must keep pace to meet the higher costs to purchase such higher quality goods.

Challenges

One of the critical challenges of the tourism industry in Belize is the increasing foot traffic from cruise ship tours. Belize City is the most popular port-of-call for these tours, catching about 40% of the nation's cruise ship. The cruise sector continues to show strong growth as more than 267 ships called to Belize's port during the period January – August, accounting for 566,074 passengers. This represents an increase of about 70% over the same period in 2003. [1]

[1] Lan Sluder, "Belize First: News of Belize and the Caribbean Coast" November 11, 2004. Also noted was that August's tourism figures were depressed due to this year's severe hurricane season. http://www.belizefirst.com/current.html

Most passengers arrive onshore in the morning, and leave around 6:00 p.m.: they have no need for lodging, and do not usually eat more than one meal while in Belize. Other than port fees, little money is realized locally as a result of this high increase in human traffic. This increases the demand placed on local infrastructures without increasing local revenue in a significant way. The dilemma is how to target this high-traffic market with high quality products with high-profile Belize branding; and with short tour experiences with minimal environmental impact.

"Almost one million Caribbean Cruise tourism visitors are projected for 2004. If only 80% of this projection realistically occurs, cruise visitors triple the size of Belize's population." Text and photo taken from "Caribbean Cruise = Belize" <http:// www.belize.com/caribbean-cruise.html.> 9/2/2004

The cruise ships present an allegory of the larger impact of the tourism industry's paradoxical benefits to the local economy. Most tourism is funded by foreign investment, and the return on these investments doesn't linger long in Belize. Belize's economy is still underdeveloped, and the average Belizean has no entrance point to today's knowledge-driven global economy. The local population is usually employed in low-end tourism services (retail, hotel, restaurants, etc.) rather than high-end services (legal services, information technology services, etc.). There is a dramatic need for the average Belizean to "move up the food chain," and to be funded by more substantial revenue than trickle-down tourism dollars.

Research Team members Doug Voorhis, Derek Eckert, Dale Morris, and Jeremy Stroup enjoy "Rosita's Fast Food" in San Pedro, Belize. *Photograph ã by Keith Crawford, IC² Institute Research Team.*

Job Creation and Spin-out Companies

Other industries relative to BEST Park and BELIZEA Plantation development include hardwoods, aquaculture, and more. Developmental plans will be reviewed at all stages for human and environmental impact. Integral to all ventures is the desire to educate, hire, and partner with local talent whenever possible. If successful, the BEST/BELIZEA plan will provide a diverse but unified business cluster in itself that – in addition to local job creation – will initiate and spin-out local industry start-ups.

Beauty in the unexpected: tree in house (Merida, Mexico), photograph ã 2004, Margaret Cotrofeld, IC² Institute Research Team.

V. LESSONS LEARNED

Dr. David Gibson and Dr. Carlos Scheel during the Belize workshop, April 20, 2004. *Photograph ã 2004, by IC² Institute Research Team.*

STEPS TOWARD ECONOMIC DEVELOPMENT IN LATIN AMERICA

By Carlos Scheel

Dr. Carlos Scheel works with ITESM (Monterrey Institute of Technology at the EGADE Graduate School of Business) in several areas regarding technological innovation strategies, development of regional innovation systems to support economic development and strategies of industrial clustering for developing countries. This work is showing success in Latin America, mainly in Central America. The clustering framework is essential for developing countries, to empower local companies and to protect local markets and assets against international competition, and give them global marketing presence. In Colombia, ITESM is integrating a program that uses the same techniques as IC² Institute's MSSTC program in Austin, in which technologies are analyzed for full market potential. Panama is negotiating to deliver this program as well.

Due to NAFTA, Mexico is scheduled to open its borders (by 2006) to China for light manufacturing. This places a challenge before Mexico, as many of its Small and Medium Enterprises (SMEs) are not yet prepared for global competition, but they are working to leverage micro and SMEs to be able compete on two fronts:

- Active external markets
- Stable local demand

The Strategic Studies Center of the ITESM is working to incubate several clusters in Latin America. One of their main focuses is to help local industries move up the "value chain" in product development. In San Salvador they have seen success in both the honeybee and ornamental plants industries.

Honeybee industry. Expanding beyond honey production, the San Salvador honeybee industry now markets the royal jelly of the honeybee for use in cosmetics and medicines. This is a case where Latin American countries have, in the past, exported very low value-added products. This change was targeted to move this industry upward on the "value-added" chain, by offering a rarer product with increased value.

Ornamental Plants. In the past, San Salvador has been limited to the exportation of stem and root stock at low value (less than $1 each), due to restrictions that prevent the importing of "soil" with nursery stock, their ornamental plants industry. After four months, the foreign broker sells this stock as developed plants for $40 to $60. But new research has provided synthetic soils that are free of import restrictions, which opens this industry to provide a higher dollar product.

ITESM has worked with similar success in Nicaragua, Chaipas, and Costa Rica. When entering a region, they promote the following nine initiatives. As the textile industry emigrates to China and Asia, it is especially crucial to diversify Latin American industries and integrate these initiatives.

First: Create a mechanism to determine the most effective clusters for the region.

Second: Promote education resources. A successful business development cluster always had a strong educational institution. A strong university inevitably stands at the center of a successful business development cluster.[1]

Third: Find a way to create trust and networks among all participants of the value system.

Fourth: Develop world class performance. Articulate the specific performance/strengths of a region, and build sustainable high potential products.

Fifth: Utilize information technologies, especially Community Learning Centers.

Sixth: Build clusters around a competitive, world recognizable brand.

Seventh: Create an industrial ecosystem that includes: academia, banking sector, industry, infrastructure, government and society (ABIIGS).

Eighth: Find a strong local champion to promote a sense of direction and unity.

Ninth: Develop social capital with three teams:

1) *Assessment team,* to determine economically, active sectors

[1] Silicon Valley has Stanford University; Boston has MIT; Austin has The University of Texas at Austin; etc.

2) *Execution team*, to target a key sector to secure an early model of success with ABIIGS
3) *Policy tools strategy team*; to articulate appropriate industrial policy. This is critical to providing sustainability to the model. ABIIGS need to secure policies to support industry, or economic growth will not reach sustainability.

Together, these nine initiatives have proven effective in several countries. While industry clusters have not yet developed, successful companies are emerging.

In Belize

Dr. Scheel's specific recommendations to the nation of Belize are:

1. Create an information and telecommunication infrastructure capable to bring connectivity (similar to the Mexican CCA's Community Learning Centers) for doing business for SMEs, but also to increase quality of life levels, public administration, etc.
2. Target the development of two clusters (following *Compstrac Methodology* to identify, empower and incubate clusters): for example, one in natural products and another in eco-tourism.
3. Develop an entrepreneurial program to train young entrepreneurs in how to develop businesses around their products and ideas.

A Mayan Princess… The typical alleyway in San Pedro opens to a beach view; golfcarts are common motorized transportation. *Photograph ã 2004, by Keith Crawford, IC² Institute Research Team..*

"Journey's End Beach," Ambergris Caye, Belize. Home base to the entire IC² Institute Research Team.
Photograph ã by V. Morgan, IC² Institute Research Team

QUICKLOOK: BELIZE

Team: Christeen Walch, Elin Oftedal, Mark Gipson

Assets

While the entire research team addressed the broad portrait of Belize, one Quicklook team also conducted personal interviews and onsite research in Belize. One great asset to the nation of Belize is its young government system. The government encourages development initiatives and welcomes foreign direct investment. BELTRAIDE has been formed to coordinate foreign investment with the Belizean government. Realizing the need to have a unified IT policy and a reliable cost effective, accessible infrastructure, the government is researching how to make the transition to a knowledge-based economy. Of paramount importance is the government's realization of the need and benefit to keep the natural resources pristine. The government understands that, "development must be centered around the people; people need to feel they are the beneficiaries" according to Honorable John Briceno.

Belize's democratic political system is stable, and provides expedient professional services and keeps bureaucracy at a minimum. The heads of state are accessible, knowledgeable, and helpful. Because of a recent and peaceful attainment of independence from Great Britain, the government has been able to prove itself "nimble" compared to neighboring nations

who have experienced a history of governmental corruption, and developed cumbersome processes which are inadequate to modern needs.

Assets in the industry sector include SICA Central American Integration System and growing industries based on Belize's natural resources – agriculture & tourism. Belize is a member of the Caribbean Single Market, and industry can pursue government tax incentives. Previously mentioned are Belize's:

- Strategic location with Belize's proximity to North & South America
- Market opportunities based on untapped natural resources
- Language skills of the work force which make it possible to conduct international business
- Stable currency with fixed 2:1 exchange rate with the U.S. Dollar

The Academic sector of Belize is limited, but is moving forward. In 2000, the University of Belize was established by the unification of five universities, with the goal to provide a broader selection of degrees. At UB, there is currently a Master's Program which is provided in conjunction with the University of North Florida and University of the West Indies. While students learn at UB, their degrees are from UNF or UW. Masters degrees are also available through Gaelen University. The cost of education is relatively affordable, and there are current trends to build academic alliances with industries in order to more accurately train a viable workforce. Funding opportunities are available as 50% of UB cost is covered by the government. Also, Belize Electricity provides a scholarship program. They have a large marine science and natural resource department.

Challenges

But while the Government is unhampered by excess bureaucracy, it also has limited monetary funds to support development. The nation experiences a sizeable trade deficit and foreign debt. While the government states a desire to help the common citizen, there exists a negative perception of their efforts to foster entrepreneurship to the layman, and they lack a clear national plan towards sustainable economic development.

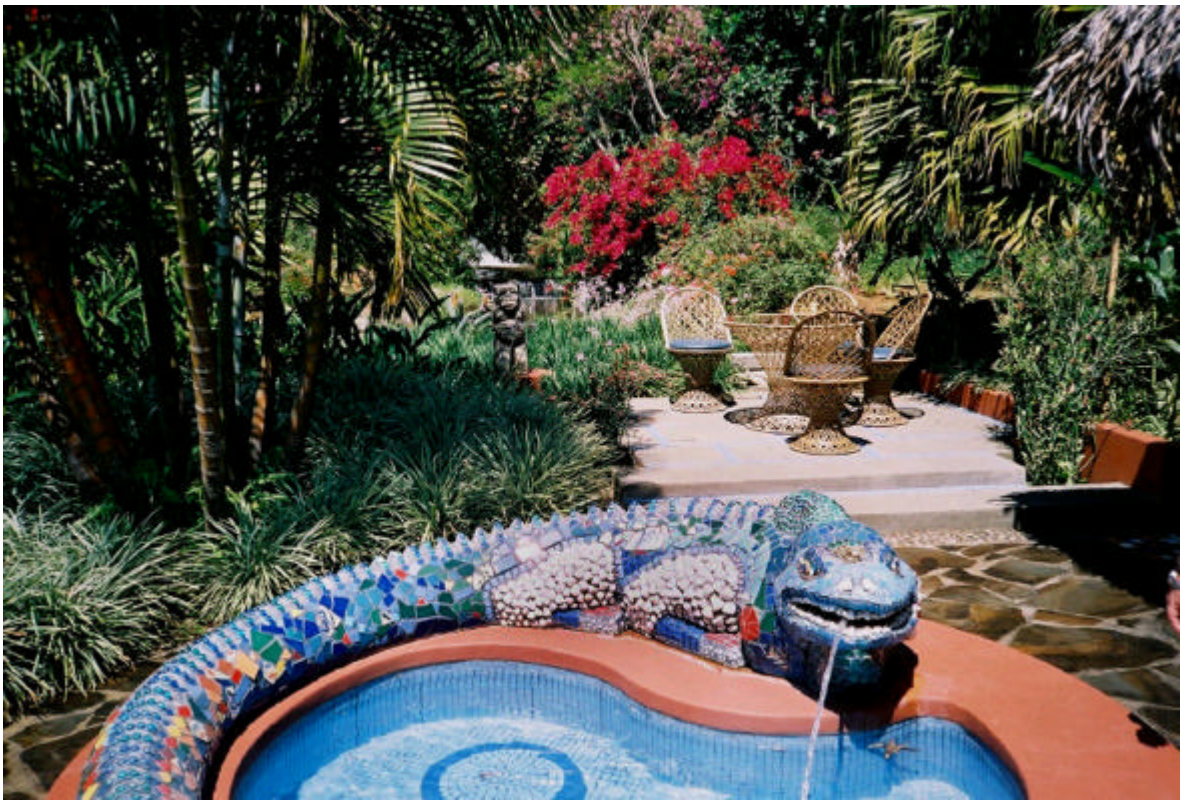
Industry faces the challenges of a small workforce, and a shortage of skilled labor. The lack of infrastructure hampers the entrance of entrepreneurs into the global economy via the Internet. Further, a "lack of perceived benefits of the Internet" leads to inefficient usage where it is available. In many sectors, monopolies create high prices and make entrepreneurial competition unviable. Paired with this lack of opportunity is a lack of entrepreneurial skills. There are no major industrial clusters in Belize, aside from the burgeoning tourism industry which lacks the capacity to accommodate the growing international interest in visiting Belize.

Academic challenges constrict the University of Belize, which has no internal financial aid available. For political reasons, the University of Belize is being moved to Belmopan (with a population of 7,000), although most students currently come from Belize City. The necessity to move to continue in education is not considered attractive to most current students, according to personal interviews; and the commute of 1.5 hours each way is prohibitive. While dormitories are planned, they do not currently exist. Salaries for Ph.D. professors are not competitive with academic institutions in the larger region. Graduates find job placement difficult, and no current follow-up program exists for UB students. Industry expresses that recent graduates have lacked the skills required for job placement.

The number of student applications has been decreasing yearly, and may decrease more with the university's move to Belmopan.

When one visits Belize, it is easy to feel that the natural resources can provide the base for economic growth for its small population. But this abounding and comforting natural environment is fragile, and the challenges of the nation are complex and real – especially as one views the enlarging tourism industry. Strategic and sustainable economic development is the great challenge of this vibrant developing nation.

"Journey's End Pier" Ambergris Caye, Belize. Photograph ã by V. Morgan, IC² Institute Research Team



Costa Rica Garden, Photograph ã Jeremy Stroup, IC² Institute Research Team.

QUICKLOOK: COSTA RICA

Team: Jeremy Stroup, Doug Voorhis, Hans Rijckenberg

Assets

Costa Rica is one of the most stable and successful countries in Latin America. Their Gross Domestic Product (GDP) is over $32 billion with a population of just under 4 million. They have a strong business culture, internal banks, as well as international banks that continue to bring financial stability to the nation. The government is pursuing the specific goal to bring their "developing nation" into the status of a "developed nation."

The Costa Rican education system consists of specialization schools, which compliment public schools. There are a number of government institutions that support training aspects; some focus on agriculture and exporting items such as sugar bananas, etc. They plan to add two additional aspects: electronics industry and medical products.

Costa Rica lists as a "Potential leader" on the United Nations (UN) Technology Achievement Index (TAI). They sustain one of the strongest education systems in Latin America. INCAE, which was founded by Harvard about 40 yrs ago, ranks as the number one business school in Latin America, and the number four international business school. Costa Rica provides two entrepreneurial programs through: Technológico of Costa Rica, and EARTH (agricultural entrepreneurial program).

The government, which owns all utilities, has taken the initiative of pumping $36 million into the telecommunications systems in order to create an international marketability of Costa Rica based

on that infrastructure. Teledensity, defined as the number of phone jacks and internet connections per capita, increased 750% over least 6 years.

Challenges

Underemployment eclipses Costa Rica's 6.6% unemployment rate. While there is a 98% literacy rate and a very highly educated workforce, a saturation level of post-graduate degrees exists. While higher education theoretically brings opportunities, limited positions are available to those who hold professional degrees. In Costa Rica these graduates face two choices: to take a job level lower than their training supports, or to seek employment outside of the country.

MBA programs train individuals how to sustain businesses, but do prepare them to create new businesses. It was indicated that entrepreneurial activities are nearly "anti-cultural" in Latin America – and in interviews, entrepreneurs indicated that banks will not loan money for technical or software businesses, or other technology ventures. While true incubators seem to be a necessity, an entrepreneurial knowledge base does not seem to exist that would be sufficient to support them.

In discussions with the Dean of INCAE, he does not view Costa Rica as a research country, and he does not expect them to do Research and Development for 10-20 years from now. Within their education system, they are trying to support business, not develop new ventures. Costa Rica is recruiting companies, but not creating companies. While local incubation facilities exist, they do not have strong ties to local businesses, which reduces their success ratio. Incubation tenants are offered research facilities without research infrastructure. Interviewees voiced that there has never been a successful venture launched from Costa Rican incubators. *The overriding challenge is to create employment opportunities that demand a higher level of sophistication.*

Keith Crawford in Jamaica, photograph ã 2004, by Derek Eckert, IC² Institute Research Team

QUICKLOOK: JAMAICA
Team: Keith Crawford, Derek Eckert

Assets

The government of Jamaica recognizes that regional economic development is linked to education and entrepreneurship. "Our vision is to develop a competitive industry to move Jamaica towards becoming a knowledge-based connected society." This statement published by The Ministry of Commerce, Science and Technology is reinforced to the people in several ways. The government funds 80% of college tuition for all native students. In the face of a crippling national debt, the government has assumed this burden as prerequisite to improving Jamaica's position in the global economy. Jamaica has liberal trading policies and is party in many international trade organizations including APEC, Caricom, ACP, EFTA, EU, IMF, ISO, UN, WTrO, and more.

The government is phasing out the monopoly license to Cable and Wireless in order to liberalize the telecommunications sector in Jamaica. As part of the monopoly phase-out agreement, a sizeable increase in physical infrastructure has been contracted. Within this sector, the country has already attracted over $400 million (US) in investments in this sector. Full liberalization of the telecommunications sector means, "Cost-effective and higher quality service, expansion of new and advanced services in all segments, and greater global competitiveness and increased exports of high value services," as stated by Philip Paulwell.

Friendly Jamaicans, photograph ã 2004, by Keith Crawford, IC² Institute Research Team

The government has also established the Jamaican Promotions Corporation (JAMPRO), an investment and export promotions agency with offices in New York, London, and Toronto. Their goal is to develop viable Jamaican-based world class business, focused on leisure, agribusiness, and light materials.

Challenges

Thirty percent of Jamaica's population lives below the poverty level, and the disparity increases between the upper and lower class. They face a growing national debt of over seven billion dollars that consumes 70% of every dollar generated by the national government. Taxes are high: 33% plus another 20% consumption tax on most transactions. An influx of immigrants from Haiti (the true trouble spot in the Caribbean)[1] burdens their economy further. Businesses face high interest rates for loans. And while JAMPRO exists to seek facilitate international investment and relocation to Jamaica, there is no equivalent for local businesses.

[1] See regional statistics, p. 77.

High crime – particularly larceny – threatens Jamaica's economy. "Crop theft" is common, which increases risk for entrepreneurs in agriculture and aquaculture. Crop theft can cause total loss of investment, and cause many ventures to fail in their critical first year – especially among small business start-ups without the resources to provide around-the-clock guards for crops nearing harvest. It would seem valuable if public awareness could be raised against the harm which this type of crime does to the region's social and economic fabric.

College professors face a disparity of education level among incoming students, due to inconsistent education requirements at the primary and secondary levels. Only 50% of college students graduate; and few jobs await those who do. Although there is focus on improving Jamaica's standing in the knowledge based economy, there is no clear policy on how to facilitate commercialization within the University. Further, there is a shortage in resources and staffing as funding for the University is not keeping pace with the needs of the global market.

In the face of these challenges, the nation's widespread long-term solution to embrace entrepreneurship is commendable, as is their commitment to increase the education of their population.

"Dreadlocks" Photograph ã Lee Abel http://www.jamaicans.com/photos/lee_abel_photos/

View from the Hilton, Port-of-Spain, Trinidad, Photograph ã 2004, by John Green, IC² Institute Research Team

QUICKLOOK: TRINIDAD TOBAGO

Team: John Green, Dale Morris

Assets

Trinidad Tobago is a single national entity. Its major export is petroleum-based energy and energy services. Unity of high visioning is Trinidad Tobago's chief asset. In the face of projections that Trinidad Tobago's current industries will not sustain the nation beyond 2020, the government has embraced the "Vision 2020" plan, and has implanted that vision within the populace at a grassroots level that is remarkable. This vision has the ultimate goal for Trinidad Tobago to become a developed nation by 2020 – using technology and partnering networks to diversify into new industries, and move up the value chain in established industries. Across the sectors of business, academia and government jointly agree on two key principles.

- Higher education is essential for the nation's economic development
- The national economy cannot be based on finite natural resources

The research team heard this vision echoed from all sectors and all economic levels of the population.

Vision 2020 is chaired by a local entrepreneur and businessman, Arthur Lokjack. This strategically protects Vision 2020 from "belonging to" a political party, so that the momentum of this long-range national plan should suffer minimum impact from potential political winds and governmental party shifts.

Paired with Vision 2020 is the National Information and Communication Technology (ICT) Strategy, with the stated vision: "Trinidad Tobago is in a prominent position in the global information society through real and lasting improvements in social, economic, and cultural development caused by deployment and usage of information and communication technology." These *government initiatives* are *sponsored by business* to *work with academia* in a unified effort to promote Trinidad Tobago's knowledge economy.

Human capital is considered the key toward these goals, and there is a targeted effort to infuse entrepreneurial values into their culture, particularly the 25-40 year old population. The government provides a powerful education initiative for its citizens: GATE (Government Assistance for Tuition Expenses). Through this program the government covers a minimum of 50% tuition for qualified degree programs (inside or outside the nation) if the graduates will bring their expertise back to Trinidad Tobago. The populace has responded to this initiative positively to "bring expertise home" from universities around the world: Cambridge University, Harvard University, Tokyo University, and other educational institutions with international reputation.

The face of the average citizen on an average street: this woman assisted IC² Institute's research team to secure a taxi, photograph ã 2004, by John Green, IC² Institute Research Team

It is recognized that investments in education give the nation's populace a higher Return On Investment than does money vested in their natural resources. For example, while a two billion dollar investment in the oil and gas industries resulted in the creation of 200 new jobs, $200 million invested education in IT infrastructure created over 2,000 new jobs.

Several initiatives for business development have been placed to assist developing businesses at all levels. NEDCO (New Enterprise Development Company) focuses on providing new business start-ups with micro-loans, capital infusion, entrepreneurial focus, and skill development. BDC (Business Development Company) provides 60% government/40% business financing to grow small and medium sized companies into large enterprises. TIDCO (Tourism and Industrial Development Company) assists small and medium enterprises grow into international ventures. PIDCOTT (Property and Industrial Development Company) is a spinout of TIDCO that interfaces companies with local universities and communities, to train people and create new jobs.

The Coconut Truck, photograph ã 2004, by John Green, IC² Institute Research Team

Our research team encountered capable, highly educated people in the 30-35 age bracket: they add optimism to the culture and to the economic horizon. This human capital, paired with a unified national vision to attain a knowledge-based economy is Trinidad & Tobago's strongest assets.

Challenges

Implementing the "Vision 2020" broad-based plan is the great challenge of Trinidad Tobago. Venture capital funding is not generally available outside the energy industry sector. A lack of adequate bankruptcy legislation exists. Further, their current social system is a labor culture, not creatively entrepreneurial in nature. *Interest rates* are a high concern of the government, while the Institute of Business survey describes *crime* as the largest inhibitor to

new business. Follow-on concerns for business development are inefficient bureaucracy and corruption.

Trinidad & Tobago's high crime rate is probably exacerbated by a lack of hope among the lower classes. With a high drop-out rate, uneducated poverty-locked youths have no apparent entrance into a knowledge economy. These youths are potential human fodder for the Muslimeen: a group of Islam extremists who are linked to a pattern of kidnapping of Trinidad/Tobago's upper class citizens for ransom, as well as the active illegal drug market. . This group incites a range of strong feelings among the population: while some consider them social misfits, others consider them freedom fighters.

A viable alternative for the lower class poor is to provide education and assistance to establish a knowledge-based agricultural sector, geared to use modern applications to serve global market needs. This would fill a growing gap in the Trinidad Tobago economic sector, as most farmers in the present economy are over 60 years old; and most agricultural ventures are small in scope.

Another major problem is environmental pollution, which is not surprising in a nation whose major export is oil and gas. While economic advancement is necessary, the natural environment must be preserved in order to secure a national future. National health is also of high concern; Trinidad Tobago ties with the Dominican Republic to hold the second highest AIDS rate in the Caribbean region. Seventeen thousand citizens have tested HIV positive. The care of this group and the containment of this disease are primary concerns to the entire populace.

Potential Partner:
Trinidad Tobago

A strong relationship between Belize and Trinidad Tobago interests would seem to have high potential return for both entities. Trinidad Tobago could assist Belize in economic visioning while Belize could assist Trinidad Tobago with guidance to retain and restore its ecological resources. Both nations have English as the national language: business and academic exchange should be easy to facilitate.

The University of Trinidad Tobago could be a "first stop" in pursuing nation-to-nation partnerships. Their Mission Statement: "*To be an entrepreneurial [Institute] designed to cover and develop entrepreneurs, commercialize R&D, and spawn companies for wealth generation and sustainable job creation towards the equitable enhancement of the quality of life of all individuals, families, and communities of [The Republic of Trinidad Tobago and the Caribbean].*"

QUICKLOOK: YUCATÁN PENINSULA, MEXICO

Team: Vanessa Morgan, Margaret Cotrofeld

Photographed through the window of a bus, this political statement was painted on a rock in a remote village between Merida and Chetumal: Fredi Pacheco for President. Photograph ã 2004, by Margaret Cotrofeld, IC² Institute Research Team.

Assets

In the Yucatán Peninsula, a cultural flamboyancy manages to embrace stoic pride and strong social reserve. There are 14 Maya archaeology zones open to the public in the peninsula, and the region enjoys a climate that is similar to Belize. The Barrier Reef on the Atlantic coast offers superb diving opportunities. The Yucatán, unlike much of Mexico, has an adequate water supply for both its population and industry.

There are three states on the peninsula: Yucatán, Quintana Roo, and Campeche. A triad of industry exists between Cancun (tourism), Merida (manufacturing and services), and Chetumal (agriculture). An outstanding medical community exists at all three locations. A surprising thought, voiced by both government and educational interests, was that the state of Yucatán, considers itself a "border state" to the U.S., separated from the U.S. by the Gulf of Mexico – a flight of about two hours from Houston, New Orleans, and Miami. This proximity is an advantage as the U.S. is its chief import and export partner.

The Mexican government has made a sustained and concentrated educational effort, and their literacy level is now at 92.2%. Within the peninsula, this statistic lags to 85%, but literacy is increasing even in the rural areas of the Yucatán. Paired with this rising literacy

rate, political awareness runs high. Political statements are painted freely on houses, fences, and billboards – even in remote areas.

At the most basic level, the population is highly entrepreneurial. Mexico is a nation of micro-business in which almost every bicycle has a cart, so that it may become the vehicle for an enterprise that moves from place to place. Small shops abound. Most cars on the road seem to be taxis for hire.

Ties to home and family are strong, and talent retention is high. Factories attempt to be family friendly employers. Those we interviewed provide bussing to and from work, as well as onsite daycare for their employee's preschool children.

The Yucatán state government provides incentives to those who establish high tech or industrial businesses, and actively promotes entrepreneurial opportunities. Embracing a regional view, the government is attempting to provide the infrastructure, networks, and models of success to develop a high tech industry cluster. And while state governments are halted at their political borders, they invest in private enterprises in the hope that these will take leadership to help provide cooperation to enhance the entire region's economy. Initial efforts are reaping success, and U.S. contracts are being secured for high tech services from the Yucatan.

The bicycle cart provides mobile marketing across the Yucatán Peninsula.
Photograph ã 2004 by Margaret Cotrofeld, IC² Institute Research Team.

Challenges

Although the peninsula enjoys a high literacy rate, "language" is high on the list of challenges named by those interviewed. For while their national language is Spanish, their largest import and export partner is the United States; and their effort to create a literate population has not yet expanded to a common usage of English. Furthermore, language is a more critical problem in the Yucatán than in most areas of Mexico, for the indigenous Maya of the region often do not speak Spanish – indeed, the dialects of their languages often change from village to village.

If one works for two weeks in a year in Mexico, one is considered employed. So, while the unemployment statistic is a mere 3%, underemployment abounds. And while Mexico's lower class must be entrepreneurial in order to survive, education is considered a means of escaping this level of risk, and high tech entrepreneurship is slow to develop.

Simplicity is valued above materialism, and factory owners face what could be called a low work ethic, which is more accurately a lack of career focus. For example, factory workers may work for one company for a number of years, and transfer to another company simply to secure a change in environment; which loses them seniority and other accrual benefits. Also, when workers are paid overtime for filling a time critical need, they are likely to take time off, as they feel they have enough money to meet their needs for the month.

These and other national challenges combine to cause the high statistic of 40% population living below the poverty level. And while the government invests in incentives for industry, higher education facilities are severely hampered by policy changes of the new state government caused by limited overall funding. Those who do attain higher education usually face the dilemma to leave their homeland or to become underemployed. Many of these have education focused on business management, rather than on technical business applications. They often choose to take a job at a low wage – often a position that a less qualified person could easily fill – perpetuating the poverty cycle.

Potential Partner:
Centro de Investigación y de Estudios Avanzados del I.P.N. (CINVESTAV-IPN)
www.mda.cinvestav.mx
Mérida, Mexico

Among its programs, this educational facility in Merida[1] provides graduates in two areas that could be of specific assistance to BEST Park and Belize interests. Its **Marine Biology** department educates scientists of a high caliber who face few employment opportunities upon graduation. The aquaculture interests of BEST Park, coral reef research, and other marine ecology concerns including local education, could be well assisted by seeking out graduates of this program.

Another program of special interest is CINVESTAV's **Human Ecology** program, which is researching the technologies and traditions of indigenous people for modern technology applications – particularly the indigenous Maya of the Mesoamerican region.

Belize universities could perhaps pair "sister" education programs with these CINVESTAV programs, in a way that would improve educational value for both locations. The initial challenge to such a partnership would be to overcome the English/Spanish language barrier. Teaching these sciences from a bi-lingual approach, however, would seem to prove highly beneficial to both Belize and Mexico.

[1] The road between Merida and Belize City can be traveled in one day by bus.

Air view of Panama City ã 2004, by Smithsonian Tropical Research Institute.

QUICKLOOK: PANAMA
Team: Hans Rijckenberg, David Gibson

Assets
Panama's premier asset is the Panama Canal: a 50 mile canal that provides "the" water route between the Pacific and Atlantic oceans. At present, 30% of the GNP of Panama consists of revenues from the Canal (including shipping and freight tolls). The canal is one of the major employers of the country, and the Canal Zone boasts several free trade zones, including the Colon Free Trade Zone at the north side of the Canal area at the Caribbean coast. The U.S. Army completed the Canal in 1914, and controlled and operated the canal until 1999. This unique relationship with the United States has shaped Panama's economy and cultural fabric – and has left the legacy of not only the canal, but also the buildings that supported U.S. Army occupation.

Panama's surrounding infrastructure is also well developed. The Pan-American Highway, the international airport, and several regional airports serve as infrastructure support to the economy. Internet penetration is high. The nation's geophysical location supports the region's economy as a hub of the Mesoamerican region. As such it supports a solid economy based on finance services and transportation, and important international finance

City of Knowledge, Fort Clayton facilities. *http://www.panamaatyourservice.com/Technology/city_knowledge_article.php*

companies have established headquarters here, mainly from the United States, Colombia and Europe.

Embracing the strategy to become a knowledge-based economy, Panama's current economic portfolio is already knowledge intensive. The structures of Fort Clayton provide the location for the City of Knowledge (CoK): a business, science and technology park with the goal of becoming the knowledge receptacle of the region. Several international organizations have established offices or subsidiaries there: World Bank, International Red Cross, and the United Nations. European interest in CoK is high, and the European Commission has recently awarded them a grant of $9.5 M.

Panama's literacy rate is a high 92.6%, attesting a strong education system, and crime is low.

Challenges

Panama's challenges are more subtle than many other areas of the region. For while the skyline of Panama City rivals the metropolises of the U.S., many of these buildings are vacant. Similarly, while the U.S. left the large legacy of its military housing, these structures are aging, inappropriate for many purposes, and not always aesthetically pleasing. Further, the costs to upkeep these facilities (such as painting and mowing) are prohibitive.

While Panama's City of Knowledge promotes research in biotechnologies, the universities of Panama do not provide education in these fields. Underemployment exists, and at the same time their best talent often emigrates to opportunities elsewhere. It would seem beneficial to provide a coordinated effort to analyze the nation's vocational needs and target their educational programs accordingly.

QUICKLOOK: CRIME vs. ECONOMIC DEVELOPMENT

In order to attain economic advancement, an environment must exist in which return on investments can be realized without criminal interference. Beyond statistical measures, an overall observation from the Quicklook teams shows the close correlation between higher crime and higher poverty. To what degree this crime is caused by poverty and vice versa cannot be determined. But while crime is often born out of desperation, it also promotes desperation in others, and demoralizes the population that would provide the backbone for society's improvement.

In nations with high crime rates, there seems to exist the need for the provision of basic necessities to the population – food, water, clothing, shelter, and medical supplies – for until these provisions are met, crime will readily perpetuate. Beyond this provision, campaigns for public awareness can promote social pressure for the citizenry to respect property lines and at the same time, assist the needy when possible. One tool of public awareness is "the power of story" to give face to the honorable soul and the dispossessed. Educational and entertainment media can be targeted to promote a public sense of morality, and to celebrate moral success.

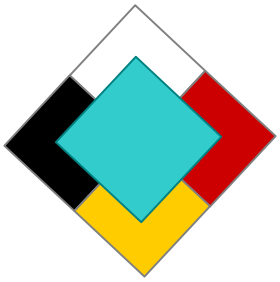
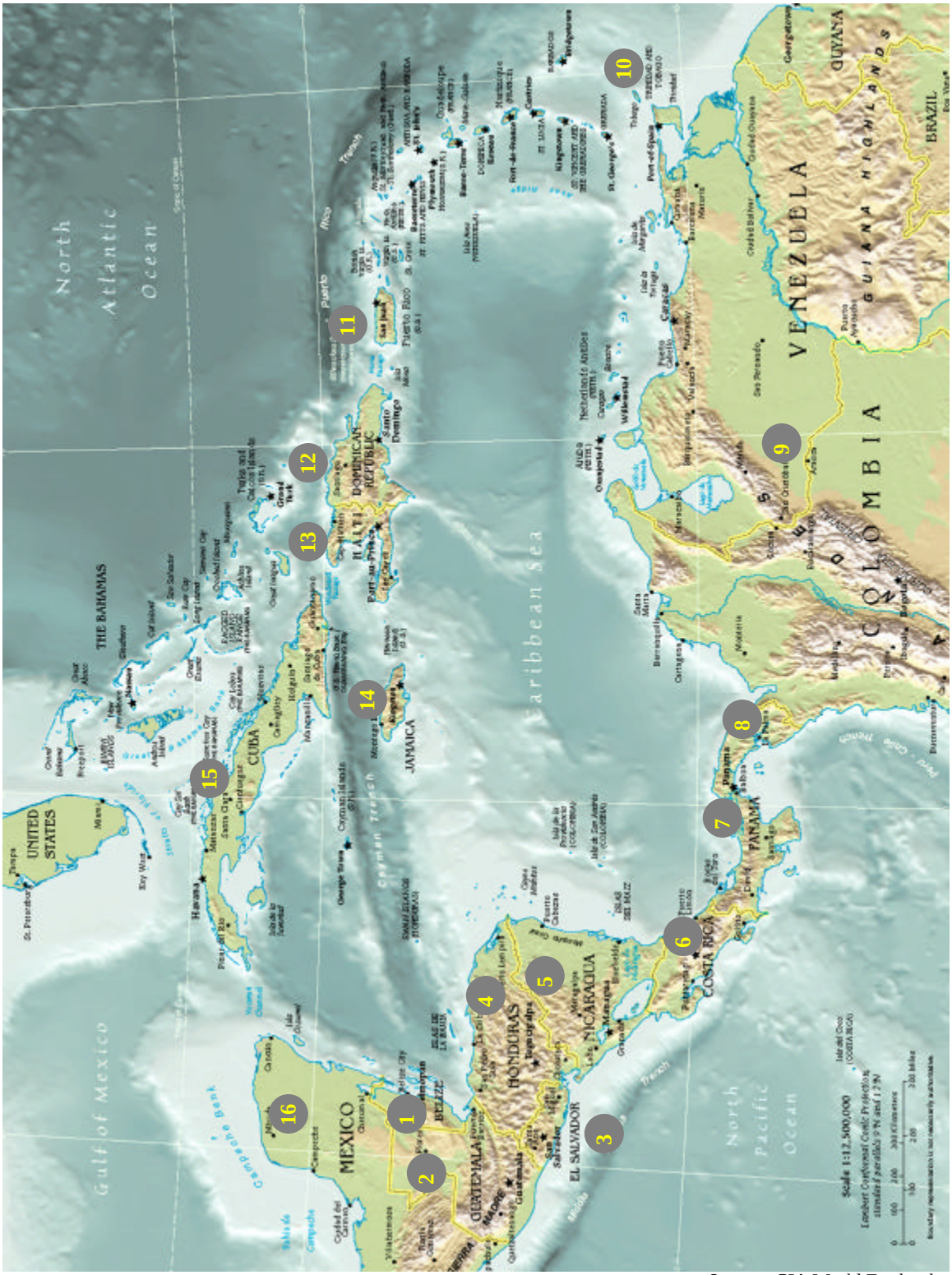


Figure 6. Map of the Region



Source: CIA World Factbook

VI. COMPARATIVE DATA: THE CARIBBEAN AND MESOAMERICAN REGION

A DIVERSE DATASET

The Mesoamerican and Caribbean region forms an ellipse of cultural and economic variety (see map, Figure 6). To provide a regional overview, we present comparative data[1] on the following:

1. Belize
2. Guatemala
3. El Salvador
4. Honduras
5. Nicaragua
6. Costa Rica
7. Panama
8. Colombia
9. Venezuela
10. Trinidad & Tobago[2]
11. Puerto Rico
12. Dominican Republic
13. Haiti
14. Jamaica
15. Cuba
16. Mexico

While these nations are geographically proximate, the diversity from one to another becomes problematic in direct comparisons. For example, it is difficult to present a comparable graph of geographic area because the range from highest to lowest is so great. In other areas such as ethnicity or religion, different parameters and definitions are applied, which makes direct comparison virtually impossible. These differentials are part of the cultural and economic fabric of the region; therefore we present the following data in a way that shows both the contrast and comparison of each of these nations to the other.

GEOGRAPHIC AREA & POPULATION

Table 4 presents lists ranking the area and population of the countries of this region. The nation of Colombia has the largest area of 1,138,910 square kilometers; Mexico follows with 1,082,550 square kilometers. The island nation of Trinidad Tobago has the smallest area of those studied, with 5,238 square kilometers; and the commonwealth of Puerto Rico is second smallest with 9,104 square kilometers.

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[1] All graphs are constructed in the order listed above, so that one nation's progress (i.e. 9. Venezuela) can be followed quickly by searching by number (i.e. 9) from graph to graph. "Ranking" lists are presented by statistical precedence. Data source for this section, unless indicated otherwise, is from 2003 CIA Factbook online; accessed from April to September 2004. http://www.theodora.com/wfb/#CURRENT

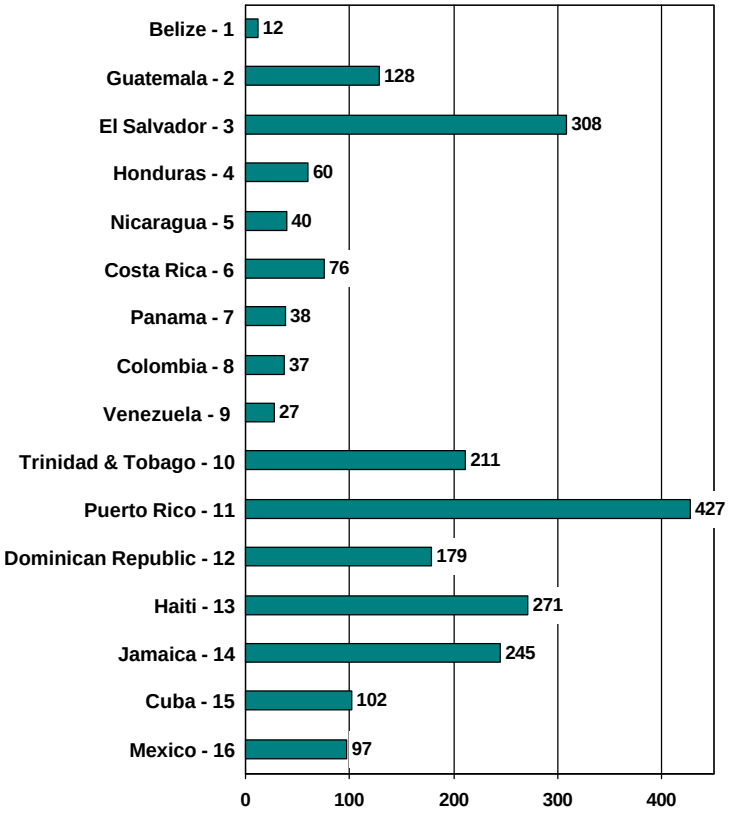
[2] "Trinidad and Tobago" is the official name of a single nation. We use an ampersand to reduce confusion over this question.

Table 4. Geographic Area and Total Population Rankings

GEOGRAPHIC AREA, in square kilometers RANKINGS (HIGH to Low)	TOTAL POPULATION RANKINGS (HIGH to Low)
1. Colombia (1,138,910 km²)	1. Mexico (104,907,991)
2. Mexico (1,082,550 km²))	2. Colombia (41,662,073)
3. Venezuela (912,050 km²)	3. Venezuela (24,654,694)
4. Nicaragua (129,494 km²)	4. Guatemala (13,909,384)
5. Honduras (112,090 km²)	5. Cuba (11,263,429)
6. Cuba (110,860 km²)	6. Dominican Republic (8,715,602)
7. Guatemala (108,890 km²)	7. Haiti (7,527,817)
8. Panama (78,200 km²)	8. Honduras (6,669,789)
9. Costa Rica (51,100 km²)	9. El Salvador (6,470,379)
10. Dominican Republic (48,730 km²)	10. Nicaragua (5,128,517)
11. Haiti (27,750 km²)	11. Costa Rica (3,896,092)
12. Belize (22,966 km²)	12. Puerto Rico (3,885,877)
13. El Salvador (21,040 km²)	13. Panama (2,960,784)
14. Jamaica (10,991 km²)	14. Jamaica (2,695,867)
15. Puerto Rico (9,104 km²)	15. Trinidad & Tobago (1,104,209)
16. Trinidad & Tobago (5,238 km²)	16. Belize (266,440)

Data Source: 2003 CIA World Factbook

Figure 7. Population per Square Kilometer: Graph & Rankings



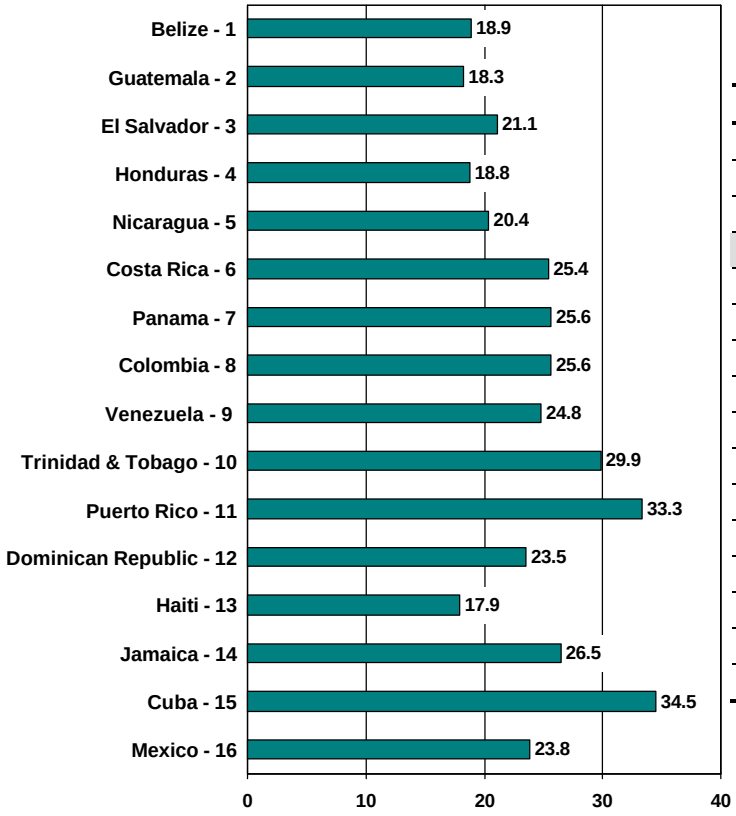
RANKINGS (HIGH to low)
1. Puerto Rico (427)
2. El Salvador (308)
3. Haiti (271)
4. Jamaica (245)
5. Trinidad & Tobago (211)
6. Dominican Republic (179)
7. Guatemala (128)
8. Cuba (102)
9. Mexico (97)
10. Costa Rica (76)
11. Honduras (60)
12. Nicaragua (40)
13. Panama (38)
14. Colombia (37)
15. Venezuela (27)
16. Belize (12)

Data Source: 2003 CIA World Factbook

Mexico has the highest population, with 104,907,991; however over 22[1] million of this number is centered in and around Mexico City, while the three states that form the Yucatán Peninsula (Yucatán, Quintana Roo, and Campeche) have a combined population of only 3,223,862[2]. Following Mexico in population size is Colombia with 1,138,910. Belize has the smallest population with 266,440 persons; and Trinidad & Tobago the second smallest with 1,104,209. The population per square kilometer ranges from 12 in Belize to 427 in Puerto Rico, Figure 7.

The Median age of the region is lowest in Haiti at 17.9 years; this figure is impacted by quality of living measures discussed on page 66. The median age is between 18 and 19 years in Guatemala, Belize, and Honduras; while the nation with the highest median age is Cuba at 34.5 years, Figure 8.

Figure 8. Median Age: Graph and Rankings



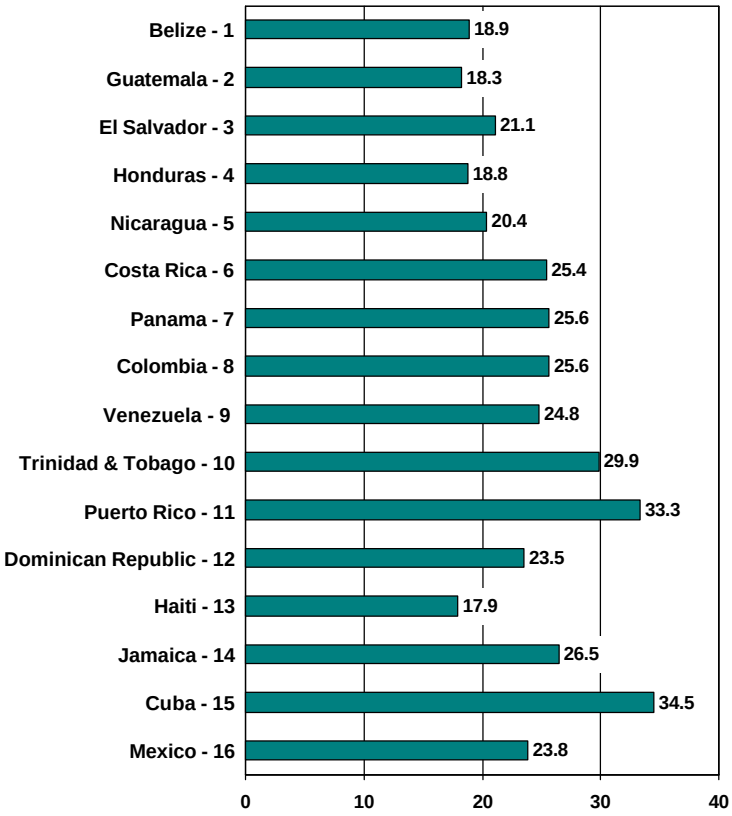
RANKINGS (Youngest to Oldest)
1. Haití (17.9 yrs)
2. Guatemala (18.3 yrs)
3. Honduras (18.8 yrs)
4. Belize (18.9 yrs)
5. Nicaragua (20.4 yrs.)
6. El Salvador (21.1 yrs)
7. Dominican Republic (23.5 yrs)
8. Mexico (23.8 yrs)
9. Venezuela (24.8 yrs)
10. Costa Rica (25.4 yrs)
11. Panama (25.6 yrs)
12. Colombia (25.6 yrs)
13. Jamaica (26.5 yrs)
14. Trinidad & Tobago (29.9 yrs)
15. Puerto Rico (33.3 yrs)
16. Cuba (34.5 yrs)

Data Source: 2003 CIA World Factbook

Population growth ranges from Trinidad and Tobago's *negative* growth factor of -0.68 percent, to Belize with a growth factor of 2.44 percent, and Guatemala with 2.66 percent, Figure 8. Belize and its Central American neighbors show the largest growth in the region. Given the high increase in tourism of this region, the population growth rate can be expected to continue to increase.

[1] Mexico City Population: data source "Times Atlas of the World, 2000."
[2] Mexico State Populations: data source "Tour by Mexico" http://www.tourbymexico.com/index.html

Figure 9. Population Growth: Graph and Rankings



RANKINGS (HIGH to low)
1. Guatemala (2.66%)
2. Belize (2.44%)
3. Honduras (2.32%)
4. Nicaragua (2.03%)
5. El Salvador (1.81%)
6. Haiti (1.67%)
7. Costa Rica (1.56%)
8. Colombia (1.56%)
9. Venezuela (1.48%)
10. Mexico (1.43%)
11. Panama (1.36%)
12. Dominican Republic (1.36%)
13. Jamaica (0.61%)
14. Puerto Rico (0.58%)
15. Cuba (0.34%)
16. Trinidad & Tobago (-0.68%)

Data Source: 2003 CIA World Factbook

ETHNICITY AND RELIGION

In both ethnicity and religion, the region is diverse enough to defy direct comparison; in fact, the different nations do not use the same categories of definition for these parameters. Therefore, these graphs are presented nation by nation in Figures 10 and 11.

Ethnic groups listed include Mestizo (European and Maya heritage), Creole (European and African heritage), Maya, Garifuna (Amerindian and African heritage), East Indian (immigrants from India), West Indian (Amerindian and Mixed), Amerindian, Black, Chinese, Spanish, Mixed, and Other. These statistics follow in Figure 10. Belize seems to offer the widest diversity of ethnicity in the region, while Haiti has the highest percentage in its majority population of any nation: 95%.

The Roman Catholic and Protestant Christian religion predominate in most nations in the region; indeed several do not list other religions as having statistical presence. Other nations breakdown Protestant into several categories, such as Costa Rica's "Evangelical, Jehovah's Witness, Other Protestant" categories. More religious diversity is reported in Belize, Jamaica, Trinidad & Tobago, and Haiti, Figure 11. It should also be noted that the predominant religion of the indigenous population of the Mayans and other Indian tribes of the region is most often a mystic mixture of Catholicism and the animist religion of older tradition. This information is not reflected by the statistical data.

Figure 10. Ethnicity Statistics

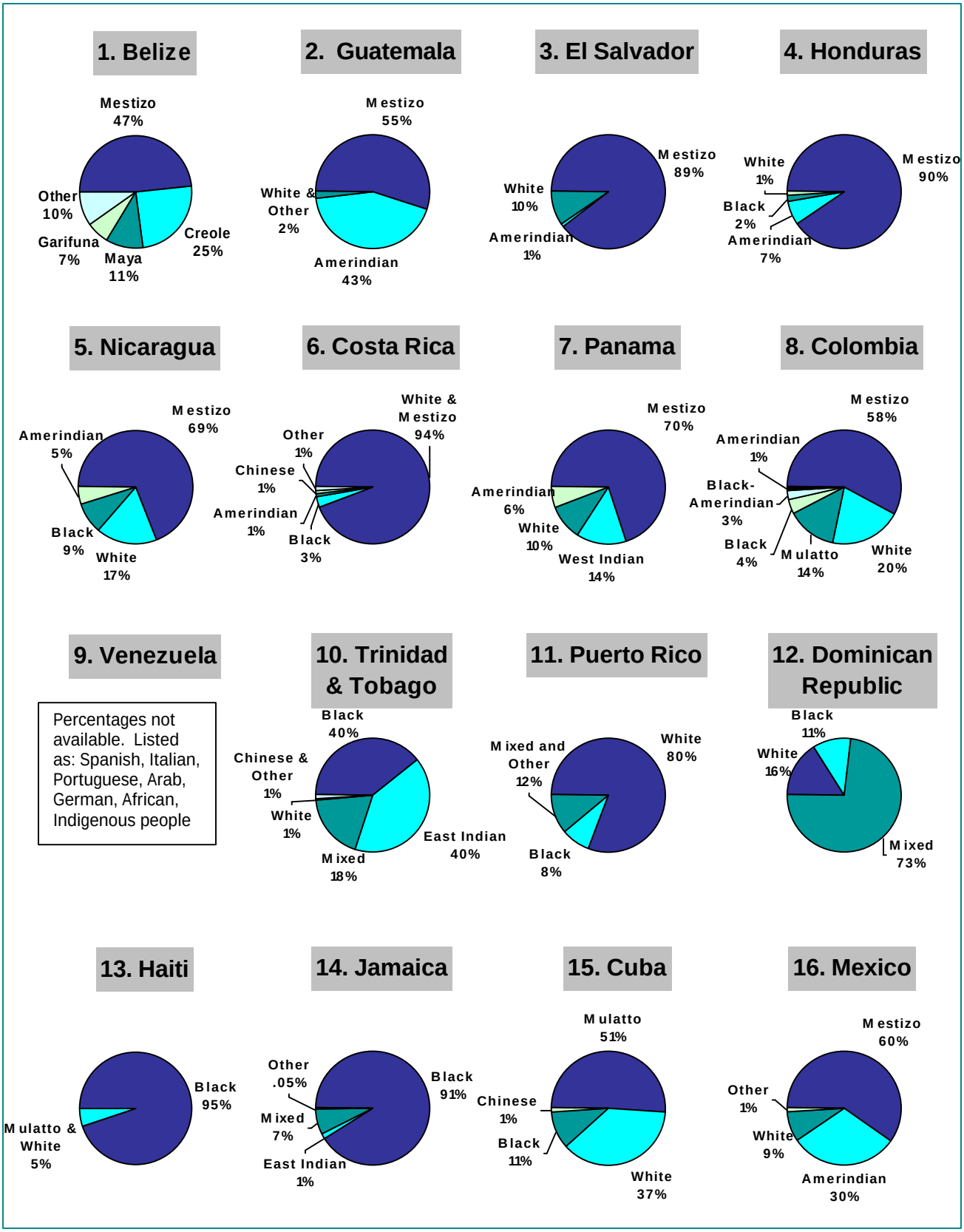
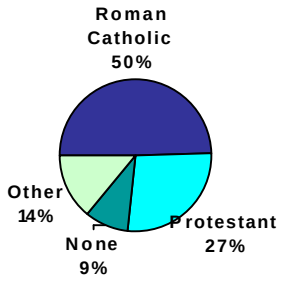


Figure 11. Religion Statistics

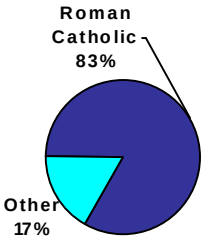
1. Belize



2. Guatemala

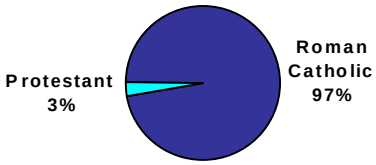
Percentages not available. Listed as: Roman Catholic, Protestant, Indigenous Mayan beliefs

3. El Salvador

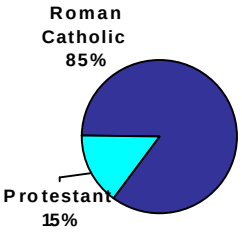


With "extensive activity by Protestant Groups"

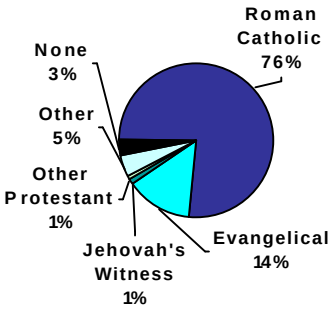
4. Honduras



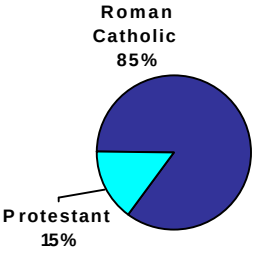
5. Honduras



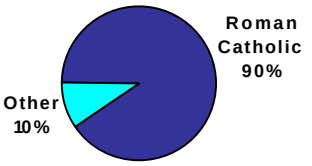
6. Costa Rica



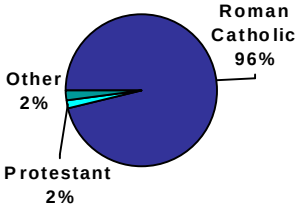
7. Panama



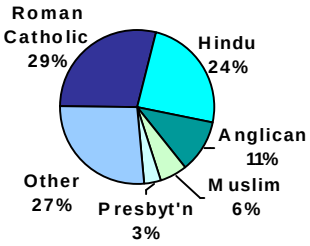
8. Colombia



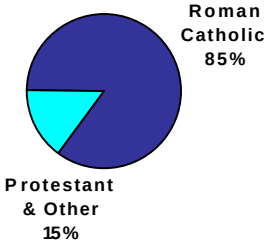
9. Venezuela



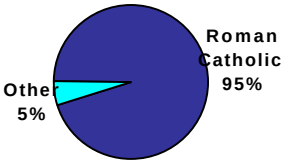
10. Trinidad & Tobago



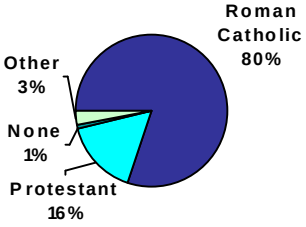
11. Puerto Rico



12. Dominican Republic

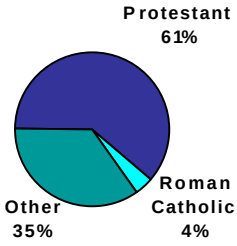


13. Haiti



Roughly half of the population also practices Voodoo

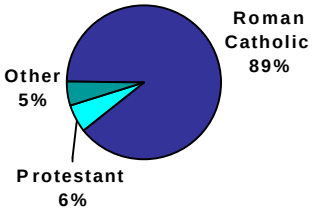
14. Jamaica



15. Cuba

Nominally 85% Roman Catholic prior to Castro assuming power; Protestants, Jehovah's Witnesses, Jews, and Santeria are also represented.

16. Mexico



Data Source: 2003 CIA World Factbook

Many of the first European settlers to America were Roman Catholic missionaries. The Cathedral of San Idelfonso, the oldest cathedral on the American continent (above) is in Merida, Mexico. This construction began in 1544 and was completed in 1598; Spaniards dismantled local Maya pyramids and used the stones in the construction of their cathedral. In direct analogy, today's Maya religion is a mixture of ancient practices and Catholic theology and ritual. *Photograph ã 2004, by M. Cotrofeld, IC² Institute Research Team.*

The regional diversity of culture displayed by the religion and ethnic statistics stems from the political roots of these nations. The European nations that colonized the regions brought strong influence to the indigenous cultures; and as with the example of the Mayan's mystic Catholicism, this resulted in a culture that is "not European and not indigenous." Table 5 provides an overview of official languages, government structure, and independence dates of these nations.

Table 5. Language, Government Structure and Year of Independence

Data Source: 2003 CIA World Factbook

	English	Spanish	Gov't Structure	Independence
1 - Belize	x		Parliamentary Democracy	1981 (from UK)
2 - Guatemala		x	Constitutional Democratic Republic	1821 (from Spain)
3 - El Salvador		x, plus Nahua (Amerindians)	Republic	1821 (from Spain)
4 - Honduras		x, plus Amerindian	Democratic Constitutional Republic	1821 (from Spain)
5 - Nicaragua	on Atlantic Coast	x	Republic	1821 (from Spain)
6 - Costa Rica		x	Democratic Republic	1821 (from Spain)
7 - Panama		x	Constitutional Democracy	1903 (from Colombia)
8 - Colombia		x	Republic	1810 (from Spain)
9 - Venezuela		x plus indigenous	Federal Republic	1811 (from Spain)
10 - Trinidad & Tobago	x		Parliamentary Democracy	1962 (from UK)
11 - Puerto Rico	x	x	Commonwealth	none
12 - Dominican Republic		x	Representative Democracy	1844 (from Haiti)
13 - Haiti	FRENCH & CREOLE		Elected Government	1804 (from France)
14 - Jamaica	x		Constitutional Parliamentary Democracy	1962 (from UK)
15 - Cuba		x	Communist State	1902 (US Admin.)
16 - Mexico		x	Federal Republic	1820 (from Spain)

QUALITY OF LIFE MEASURES

While quality of life is difficult to measure comparatively, we present statistics on literacy rate, population below poverty, life expectancy at birth, infant mortality, and the HIV prevalence rate. Combined, these statistics benchmark a general profile of the quality of life of these nations.

Literacy Rate[1] and Population Below Poverty

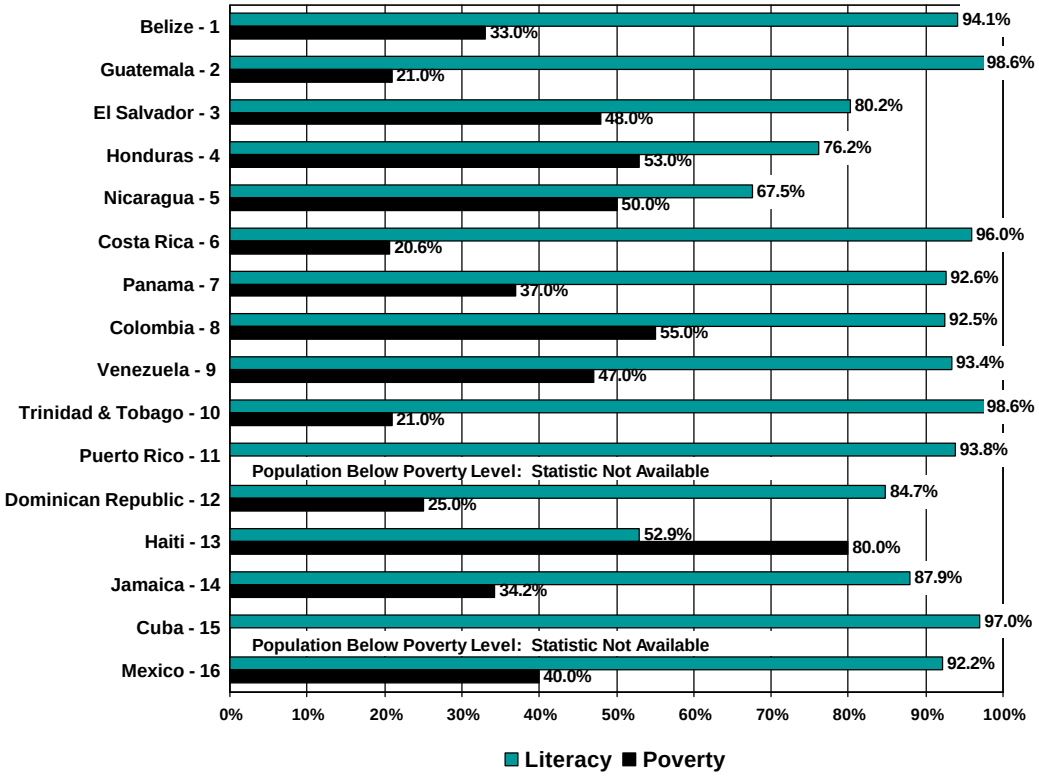
The highest literacy rate is 98.6 percent, shared by both Guatemala and Trinidad & Tobago. The literacy rate is lowest in Haiti at 52.9 percent, followed by Nicaragua at 67.5 percent and Honduras at 76.20 percent. Ten out of the sixteen nations in this study show good literacy levels with statistics over 92 percent, Figure 12.

Comparative data on the "population below poverty level" shows Haiti with the extremely high figure of 80 percent, followed by Colombia with 55 percent. Costa Rica, Guatemala, and Trinidad & Tobago share the lowest statistic in this dataset with 21 percent of their population below poverty level. (Statistics for Cuba and Puerto Rico are not available for this parameter.)

Literacy rates are rising in the Mesoamerican and Caribbean region. A shop vendor reads a book while waiting for customers in Cancún, Mexico. Photograph ã 2004 by M. Cotrofeld, IC² Institute Research Team.

[1] Different definitions were sometimes applied to determine literacy rate. El Salvador defines literacy as "age 10 and over who can read and write," while Jamaica defines literacy as "age 15 and over who have ever attended school." Other countries measured the parameter of "population of 15 and over who can read and write." El Salvador's lower age level for this parameter may account in part for its lower statistic.

Figure 12. Comparison: Literacy Levels and Population below Poverty



Data Source: 2003 CIA World Factbook

Rankings shown in Table 6 emphasize the correlation between literacy rate and population under poverty level. The most "educated while poverty stricken" nations seem to be Colombia and Venezuela. Fifty-five percent of the population of Colombia is under the poverty level, in spite of its literacy rate of 92.5; while 47 percent of Venezuela is under the poverty level, while the nation has a literacy rate of 93.4. As a direct comparison, the U.S. has a literacy rate of 97% and a poverty rate of 12%.

These high literacy levels substantiate a consistent education effort in these nations to improve their economic status and quality of life. Yet while the literacy rates rise, poverty levels remain high. To be able to effectively compete in today's knowledge-based global economy requires – beyond literacy – a broad range of skills and access to both hard and smart infrastructures.

Table 6. National Rankings: Population Below Poverty and Literacy Levels

LITERACY RANKINGS (HIGH LITERACY to Low Literacy)	POVERTY RANKINGS Pop. Below Poverty Level (LOW POVERTY to High Poverty)
1. Guatemala	1. Costa Rica
2. Trinidad & Tobago	2. Guatemala
3. Cuba	3. Trinidad & Tobago
4. Costa Rica	4. Dominican Republic
5. Belize	5. Belize
6. Puerto Rico	6. Jamaica
7. Venezuela	7. Panama
8. Panama	8. Mexico
9. Colombia	9. Venezuela
10. Mexico	10. El Salvador
11. Jamaica	11. Nicaragua
12. Dominican Republic	12. Honduras
13. El Salvador	13. Colombia
14. Honduras	14. Haití
15. Nicaragua	
16. Haití	*Puerto Rico & Cuba not available*

Data Source: 2003 CIA World Factbook

Infant Mortality Rates and Life Expectancy at Birth

In another direct comparison, Figure 13 presents infant mortality rates which directly impact the paired statistic of life expectancy at birth. Table 7 shows the correlating rankings of these parameters. The infant mortality rate is lowest in Cuba, at 7.15 per 1,000 live births; while Puerto Rico has an infant morality rate of 9.38 per thousand. Haiti has the highest infant mortality rate per 1,000 live births at 76.01. This figure is over double the next highest figure of 34.19 in the Dominican Republic.

Puerto Rico enjoys the highest life expectancy at birth at 77.26 years, followed by Cuba at 76.8 years. Haiti shows the lowest life expectancy at birth, 51.61 years. Guatemala has the second lowest life expectancy at birth at 65.23 (closer to average for the region).

Girl with flowers: Mérida, Mexico. *Photograph ã 2004, by M. Cotrofeld, IC² Institute Research Team.*

Figure 13. Infant Mortality Rates & Life Expectancy at Birth

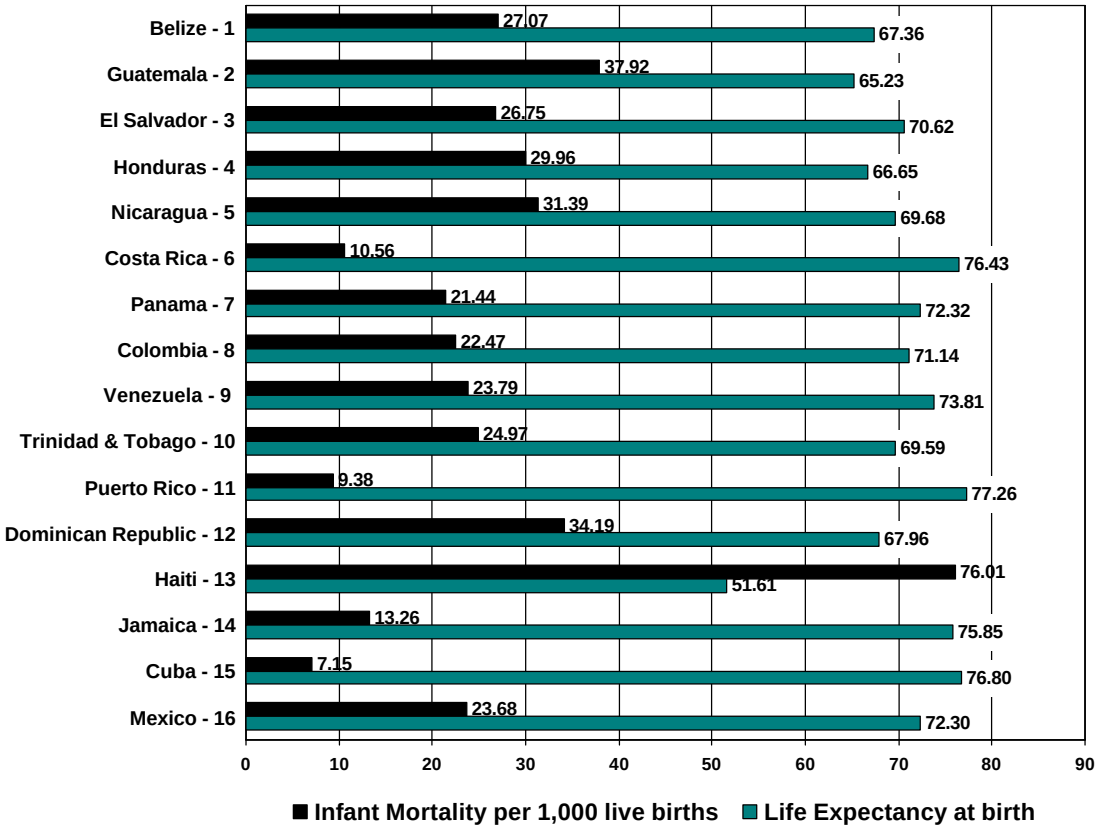


Table 7. Rankings: Life Expectancy and Infant Mortality Rates

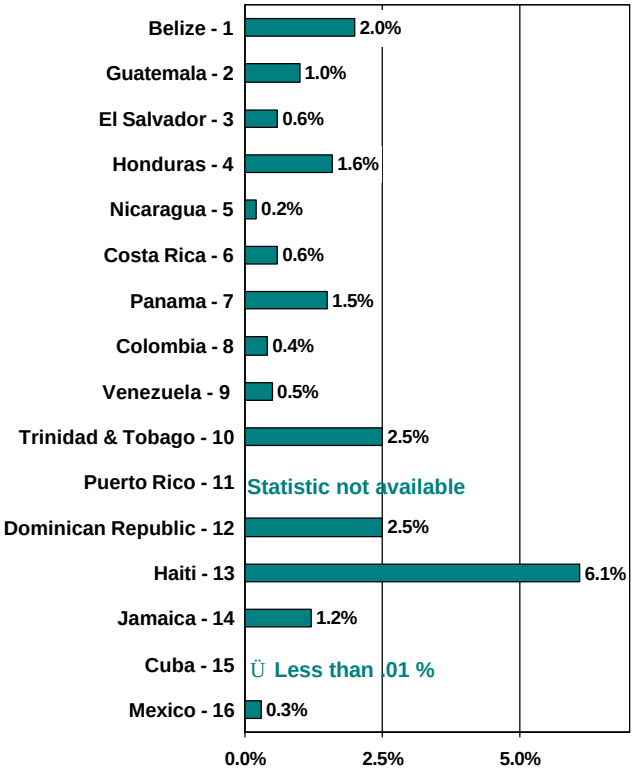
LIFE EXPECTANCY RANKINGS (HIGH LIFE EXPECTANCY to Low)	INFANT MORTALITY RANKINGS Deaths per 1,000 live births (LOW DEATH RATES to High)
1. Puerto Rico	1. Cuba
2. Cuba	2. Puerto Rico
3. Costa Rica	3. Costa Rica
4. Jamaica	4. Jamaica
5. Venezuela	5. Panama
6. Panama	6. Colombia
7. Mexico	7. Mexico
8. Colombia	8. Venezuela
9. El Salvador	9. Trinidad & Tobago
10. Nicaragua	10. El Salvador
11. Trinidad & Tobago	11. Belize
12. Dominican Republic	12. Honduras
13. Belize	13. Nicaragua
14. Honduras	14. Dominican Republic
15. Guatemala	15. Guatemala
16. Haiti	16. Haiti

Data Source: 2003 CIA World Factbook

HIV Prevalence Rate

The HIV prevalence rate is statistically lowest in Cuba, which reports less than one tenth of one percent, Figure 14. Other nations which have HIV prevalence of one percent or less include Guatemala, El Salvador, Nicaragua, Costa Rica, Colombia, Venezuela, and Mexico. Haiti has the highest HIV prevalence rate of 6.1; the second lowest is 2.5, shared by the Dominican Republic and Trinidad & Tobago. (The statistic for this parameter is unavailable for Puerto Rico.)

Figure 14. HIV Prevalence Rate and Rankings



RANKINGS (LOW to High)
1. Cuba
2. Nicaragua
3. Mexico
4. Colombia
5. Venezuela
6. El Salvador
7. Costa Rica
8. Guatemala
9. Jamaica
10. Panama
11. Honduras
12. Belize
13. Trinidad & Tobago
14. Dominican Republic
15. Haiti
Puerto Rico not available

Data Source: 2003 CIA World Factbook

Patterns shown by Quality of Life Measures

While these statistics do not indicate a clear regional "leader" in quality of life measures, they do indicate that Haiti is the most troubled. Haiti has the lowest literacy rate, the highest population below poverty, the highest infant mortality rate, the lowest life expectancy at birth, and the highest HIV prevalence rate. Not only does Haiti show the worst statistics, their statistics are "far and away" the worst, with alarming figures other nations in the region don't approach. These related measures reduce the nation's median age to 17.9 (Figure 8, p. 65).

Haiti's very low median age adds another troubling detail to the nation's profile: not only is it a nation in abject poverty – but it is a nation of *minors* in abject poverty. And this young, uneducated nation faces the greatest statistical challenges to overcome of any in its region.

Another statistic that perhaps isolates Haiti further is that it is the only nation in the region whose official languages are French and Creole (Table 5, p. 70). All other nations in our study have an official language of English or Spanish. This language barrier almost certainly

serves to economically isolate the country, both in seeking regional partnerships for success, and in daily business exchange.

While Haiti is not the focus of this report and its great needs cannot be appropriately addressed within present parameters, its troubled profile must be acknowledged in this discussion of regional statistics; and indeed, the large number of emigrants from Haiti impacts the surrounding nations as Haitians seek better circumstances elsewhere[1].

GROSS DOMESTIC PRODUCT & LABOR FORCE

Gross Domestic Product ranges from Mexico's 924.4 billion dollars to Belize's 1.28 billion, Table 8. Yet GDP per capita shows Puerto Rico in the regional lead, with $11,500; and Haiti with the lowest figure of $1,700, Figure 15.

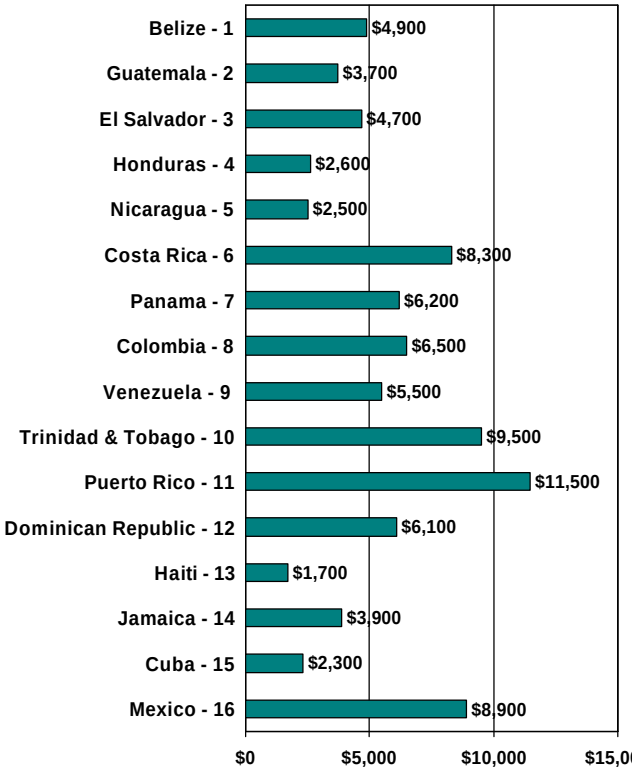
Table 8. Rankings: Gross Domestic Product

Gross Domestic Product RANKINGS (HIGH GDP to Low)
1. Mexico ($ 924.4 billion)
2. Colombia ($ 268 billion)
3. Venezuela ($ 132.8 billion)
4. Dominican Republic ($ 53 billion)
5. Guatemala ($ 48 billion)
6. Puerto Rico ($45.7 billion)
7. Costa Rica ($32 billion)
8. El Salvador ($30 billion)
9. Cuba ($25.9 billion)
10. Panama ($18.06 billion)
11. Honduras ($17.6 billion)
12. Nicaragua ($12.8 billion)
13. Haiti ($ 12 billion)
14. Trinidad & Tobago (11.1 billion)
15. Jamaica ($ 10 billion)
16. Belize ($1.28 billion)

Data Source: 2003 CIA World Factbook

[1] See Jamaica Challenges, p. 50.

Figure 15. GDP Per Capita and Rankings

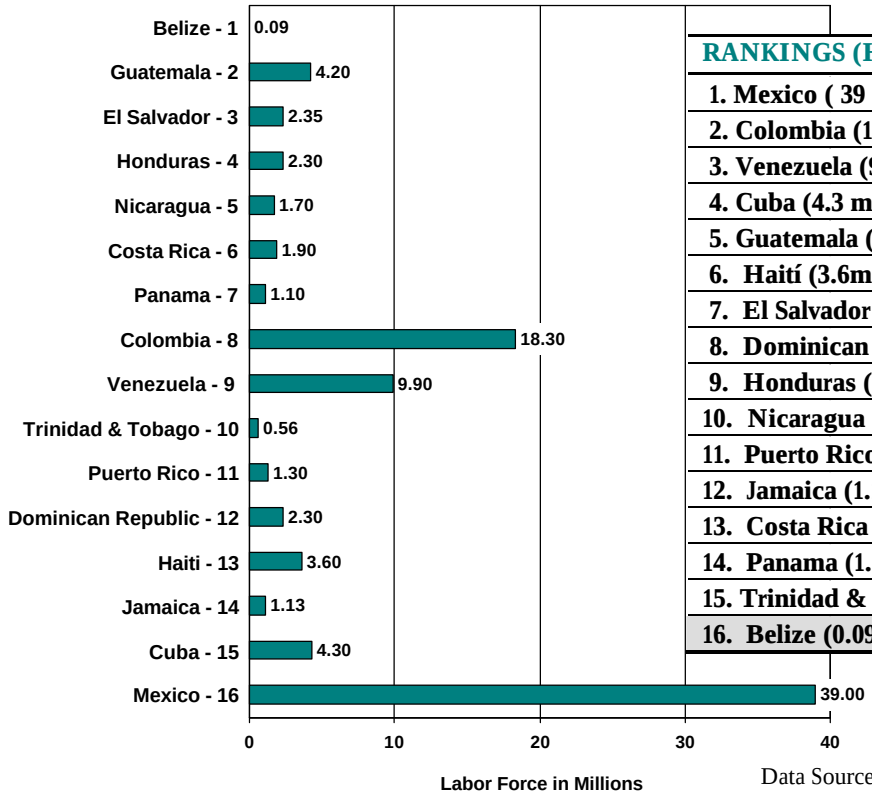


RANKINGS (HIGH to Low)
1. Puerto Rico ($11,500)
2. Trinidad & Tobago ($ 9,500)
3. Mexico ($8,900)
4. Costa Rica ($8,300)
5. Colombia ($6,500)
6. Panama ($6,200)
7. Dominican Republic ($6,100)
8. Venezuela ($5,500)
9. Belize ($4,900)
10. El Salvador ($4,700)
11. Jamaica ($3,900)
12. Guatemala ($3,700)
13. Honduras ($2,600)
14. Nicaragua ($2,500)
15. Cuba ($2,300)
16. Haiti ($1,700)

Data Source: 2003 CIA World Factbook

Mexico has the largest labor force, at 39.8 million, followed by Colombia with 18.3 million, Figure 16. Belize has the smallest labor force at 90,000; and Trinidad & Tobago the second smallest with 564,000.

Figure 16. Labor Force and Rankings



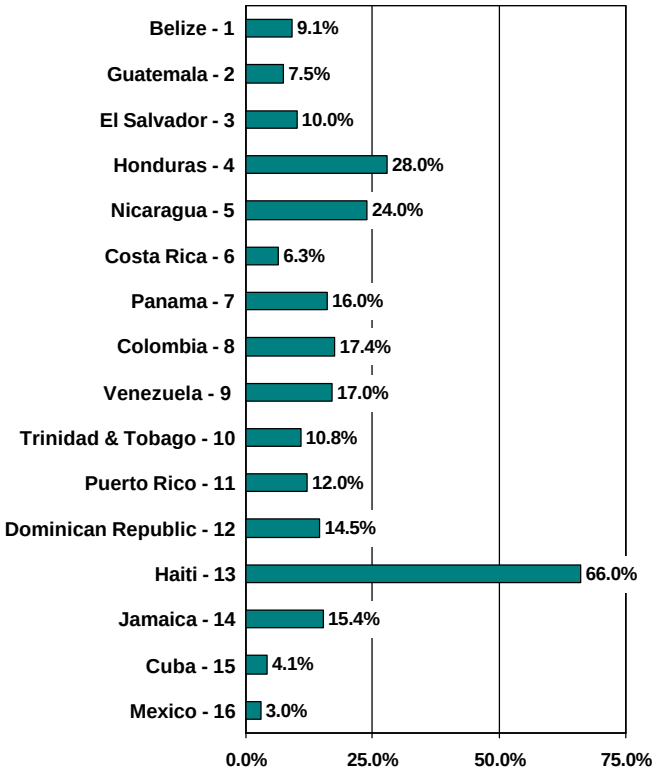
RANKINGS (HIGH to Low)
1. Mexico (39 million)
2. Colombia (18.3 million)
3. Venezuela (9.9 million)
4. Cuba (4.3 million)
5. Guatemala (4.2 million)
6. Haití (3.6million)
7. El Salvador (2.35 million)
8. Dominican Republic (2.3 million)
9. Honduras (2.3 million)
10. Nicaragua (1.7million)
11. Puerto Rico (1.3 million)
12. Jamaica (1.13 million)
13. Costa Rica (1.1 million)
14. Panama (1.1 million)
15. Trinidad & Tobago (0.56 million)
16. Belize (0.09 million)

Data Source: 2003 CIA World Factbook

Unemployment

Unemployment statistics are presented as reported in Figure 17, but these statistics are not expected to be congruent in measure. For example, while Mexico shows only 3% unemployment, this statistic counts anyone who has worked for 2 weeks in a year as "employed." Cuba also boasts low unemployment figure of 4.1%. The highest unemployment figure is held by Haiti at over 66%, followed by Honduras with 28%, and Nicaragua with 24%. Most of these nations report "underemployment" as a major economic concern. For while their educational systems increase in efficiency, local opportunities continue to lapse. In interviews conducted by the Quicklook team, many regions cited underemployment as caused generally by a lack of entrepreneurial values and opportunities in the culture.

Figure 17. Unemployment Statistics and Rankings



RANKINGS (LOW to High)
1. Mexico (3%)
2. Cuba (4.1%)
3. Costa Rica (6.3%)
4. Guatemala (7.5%)
5. Belize (9.1%)
6. El Salvador (10%)
7. Trinidad & Tobago (10.8%)
8. Puerto Rico (12%)
9. Dominican Republic (14.5%)
10. Jamaica (15.4 %)
11. Panama (16%)
12. Venezuela (17%)
13. Colombia (17.4%)
14. Nicaragua (24%)
15. Honduras (28%)
16. Haití (over 66%)

Data Source: 2003 CIA World Factbook

GDP and Labor Force by Business Sector

In preliminary comparisons not presented here, there was no apparent correlation between higher overall GDP and business sector GDP. In comparing GDP by business sector to Labor force by business sector (Figures 18 and 19), there is the general observation that the agricultural sector employs a larger labor force compared to the realized GDP. While this is perhaps not surprising, the challenge exists to assist this business sector to move up the value chain in marketing[1].

[1] Refer to "Steps toward Economic Development in Latin America" by Carlos Scheel, p. 41.

Figure 18. Labor Force by Business Sector

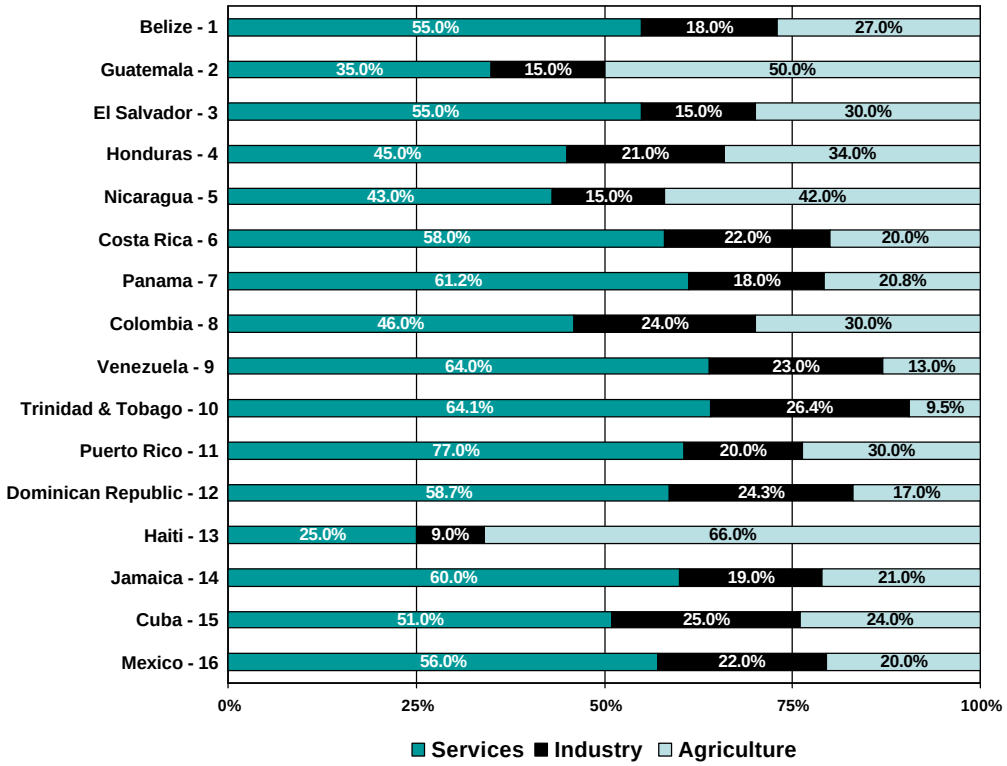
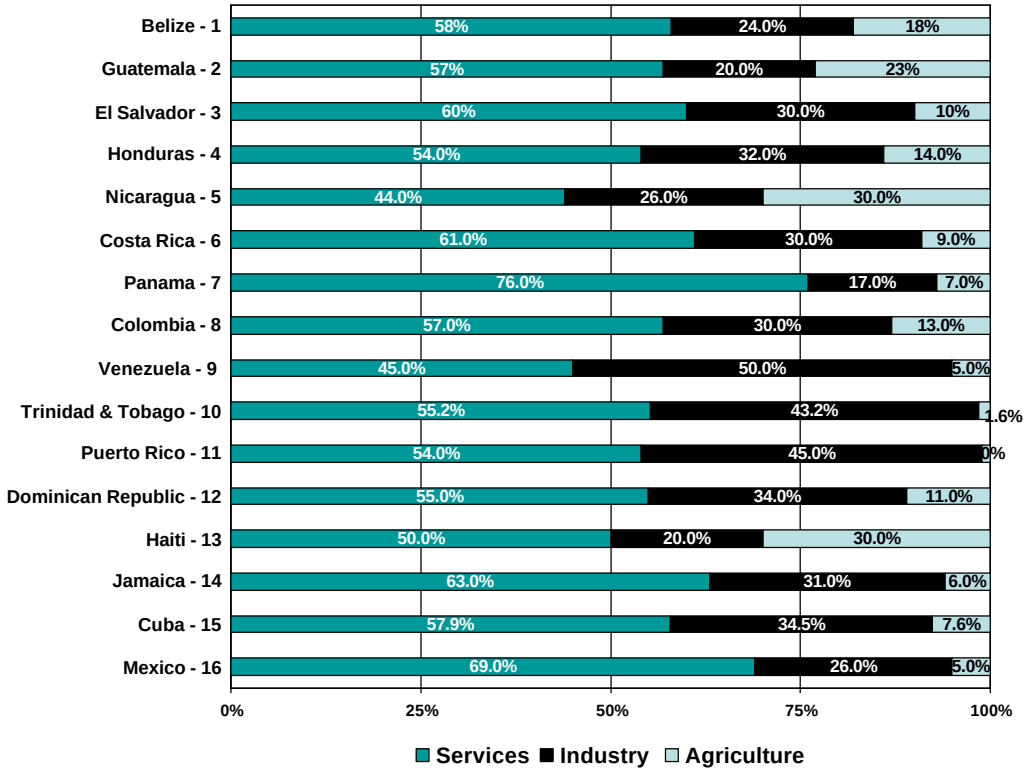


Figure 19. GDP by Business Sector



Data Source: 2003 CIA World Factbook

EXPORTS & IMPORTS AND INTERNATIONAL PARTNERS

Table 9 presents Exports and the top three international export partners of each nation included in this comparative study. Belize ranks lowest in Exports with 290 million dollars f.o.b. followed by Haiti's 298 million dollars f.o.b. These figures are a small fraction of the exports of the neighboring nations, whose numbers are expressed in billions (not millions) of dollars.

The number one export partner for each of these nations is the U.S., with the exception of Cuba which is under U.S. trade embargo, whose number one export partner is the Netherlands.

Table 9. Exports in $ and Top Three Export Partners

EXPORTS	Exports in $	FIRST	SECOND	THIRD
1-Belize	$ 290 M f.o.b.[1]	US (40.5%)	UK (23.2%)	Peru (8.3%)
2-Guatemala	$ 2.7 B f.o.b.	US (55.3%)	El Salvador (9.4%)	Costa Rica (3.9%)
3-El Salvador	$ 3 B	US (65%)	Guatemala (11%)	Honduras (8%)
4-Honduras	$ 1.3 B f.o.b.	US (45.7%)	El Salvador (10.2%)	Guatemala (9.7%)
5-Nicaragua	$ 637 B f.o.b.	US (57.7%)	Costa Rica (10.8%)	Guatemala (10.8%)
6-Costa Rica	$ 5.1 B	US (31.5%)	Netherlands (8.9%)	UK (4.5%)
7-Panama	$ 5.8 B f.o.b.	US (47.8%)	Sweden (5.8%)	Costa Rica (4.8%)
8-Colombia	$ 12.9 B f.o.b.	US (43%)	EU (16%)	Andean CON (15%)
9-Venezuela	$ 28.6 B f.o.b.	US (65%)	Brazil (5.5%)	Colombia (3.5%)
10-Trinidad & Tobago	$ 4.2 B f.o.b.	US (46.6%)	Venezuela (19.4%)	Colombia (8%)
11-Puerto Rico	$ 46.9 B f.o.b.	US (88.2%)	UK (1.5%)	Dominican Republic (1.4%)
12-Dominican Republic	$ 5.3 B f.o.b.	US (87.3%)	Netherlands (1.1%)	Canada (7%)
13-Haiti	$ 298 M f.o.b.	US (84.3%)	EU (5%)	
14-Jamaica	$ 1.4 B f.o.b.	US (35.7%)	EU (15.9% w/o UK)	UK (13%)
15-Cuba	$ 1.8 B f.o.b.	Netherlands (22.4%)	France (6.5%)	Canada (5.7%)
16-Mexico	$ 158.4 B f.o.b.	US (82.7%)	Canada (5.4%)	Japan (1.1%)

Data Source: 2003 CIA World Factbook

Table 10 presents Imports and the top three international import partners of each nation. Belize ranks lowest in imports with 430 million dollars (c.i.f., followed by Haiti with imports of 1.14 billion dollars c.i.f. As with exports, the number one import partner for each of these nations is the U.S., again with the exception of Cuba, whose number one import partner is Spain.

[1] f.o.b. = free on board. c.i.f. = cost, insurance, and freight

Table 10. Imports in $ and Top Three Import Partners

IMPORTS	Imports in $	FIRST	SECOND	THIRD
1-Belize	$ 430 M c.i.f.	US (35.7%)	Mexico (10.1%)	Netherlands Antilles (6.1%)
2-Guatemala	$ 5.6 B f.o.b.	US (32.8%)	Mexico (9.3%)	South Korea (8.2%)
3-El Salvador	$ 4.9 B	US (50%)	Guatemala (10%)	EU (7%)
4-Honduras	$ 2.7 B f.o.b.	US (46.2%)	Guatemala (9.9%)	El Salvador (6.2%)
5-Nicaragua	$ 1.7 B f.o.b.	US (27.6%)	Costa Rica (10.8%)	Guatemala (10.8%)
6-Costa Rica	$ 6.4 B	US (36.7%)	Japan (4.4%)	Mexico (4.2%)
7-Panama	$ 6.7 B f.o.b.	US (34.3%)	Colombia (5.9%)	Japan (5.4%)
8-Colombia	$ 12.5 B f.o.b.	US (35%)	EU (16%)	Andean CON (15%)
9-Venezuela	$ 18.8 B f.o.b.	US (60%)	Brazil (5.5%)	Colombia (3.5%)
10-Trinidad & Tobago	$ 3.8 B f.o.b.	US (34.2%)	Venezuela (19.4%)	Colombia (8%)
11-Puerto Rico	$ 29.1 B c.i.f.	US (53.5%)	Ireland (16.3%)	Japan (4.5%)
12-Dominican Republic	$ 8.7 B f.o.b.	US (87.3%)	Netherlands (1.1%)	Canada (.7%)
13-Haiti	$ 1.14 B c.i.f.	US (55.9%)	EU (9.8%)	Dominican Republic (N/A)
14-Jamaica	$ 3.1 B f.o.b.	US (47.8%)	CARICOM (12.4%)	EU (8%)
15-Cuba	$ 4.8 B f.o.b.	Spain (12.7%)	France (6.5%)	Canada (5.7%)
16-Mexico	$ 168.4 B f.o.b.	US (70.6%)	Germany (3.5%)	Japan (2.7%)

Data Source: 2003 CIA World Factbook

Table 11 compares national rankings of Exports to Imports. All these nations import more than they export, except Puerto Rico and Colombia. Nicaragua and Haiti show the greatest disparity, importing billions while exporting millions.

Table 11. Rankings: Imports and Export

EXPORTS RANKINGS (HIGH to Low)	IMPORTS RANKINGS (HIGH to Low)
1. Mexico ($158.4 billion f.o.b.)	**1. Mexico ($168.4 billion f.o.b.)**
2. Puerto Rico ($46.9 billion f.o.b.)	**2. Puerto Rico ($29.1 billion c.i.f.)**
3. Venezuela ($28.6 billion f.o.b.)	**3. Venezuela ($18.8 billion f.o.b.)**
4. Colombia ($12.9 billion f.o.b.)	**4. Colombia ($12.5 billion f.o.b.)**
5. Panama ($5.8 billion f.o.b.)	**5. Dominican Republic ($8.7 billion f.o.b.)**
6. Dominican Republic ($5.3 billion f.o.b.)	**6. Panama ($6.7 billion f.o.b.)**
7. Costa Rica ($5.1 billion)	**7. Costa Rica ($6.4 billion)**
8. Trinidad & Tobago ($4.2 billion f.o.b.)	**8. Guatemala ($5.6 billion f.o.b.)**
9. El Salvador ($3 billion)	**9. El Salvador ($4.9 billion)**
10. Guatemala ($2.7 billion f.o.b.)	**10. Cuba ($4.8 billion f.o.b.)**
11. Cuba ($1.8 billion f.o.b.)	**11. Trinidad & Tobago ($3.8 billion f.o.b.)**
12. Jamaica ($1.4 billion f.o.b.)	**12. Jamaica ($3.1 billion f.o.b.)**
13. Honduras ($1.3 billion f.o.b.)	**13. Honduras ($2.7 billion f.o.b.)**
14. Nicaragua ($637 million f.o.b.)	**14. Nicaragua ($1.7 billion f.o.b.)**
15. Haiti ($298 million f.o.b.)	**15. Haiti ($1.14 billion c.i.f.)**
16. Belize ($290 million)	**16. Belize ($430 million c.i.f.)**

Data Source: 2003 CIA World Factbook

BUDGETS, EXTERNAL DEBT & ECONOMIC AID

Mexico has the largest budget expenditures with $140 billion, followed by Colombia with $25.6 billion, while Belize has the smallest budget expenditure of $209 million (Table 12). Venezuela has the highest budget deficit of 6.5 billion, followed by Mexico with 4 billion. Belize is one of only three nations whose budget expenditures do not exceed budget revenues, along with Haiti[1] and Honduras. In rankings of External Debt, Table 13, Mexico ranks highest, while Belize ranks lowest.

Table 12. Rankings: Budget Revenues and Budget Expenditures

RANKINGS (HIGH to low)	Budget Revenues	Budget Expenditures	Differential
1. Mexico	$136 billion	$140 billion	4 billion
2. Colombia	$24 billion	$25.6 billion	1.6 billion
3. Venezuela	$21.5 billion	$27 billion	6.5 billion
4. Cuba	$14.9 billion	$15.6 billion	.7 billion
5. Puerto Rico	$6.7 billion	$9.6 billion	2.9 billion
6. Dominican Republic	$2.9 billion	$3.2 billion	.3 billion
7. Jamaica	$2.23 billion	$2.56 billion	.33 billion
8. El Salvador	$2.1 billion	$2.5 billion	.4 billion
9. Costa Rica	$1.91 billion	$2.35 billion	.41 billion
10. Panama	$1.9 billion	$2 billion	.1 billion
11. Guatemala	$1.54 billion	$1.6 billion	.06 billion
12. Trinidad & Tobago	$1.54 billion	$1.6 billion	.06 billion
13. Nicaragua	$726 million	$908 million	182 million
14. Honduras	$607 million	$411.9 million	195.1 million
15.Haití	$273 million	$361 million	88 million
16. Belize	$224 million	$209 million	13 million

Table 13. Rankings: External Debt

Data Source: 2003 CIA World Factbook

RANKINGS (HIGH to low)	External Debt
1. Mexico	$150 billion
2. Colombia	$38.4 billion
3. Venezuela	$38.2 billion
4. Cuba	$27.3 billion or more
5. Panama	$7 billion
6. Nicaragua	$5.8 billion
7. El Salvador	$5.6 billion
8. Honduras	$5.4 billion
9. Jamaica	$5.3 billion
10. Costa Rica	$4.8 billion
11. Dominican Republic	$4.8 billion
12. Guatemala	$2.8 billion
13. Trinidad & Tobago	$2.8 billion
14. Haití	1.2 billion
15. Belize	$475 million
Puerto Rico	Not Available

[1] Given Haiti's troubled profile it is at first surprising that they do not exceed their budget, but this would apparently be due to the high volume of economic aid which it receives (Table 14), and is outstripped by the size of their external debt.

Table 14. Rankings: Economic Aid

RANKINGS (HIGH to low)	ECONOMIC AID
1. Mexico	$1.666 billion
2. Haiti	$730.6 million
3. Honduras	$557.8 million
4. El Salvador	$252 million
5. Dominican Republic	$239.6 million
6. Panama	$197.1 million
7. Venezuela	$74 million
8. Cuba	$68.2 million
9. Guatemala	$24 million
10. Trinidad & Tobago	$24 million
11. Nicaragua	Substantial foreign support

Data Source: 2003 CIA World Factbook

Mexico has received far and away the most economic aid, at $1.666 billion dollars. Second in receiving Economic aid is Haiti with $730.6 million and Honduras at $557.8 million. Nicaragua's figure was not stated in the CIA World Factbook, but was given as "substantial foreign support." Countries not included on this list were notated $NA, which means they have received little or no foreign economic aid. Belize is among these.

BELIZE'S REGIONAL PROFILE

For lack of a better word, Belize seems to be "small" in the regional view. Though it is not the smallest nation in our study by square kilometers, Belize's geographic area is dwarfed by its nearest neighbor Mexico. Of all the nations in this study, it has the smallest population (and consequently the smallest labor force), both overall and per square kilometer. Belize's GDP was lowest of the nations studied (although it ranked 9th out of 16 in GDP per Capita). Of the nations we studied, its external debt was smallest – and so was its overall budget. Its unemployment was lower than 10 other nations.

At the "street level," our research team found the populace cheerful, friendly and very helpful. Diverse in ethnicity and race, it provides an inclusive society, which is a positive environment for economic growth and social change. Its literacy is high, and though its poverty level is at 33%, nine other nations in our study had higher poverty rankings.

Belize has problems, to be sure. Only three nations of our study showed lower life expectancy at birth, and only five showed higher infant mortality rankings. It ranked high in HIV prevalence. Its median age is quite young, at 18.9 years. Yet, as a developing nation in a region of developing nations, Belize seems small and overall its problems seem approximately average. It is not a nation trapped in desperation, as is Haiti.

But Belize is rising in international prominence – most especially in international tourism. It is alarming to consider the question of whether this small nation can handle its population being "tripled"[1] by cruise ship tourists who do not triple its workforce or actively contribute to its society or economic base. Further, because of its small geographic area, Belize cannot afford "mistakes" in protecting its environmental ecology and pristine natural resources.

[1] See photo caption, page 38.

These concerns for Belize should be brought to the attention of the U.S. and the European Union, perhaps with the understanding that "in this small place of the world," a little economic assistance could provide large and meaningful improvements.

Further, it should be noted that the success of BEST Park and BELIZEA Plantation could provide a turning point toward bringing Belize into the status of a developed nation in a sustainable manner. For in this "small place," one large success could provide immeasurable benefit.

THE REGIONAL BENEFIT OF BEST PARK

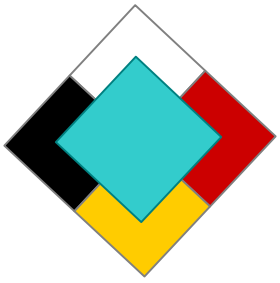
In addition to its positive potential in Belize, the success of BEST Park could benefit the entire Mesoamerican and Caribbean region:

- to catalyze indigenous industry clusters
- to encourage entrepreneurship in general

Further, as a facility strategically planned to support sustained economic growth, this new model could prove valuable to developing regions worldwide: for the challenges of Belize are common – underemployment, ensuing poverty, and continued use of practices which are not sustainable for an enlarging population in a fragile ecology.

This report is part of the analysis process incorporated by BEST PARK and BELIZEA Plantation, in order to assess the assets and challenges this venture will face. IC² Institute is largely the model of this visionary project. Their partnership in researching and providing this report has been intended to provide intrinsic insight to plans currently in formation. Their continued involvement in the planning and development process is hoped to lend stabilizing oversight toward the stated goals.

Hope and extraordinary vision initiated this study; and the purpose of this study is to reinforce and substantiate that hope and vision toward a sustainable reality.



Children en el Mercado/Easter Monday, Cancún *photograph ã 2004, Margaret Cotrofeld, IC² Institute Research Team.*

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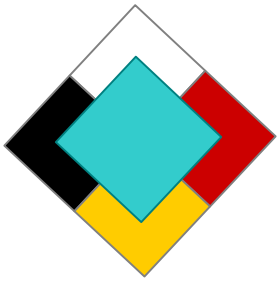

Bicycling the sandy streets of San Pedro, Photograph ã 2004 by Keith Crawford, IC² Institute Research Team.

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