

# Bayamón, Puerto Rico

## LivCom Awards 2005

A Sustainable Community with Global Connectivity

Liveable Community Competition  
Environmentally Sustainable Project Competition



# General Information

## Puerto Rico<sup>1</sup> and Bayamón

Bayamón, is a municipality located in the northern coast of Puerto Rico approximately 7 miles from the capital city of San Juan, has a territorial extension of 44.7 sq. miles and is the second most populated municipality on the Island with 224,044 inhabitants (as reported by the Census of 2000) and is third in population density with 5,012 inhabitants per square mile. While during the decades of 1960 through 1990 population in the municipality of Bayamón grew an average of 10.3% per year, in the past decade, population growth was only 1.7%. Today demographic dynamic shows a tendency towards the stabilization of growth.

## Hydrograph: a natural resource conditioning development.

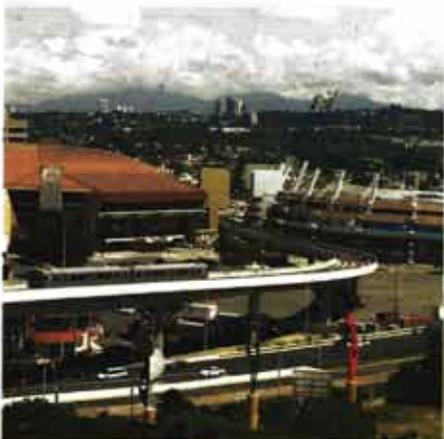
Original settlements in the jurisdiction of Bayamón (1772) were attracted by the opportunities the Bayamón River and its waters provided. Available fresh running water to nourish daily life, the pleasant microclimate of the land around, including fertile land and winds that mitigated Caribbean sun and heat, and a means of transportation that well served commerce those days, were some of the nature's blessings enjoyed by the settlers.

Previous land development and suburban sprawl forgot the river and its environmental significance. On the contrary, the running waters of the river began to be perceived as a menace to the new settlements. Population boomed and development efforts during the decades of 1960, 1970 and 1980 neglected the natural environment of the river and avoided the lands that could be impacted by its furious waters. Unfortunately, at that time the lack of technology and information limited adequate understanding of the impact of growth on the behavior of the river and its environment. During intense rainfalls the river would force its way through non-anticipated terrains frequently flooding communities and causing great damage, natural environment was severely impacted: erosion affecting the river effluents, main channel and the river bank had the effect of damaging the flora and the fauna also.

First generation problem solving interventions included initiatives like building a fringe on top of the river overcoming the threats of flooding and accepting the challenge of incorporating the river in urban life.



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<sup>1</sup>Puerto Rico is located in the Caribbean Region between North and South America. It is the smallest of the Greater Antilles in the Caribbean and is an archipelago conformed of a main island with 100 x 36 miles of territorial extension and three other very small islands. The climate is tropical, with little seasonal temperature variation. Its territory is comprised of mostly mountains and a coastal plain belt. According to the Census of 2000, Puerto Rico had 3,916,632 inhabitants. Geopolitical division is conformed of 78 municipalities. The Capital City is San Juan, and thirteen (13) surrounding municipalities interact in what is identified as the San Juan Metropolitan Region.

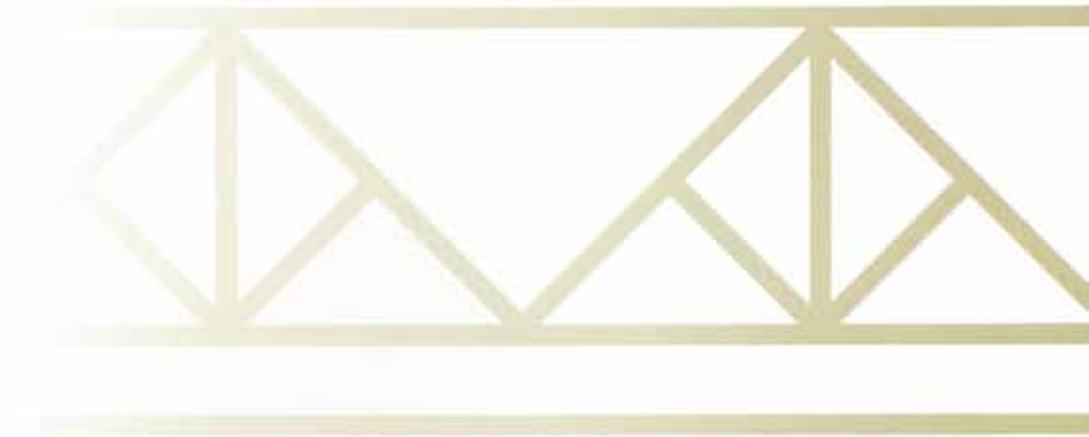
1. *La Red*, by Luis Toruella

2. *Central Park Allegories*, anticipate the modernity of the Sports Complex and the modern multimodal transit system serving Bayamón

3. *Ramón Luis Rivera*, Mayor of the City of Bayamón

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*"By its form, as by the manner of its birth,  
the city has elements at once of biological  
procreation, organic evolution and  
aesthetic creation.*

*It is both a natural object and a thing  
to be cultivated, something lived and  
something dreamed. It is the human  
invention par excellence"*

*Claude Levi-Strauss*



Puerto Rico

- Puerto Rico
- Metro Area
- Bayamón



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4. Reforestation on main road

5. Guillermo Sanabria Camera Orchestra

6. Junte Verde



# Community Involvement

## Social awareness and collective power

Social awareness is vital and necessary to Collective Power. Environmental accountability and learning are only possible through the acknowledgement and valorization of past experiences; record keeping and intense usage of information and technology. When these elements are present the vital links between humanity, natural and constructed environments are understood and caring for these become possible. In recent years Bayamón has rediscovered the potential of the river and has adopted Sustainable Development and Smart Growth policies that guide projects and citizen interaction with its ecosystem.

Puerto Rico's, urban development followed a model that did not consider enough the impact of actions on the environment. Our delicate island-ecosystems have been adversely impacted by development, and at the same time the effects of degradation on constructed environment and society can be easily perceived. In Bayamón, an emerging leader generation promotes sustainability and as the traces in a flag, the indispensables of financial, natural, produced, human, and social capitals, in harmonious operability are transforming economic development. Conservation, protection, responsible utilization and replenishment of the five types of capital results crucial to the sustainability of a robust and vibrant socio-economic development and within this framework, the smart developments and effective management practices implemented on the Bayamón Sustainable Corridor (the river system and its urban surroundings) have become a symbol and a model to follow influencing favorably decisions at the regional level and state level. More and more other municipalities are watching the development model of Bayamón and regulatory standards are being reconsidered after paradigms set forward through implementation of successful practices demonstrating a different pathway for development.

Bayamón has adopted the policy that educating for sustainability requires community wide involvement and the acknowledgement of the basic principle that sustainable cities are not improvised, neither emerge by coincidence, but on the other hand, are the result of determination and sound individual decisions. Among the benefits of this sustainability public policy are green development initiatives, increased health, productivity, perception of value and desire to do things correctly.

Local Environmental Challenges are being met with ample citizen participation that first recognizes that important determinants of environmental quality are the decisions and behaviors of individuals everywhere; and second, that one generation must understand the needs and aesthetic desires of future generations. Public education provides for awareness, informed choices and social responsibility.

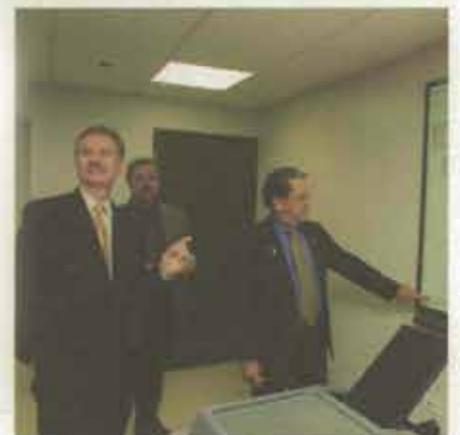
**Dissemination of the Service Network available to all citizens** is done through personal involvement of the Mayor by continuously visiting projects and providing information on the media; by the publication of a Service Guide and through the Municipal Web-Site ([www.municipiodebayamon.com](http://www.municipiodebayamon.com)).



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7. Martial Arts Competition

8. Public participation in project inaugural events is stimulated, as to educate and promote active enjoyment of infrastructure and services.

9. Conventional means of citizen participation are required by law and as well implemented at all levels of planning, including public and private proposed interventions; public exposure of planning documents; public meetings and hearings to discuss policies, objectives, projects and budgets; and open legislative sessions.



# Enhancement of the landscape

Bayamón has committed to a balanced and sustainable development of the Bayamón and Rio Hondo Basins and has adopted the project for the Bayamón Sustainable Corridor. This initiative addresses the need for formal adoption of policies to protect environment in areas that impact the ecosystems of both rivers and that may affect the quality of life. Many projects have been precedents to this formality and all have been guided through an environmental enhancement policy oriented as to provide for the healthy integration of man, constructed environment and nature.

**Bayamón was the first municipality in Puerto Rico to use aerial space in new developments**, probably the symbol for this type of developments that maximize land use and seek compatibility among diverse urban uses is the Bayamón City Hall.

**Floodplain Management Plan for the Municipality of Bayamón (1998) and All Hazard Mitigation Plan (June 2003)**, have recorded the historic events and have clearly identified the hazards of not caring for life and property related to the river ecosystem. Mitigation initiatives in these plans have guided interventions as care of critical infrastructure, relocation of families, continued cleaning and maintenance of the River Basin; and have pointed the need of coordinated efforts among the six municipalities through which the rivers cross and of the public and private entities that can assist the sustainable development of the River Basins.

**Municipal Growth Management Plan** has established clear policies for the management of sensitive ecosystems and has identified and classified sensible areas, defining the needed management and development controls for wetlands, aquifers, delicate flora and fauna ecosystems, and for archeological findings as well.

**The Central District Neighborhood Revitalization Plan** addresses the degradation of the environment and population loss, natural to the aging of the city and through public and private initiatives deals with urban life scars that through the years had become more evident in central areas: homelessness, inadequate shelter, mounting crime, paralyzing gridlock, decaying infrastructure, polluted air and water. Comprehensive Planning with strategic implementation have been changing the face of Central Bayamón. Initiatives include TOD<sup>10</sup> new housing developments, the reconstruction of market areas and the revamping of all areas with green infrastructure and new urban amenities. Seven Main Neighborhoods are being impacted through sustainable and smart growth projects and coordinated efforts between private entities, local, municipal and federal governments.

**Reforestation** of public surroundings has taken place through public and corporate initiatives. Among public projects have been the planting of indigenous species (15,000 new plants each year) and establishing a Municipal Plant Nursery. Also the involvement of rehabilitated ex-substance-abusers and people with physical and mental impairments in the reforestation project has provided employment opportunities and taken people away from the streets. Among corporate initiatives: mandatory mitigation regulations have restored the balance of wetlands in our territory; implementation of educational initiatives; facility maintenance have set models and competitive spirit towards beautifying the city.

**Mass Transit initiatives** are being promoted. On February 2005 the Urban Train System serving the Metropolitan Area began operation with three stations serving the Bayamón Sustainable Corridor. The municipality has assigned resources for the establishment of an integrated Trolley/Bus System. **This multimodal system will attain multiple objectives: connecting urban sectors, reducing traffic congestion, pollution emissions and city heat.**

**Special Zoning Districts for the surroundings of the Urban Train** provide special codes for densification, lower parking requirements, for pedestrian connections, and design and landscape architecture guidelines.

Attraction to Bayamón of one of the most recognized **University Environmental Programs** in P.R. has remarked significance of environmental objectives in the Bayamón Sustainability Corridor. This University is planning for the establishment of a **Program for Environmental Education to Decision Makers in the Caribbean and Latin America**. The site at Mogote Santa Ana (very sensitive karstic zone) is being considered and the projected facilities come to be a model for sustainable, low impact development. Classroom and meeting rooms will be constructed as to facilitate interaction with the environment and learning sustainable practices through personal experience.

<sup>10</sup>TOD – Transit Oriented Development increases pedestrian activity around transit stations with positive effects on the customer base of local businesses and tax revenues and local property values. At the same time reduces pressure of development in remote areas and decreases air pollution associated with automobile travel.



10.

10. Junte Verde is a yearly thematic festival or celebration and on this day the population of the region participates in an environmental education endeavor experiencing directly the blessings of nature.

# Heritage Management

Imbedded in all initiatives at the Bayamón Sustainable Corridor is the pride for natural, historical and cultural heritage. Projects foster social bonding, individual physical health and community identity and awareness.

**The rescue of patrimonial inventory** - many historic buildings and settings have been restored and returned to the public through uses for cultural education or recreation; among them Francisco Oller Museum, Olazabal Building housing the Workforce Investment Program and Head Start Educational Programs, the Vela Building housing the Fine Arts School, the Hacienda Santa Ana, housing a factory established since the nineteenth century, it is a private property restored by its owners and with a museum to showcase historic value of this site.

**Noches de Nostalgia y Bohemia** is the exposure of the values of the Central District and an invitation to their rescue. One night each month, the Traditional Urban Core becomes the setting for social interaction through music, culture and artistry.

The North Coastal Plain of Puerto Rico is sustained on a geological belt that runs the territory from east to west. This is a resource with storage capacity for great amounts of ground water and clandestine garbage/junk deposits has threatened its quality. A **Municipal Environmental Vigilance Corps** controls for illegal deposits, dilapidated private property, abandoned vehicles, and recommends actions for infrastructure maintenance and the enhancement of public areas. Also the Municipality has carefully selected a **strategic site for recyclable garbage/junk deposits**. This initiative will contribute to the conservation of the Karst Region and in the near future his site will serve as a platform for a major recycling project, but while this is achieved, the municipality has in place a recycling pilot project in 7 urbanizations and 27 schools; a strategic alliance with ProNaturra, a private recycling company, conducting a door-to-door recycling program for 4,000 housing; a friendly environment for businesses interested in investing in recycling-related activities.

**Public Art Projects** enhance the character and visual distinction of the city. Outstanding projects have been La Red by artist Luis Tomuellas enhancing Road 167 and symbolizing collective potential; Fountain Sculpture marking the Northern Entrance to the Bayamón Center; the Palm Tree at Road 167, marking the northwestern entrance to the Center and as a remembrance to native flora of the coastal plain where Bayamón is located; Central Park Allegories, anticipating the modernity of the Sports Complex and the modern multimodal transit system serving Bayamón. And, now developing, Parque Estrella del Norte, designed by the world renown artist Pablo Rubio, located near the Western and furthest terminal of the Urban Train, as symbol of the guiding principle that "humans are not distinct from nature but can use nature for human endeavors as long as coterminal subtle effects of timing and spatial positioning are in harmony."

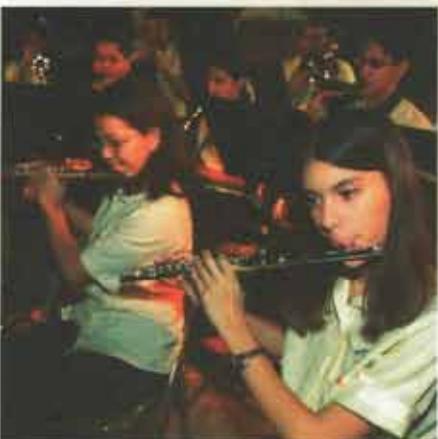
**A Campaign for the promotion of positive values** stimulates acknowledgement of environmental concerns (for example on garbage disposal, on maintenance of private property and care of public infrastructure) and triggers collective power towards city management and appreciation.



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11. Hacienda Santa Ana

12. Miss Universe Pageant celebrated in the city of Bayamón in 2001

13. Noches de Nostalgia y Bohemia

# Environmentally Sensitive Practices

The resources already invested by Bayamón (public and private) in sustainable and smart growth initiatives, have demonstrated possibility and that **environmental concerns come to be a very strong unifying factor for all territories**. These echo **New Diplomacy** in the World that addresses issues as, environment, security and human rights, among others.<sup>4</sup>

Paseo del Río and the Bayamón Golf Course are representative projects of environmental sensitive practices where interventions are smoothed through low impact developments, reforestation and landscape architecture, but as well serve as engines to rethink and redevelop areas of high activity, as quality environments with meaningful socio-economic opportunities.

## Benefits both projects account for are:

- Erosion and sedimentation control
- Reversed desertification
- Reforestation and conservation of biodiversity
- Enhancement of river conveyance to avoid flooding
- Revamping dilapidated industrial areas
- Contribution to decrease global warming and reduction of CO 2 emissions through physical sequestration
- Environmental Management & Accounting, CSR, SRI<sup>5</sup>
- Increased valuation of area properties
- Rekindling of economic activity of the area
- Contribution to poverty reduction through education, jobs, and new ways for capital growth
- Social bonding and networking

**Paseo del Río** comes to offer a unique and safe recreational area consisting of two independent walking/jogging and cycling trails, that extend through 9.5 kilometers next to the Bayamón river course. Two trails of uninterrupted pathways allow its visitors to embrace natural beauty and picturesque surroundings while exercising, or just enjoying social interaction and family activities. The facility includes resting areas with benches, water fountains, restrooms, public telephones, kiosks (private concessions), free parking and state of the art security. Paseo Río Bayamón maximizes the involvement of local residents and visitors, from children and teenagers to adults and seniors, including handicapped, providing for quality time, entertainment and educational activities, at no cost. Approximately 10,000 persons use the facility each week fostering social bonding, individual physical health, and community identity.

The project enhances the riverbank natural environment through forestation and continued maintenance of the canal. It is habitat and a species protection project and a flood mitigation initiative. Intense reforestation has taken place: 1,500 trees of 10 different species, 1.5 million square feet of grass, 50,000 bush plants of 25 varieties, and 6 varieties of ground cover were originally planted. Inventory and identification of biodiversity is taking place for didactical purposes

Design arrangements increase in complexity as one moves along the Paseo Río Bayamón. Experiencing the river walk stimulates awareness of the historical legacy of the original settlements established around the river Basins, celebrating and recreating Bayamón's metamorphosis into modernity; from the beginnings in 1500, the first settlements on 1645, the pre-industrial & agricultural economy of the 1770, the awakening of the city in 1791, and the industrial and modern development from 1820 to the present. **A near future addition to the project is signage and interactive stations for better acknowledgement of this intended chronological journey.**

During the month of June, 2005, the city of Bayamón inaugurated **Paseo Río Bayamón Golf Course**, an ecologically responsible course, developed on a 11 acre site in the past used as an open earth garbage dump and with an investment of 6 million dollars.

The Golf facility consists 19,000 square feet of putting green, chipping green, a Driving range consisting of a two level building with 62 sheltered stations, night illumination, a Pro shop, a Lake, and pedestrian and bicycle connections to the Paseo Río Bayamón Development. The landscape has been designed by a dasonomist utilizing primarily indigenous species (Planting of 11 acres of grass and 3 acres of 10 varieties of bushes and 5 varieties of palms) and with particular attention to develop a "soto" forest or small forest to guarantee the generational continuity of the species and older species mature. Expressive topographic features and natural views are combined with the appealing and colorful arrangement of flora providing for a unique multisensory experience.

This is the only public golf facility in Puerto Rico and represents an opportunity for social enrichment through interaction. It required that a mutual gains negotiation and conflict resolution approach be implemented all throughout the design and construction phases to integrate the community and all major stakeholders. SME's<sup>6</sup> involvement and participation included transfer of knowledge and capacity building in order to counteract the dualistic vision characterized by simplistic binary opposites. As a result many sponsors have adopted the project in one way or another. While being available to low income residents (in PR golf has been available only to high income sectors), free of charge, this project serves as a model for social interaction and equity.



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<sup>4</sup>Cities in our Future / Edited by Robert Geddes. "Based on the Conference on Cities in North America held in New York in 1996. Island Press. 1997.

<sup>5</sup>After the World War II and with the formation of the United Nations a process began that generated a "New Diplomacy" challenging many of the perceptions of the "Old or Traditional Diplomacy". A plethora of issues concerning, human rights, humanitarian, Labor, environmental and security issues have challenged traditional notions of sovereignty and the sanctity of national boundaries in all cases reaffirming the assertion that other governments might have a concern on another country "sovereign domestic" issues, like transboundary environmental issues (acid rain, air and water pollution, global warming, marine fisheries, biotechnology and trade.)

<sup>6</sup>CSR – Corporate Social Responsibility; SRI – Social Responsible Investment.

<sup>7</sup>SME – Small and Medium Enterprises

# Planning for the Future

## An Agenda for the Region based on Environment as the Unifying Factor

Outstanding projects as Paseo Río Bayamón and the Bayamón Golf Course, have stimulated momentum for the **Paseo del Mar Development**. Paseo del Mar is conceptually constructed envisioning the sustainable development of the Metropolitan District of Northern Puerto Rico. A network of natural waterways interconnects municipalities that are part of the actual metropolitan conglomerate. Bayamón, Guaynabo, Cataño, Toa Baja and San Juan, all municipalities in this geographical region, have experienced the impact of the uncontrolled growth of the past four decades manifest in population increase, urban sprawl and complexity as well as degradation of natural and constructed environment.

In 1995 the Developing Countries Per Capita Gross Domestic Product (GDP) was \$300. \$2,500 for middle income countries and \$20,000 for the developed countries. From 1980 the developed countries increased their income by 50%, while the developing countries experienced a dramatic 180% increase, but unfortunately high middle income countries like Puerto Rico increased their income less than 20%. In 2003 Puerto Rico's per capita GDP was \$11,279, less than half of the per capita GDP of the United States which was \$31,632 and alarmingly less than 1/8th of the growth experienced by the developing countries.

As a result the per capita income ratio that measures the inequality between developed and middle income countries increased in 20% (like the case between Puerto Rico and the United States), and decreased 50% between the developed and developing countries. In other words Puerto Rico, like other middle income countries, lagged behind, among other reasons because it could not find its niche in the world market created by globalization.

Puerto Rico has not been able to compete in high added value markets controlled by the developed economies because our labor force is not sufficiently skilled, nor can we compete in the standardize product markets manufactured by low wage labor using widely available technology to do routine tasks at the lowest possible costs.<sup>7</sup>

Within this Framework **Paseo del Mar Development**, has a greater ambition when it comes to be understood within the socio-economic context of Puerto Rico.<sup>8</sup> It brings a platform for a New Economic Development model based on the following:

- First, in the recognition that causes of present limitation are framed in Direction and Planning by the Government, Nationalization and Expropriation of Private Enterprises, Extreme Regulation and a closed economy (Development Model I previously promoted after World War II by the International Monetary Fund (IMF) and the World Bank (WB)).
- Second, that Puerto Rico's economy resulted redefined within the context of Model I, which allowed maintaining a zone of relative comfortable dual national and cultural identity, and positioned the island as a Developing Economy.
- Third, that Puerto Rico has grasped to Model I, past its useful life and has as well resisted change, yielding sub-optimal productivity and welfare.
- Fourth, that socio-economic health is today, inevitably threatened, challenged and transformed by the overwhelming unilateral cultural and economic effect of Globalization.
- Fifth, that transformation to Model II, becomes a must to overcome the increasing gap between our economy and that of developed countries.

Through the leadership of Bayamón, **mobilization of different sectors has begun and new paradigms are being set:**

- **Municipal governments as facilitators;**
- **Local and international private investment must be the driving force;**
- **A new Economic Platform promoting calibrated mixed use developments within a Regional Environmentally Sustainable Socio-Economic Development Model coupled with Implementation of Second Generation Model II Reforms and with Global Connectivity.**

<sup>7</sup>Globalization's Missing Middle, Foreign Affairs, November/December 2004, Vol 83 No 6 by Geoffrey Garrett.  
<sup>8</sup>Puerto Rico was a Spanish colony from 1493 to 1898 when it became part of the United States as a result of the Treaty of Paris, which ended the Spanish American War. Puerto Rico became a possession of the United States in 1898, US citizenship was granted to its inhabitants in 1917 and the island became a semi-autonomous US Commonwealth on July 25, 1952.

Puerto Rico is the smallest of the greater Antilles in the Caribbean. A 100 x 36 miles island east of the Dominican Republic. The climate is tropical, mild with little seasonal temperature variation. The terrain is comprised of mostly mountains and coastal plain belt all around the island. The population consist of 3,916,632.

16. Bayamón continues to locally develop its social capabilities and the necessary assets as to allow for satisfactory quality of life, expressed in terms of, ecological restoration, variety and city dynamism, security, as well as for effective management of the pressures of growth by leaving in the past uninformed interventions.



# Setting winds towards change

**Paseo del Mar Development** represents a strategy setting winds for the reconciliation of a robust and stable economy for Puerto Rico.

Paseo del Mar has the capability of addressing fundamental international environmental law principles as the following:

- Human beings have the right to an environment adequate for their health and well being
- Global environment is a common concern for humanity
- Communities have common but differentiated responsibilities and possibilities
- A sense of duty must ensure that particular nor collective actions cause environmental harm
- Sustainability can be achieved if environmental protection is integrated to the development process
- The right to development is to be fulfilled equitably meeting the needs of present and future generations

Paseo del Mar comes to conform a regional allegiance initiated by the municipalities of Bayamón, Toa Baja and Cataño. As for the beginning of the project, Bayamón has assumed team leadership to, progressively and with determination, assist the development of 80 square kilometers along the east and west bank of the twin Bayamon and Rio Hondo Water channels, and the river deltas extending to the east up to Isla de Cabras and to the west up to Punta Salinas. Up to date three Municipalities are involved in the Paseo del Mar (Bayamón, Toa Baja and Cataño) but one of the goals is that in the long run all of the municipalities through which the River passes be involved.

Among projects of the Paseo del Mar Development are:

- Expand the concept of a Sustainable Corridor to the entire extension of the River Basin, and Develop Guidelines and a Special Zoning District
- Define water and air quality standards and implement monitoring strategies
- Develop a Master Regional Plan for the Basin: identify spaces for Projects for gardens, parks, high tech agriculture, landscaping, natural channel conditioning and maintenance, reforestation, as to conform the green infrastructure that will support sustainable future developments
- Promote investors interest for projects of active and passive recreational, ecotourism, commerce, retail, housing cultural, high tech industry, use of channels for recreational transportation

Emphasis will be placed on:

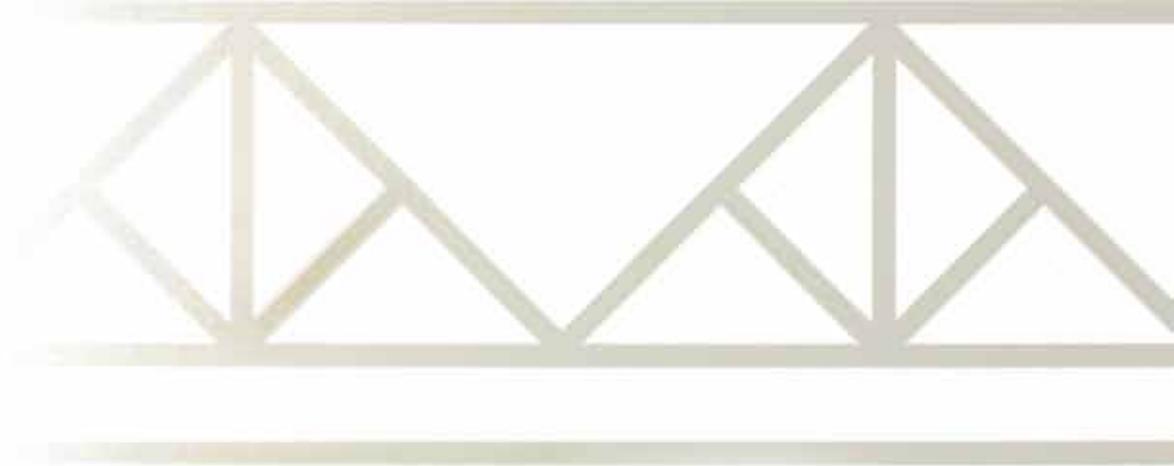
- The development of the SME'S and services sector which is our comparative Advantage
- Implement an environmental education and participation strategy as to involve local residents and external visitors
- Increasing biodiversity through the protection of species (flora and fauna)
- Accounting for sustainability modeled in the Kyoto Protocol
- Historic remembrance: A celebration and recreation of the original sea routes during 17 century; inventory of natural and constructed patrimony and promote integration to development concept
- Facilities to promote health of the population
- Education, transfer of knowledge and capacity building, knowledge based development
- Differentiation and Branding: using strategic marketing to promote image, products, attractiveness for tourism and foreign capitals
- Developing export capacity for goods and services to enhance competitive advantages of the region

The main development strategy for this Project is to establish a legal and administrative framework that will promote "a place defined by its life forms, its topography and its biota, rather than by human dictates; a region governed by nature, not legislature". Sustainability implies in Bayamón promoting grassroots efforts to revitalize our city. Individual action is stimulated as to add up for collective harmonious achievement. A principal goal of this project is the development of sustainable communities throughout the region that will have the ability to keep healthy and prosperous considering long term effects on economy, ecology and social equity.



*"We travel together, passengers in a little Spaceship...  
preserved from annihilation only by the care, the work,  
and I will say, the love we give our fragile craft."*

*Adlai Stevenson, in his last speech, 1965*



## The Environmentally Sustainable Project Awards

### **The present**

A completed project, two phases

**1** Paseo Río Bayamón Golf Course

**2** Paseo Río Bayamón

### **The future**

An extension of the completed projected: Phase-3

**3** Paseo del Mar

A Calibrated Environmentally Sustainable Socioeconomic Development Model that Reconciles Robust Economic Development with the Conservation of Natural Resources.

# Introduction: Puerto Rico's Development Model



## Statement of the Problem: Why Sustainable Development?

In 1995 the Developing Countries GDP per capita was \$300, \$2,500 for middle income countries and \$20,000 for the developed countries. From 1980 the developed countries increased their income by 50%, the developing countries experienced a dramatic 160% increase, unfortunately high middle income countries like Puerto Rico increased their income less than 20%; our GDP per capita was \$11,279 in 2003, less than half of the GDP per Capita of the United States which is \$31,632 and alarmingly less than 1/8 of the growth experienced by the developing countries.

As a result the income per capita ratio that measures the inequality between developed and middle income countries increased in 20% (like the case between Puerto Rico and the United States), and decreasing 50% between the developed and developing countries. In other words Puerto Rico like other middle income countries lagged behind, among other reasons because it could not find its niche in the world markets created by globalization.

We have not been able to compete in high value added markets controlled by the developed economies because our labor force is not sufficiently skilled, nor can we compete in the standardize product markets manufactured by low wage labor using widely available technology to do routine tasks at the lowest possible costs.<sup>7</sup>

We cannot maintain a healthy environment without a robust economy and we cannot have a robust economy without a healthy environment.

We must remember that Puerto Rico came out victorious, protected and willing to enjoy the post war bonanza granted by Model I, US citizenship - and its relation with the United States.

A possible explanation is that every change is elicited by discomfort. We opted for short term development that nurtured our perception of perpetual conservation and protection of a our partial autonomy and cultural identity without a hint of suspicion that it would eventually be inevitably threatened, challenged and transformed by the overwhelming plurilateral cultural and economic wave of **Globalization**.<sup>7</sup>

<sup>7</sup>Globalization's Missing Middle, Foreign Affairs, November/December 2004, Vol. 83 No 6 by Geoffrey Garrett  
<sup>7</sup>Leading Change: Why Transformation Efforts Fail, HBR, March-April 1995 by John P. Kotter

## Economic and Socio-Economic Indicators Table

Figueroa & Figueroa Architects - Engineers and International Business Consultants

	 USA	 IRELAND	 SINGAPORE	 PUERTO RICO	 ARGENTINA	 CHILE	 BRAZIL
GDP per capita	\$37,800	\$29,800	\$23,700	\$16,800 \$11,279 (USD)	\$11,200	\$9,900	\$7,600
(Purchasing Power Parity)	2/222	11/222	28/222	52/222	69/222	75/222	90/222
GINI INDEX (Inequality Index)	45-40	0.36	N/A	0.57	N/A	0.56	0.60
REAL GROWTH RATE	3.10% (2003)	1.40% (2003)	1.10% (2003)	1.90% (2004)	8.70% (2003)	3.3% (2003)	-2% (2004)
POVERTY RATE	12%	10%	N/A	44.60%	51.70%	20.60%	22%

Source: IMF, World Bank, International Institute of Economics, U.S. 2000 Census & United Nations.

## EDUCATIONAL ATTAINMENT

### Puerto Rico

- 60% of the 25 years and more group have up to high school diploma.
- 25% of that same age group has up to ninth grade and 14.6% has between ninth grade and high school without diploma.
- 19.4% has some college and associate degree.
- 18.3% has bachelors and higher degree.

### United States

- 80% of the 25 years and more group have up to high school diploma.
- 7.5% of that same age group has up to ninth grade and 12.1% has between ninth grade and high school without diploma.
- 27.4% has some college and associate degree.
- 24.4% has bachelors and higher degree.

January 2005  
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# II. The Environment: The new Diplomacy

## The Environment: The New Diplomacy

Diplomacy has to do with the relationship between and among tribes, states or empires. This entails dealing with a complex set of rule of engagement generated by the changing set of issues faced by modern nation states and their relationships.

Traditional diplomacy addresses war and peace, border disputes, trade rules (GATT, WTO) treatment of foreign nationals, rules for communication and transport among nations. War, peace and border disputes are often referred to as spectacular diplomacy. Because of the importance of its implications. All of these issues are related in some way or another to **sovereignty** and **territoriality**; the two great principles defined for Europeans by the peace of Westphalia in 1648 when the modern nation state was defined. The treaty ended years of religious wars. This principle evolved in to the notion that governments have the right to make all decisions within their borders.

After the World War II and with the formation of the United Nations a process began that generated a "New Diplomacy" challenging many of the perceptions of the "Old or Traditional Diplomacy". A plethora of issues concerning, human rights, humanitarian, labor, **environmental** and security issues have challenge traditional notions of sovereignty and the sanctity of national boundaries in all cases reaffirming the assertion that other governments might have a concern on another country "sovereign domestic" issues, like **Transboundary Environmental issues** (acid rain, air and water pollution, global warming, marine fisheries, biotechnology and trade).

## Theoretical Framework

There are five classes of capital indispensables and useful for the concept of sustainable Development on which the two completed projects: Paseo Rio Bayamón Golf Course and Paseo Rio Bayamón were based and the future project Paseo del Mar will be based. These are Financial, Natural, Produced, Human and Social Capital. All are part of an inventory capable of generating economically desirable factors of production. The conservation, protection, responsible utilization and replenishment of the five types of capital is crucial to the sustainability of a robust and vibrant socioeconomic development.<sup>1</sup>

The sustainable development should maintain and if possible increase the inventory of all productive capital including natural capital which in no few occasions we irreversibly exhaust through economic production; **maintenance** has to be added to the trio of economically essential activities: **production, distribution** and **consumption**.<sup>2</sup> In the Bayamón initiative we were aware that the flows, depending on their direction, can increase, replenish or deplete the inventory, just like the balance in a checkbook.

Agenda 21 pursued the reaffirmation of the principles and objectives established on Article 36 of the GATT during the last 1975 Tokyo Round under the title Trade and Development a unequivocal manifestation that one of the most contentious global issues is the conundrum between International Trade and the limited extent of the applicability of the environmental treaties and protocols in the International traded treaties.

We argue that Bayamón has attempted to align its development strategies and environmental policies with the best principles and objectives contained in the ratified and non ratified environmental treaties and protocols. Furthermore we believe that it has accomplished a quantum leap in discovering and applying the formula that we all been yearning for: **Sustainable Development**.

Furthermore EMA "Environmental Management Accounting" which attempts to expose the hidden benefits or costs of doing business the right way or the wrong way respectively is done by quantifying processes so that firms can differentiate between an efficient (i.e. profitable) and an inefficient (i.e. unprofitable) process.

With EMA a firm can target inefficient process (this applies to services also) that generate waste emissions not at the end of the pipe "which is costly" but at the beginning by purchasing inputs that will contribute with 100% of their value. This strategy should yield profits for the firm, eliminate the need for protection of the environment, create an incentive by reverting the "polluter pays principle" and avoid damage to the environment.

This concept can be enhanced with CRS "Corporate Social Responsibility" and SRI "Socially Responsible Investment" both an effective incentive for the private sector to protect the environment.



<sup>1</sup>New Diplomacy, Willem Moomaw, The Fletcher School of Law and Diplomacy, Tufts University  
<sup>2</sup>Five Kinds of Capital: Useful Concepts for Sustainable Development, Global Development and Environment Institute Working Paper No. 03-07 Neva R. Goodwin, September 2003. <http://ase.tufts.edu/gdae>  
<sup>3</sup>Reconciling Growth and the Environment, Jonathan M. Harris and Neva R. Goodwin, March 2003 Global Development and Environment Institute, Working Paper No. 03-03, <http://ase.tufts.edu/gdae>

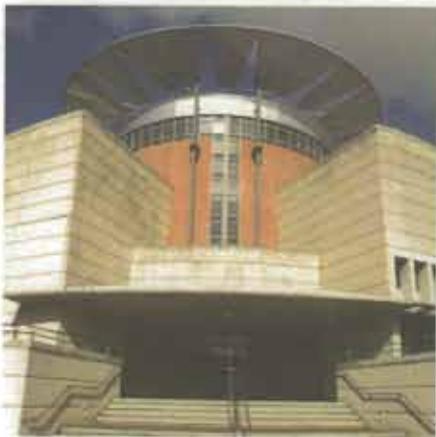
# III. Puerto Rico within the Global Context

Globalization is an interdisciplinary and multidimensional phenomenon characterized by integration, liberalization, interdependency and communication. It has to do with international politics, economics, trade, finance, security, negotiation and conflict resolution, transnational social and humanitarian issues, leadership, management, business law and transnational environmental issues.

At the same time expands and reduces the income gap within and outside the nations creating some temporary losers in the short term but all winners in the long run. It intensifies and simultaneously decreases the importance of local politics expressed through citizen's direct participation. International integration subordinates the local issue to the international issue.

It homogenizes and pluralizes the cultural identities of nations due to ethnic and multicultural influence, thus eliciting a defensive reaction by the sovereigns when faced with the perception of threat to their cultural identity. (Lindenberg and Dohel)

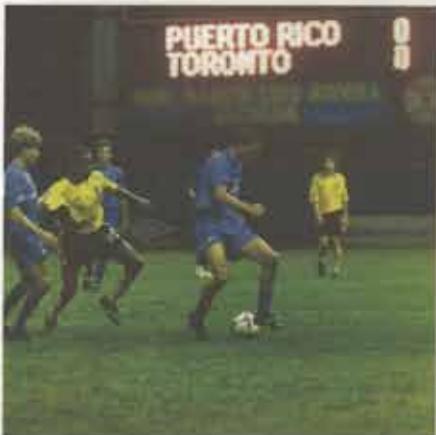
Globalization challenges the concept of sovereignty in the following aspects: 1) erodes the ability of governments to establish standards, rules and regulations, 2) decreases the ability of governments to manage and control markets, 3) induces governments to establish policies compatible with external interest instead of domestic constituency.



18.



19.



20.

18. *New Urban*

19. *Ramón Luis Rivera, Mayor of the City of Bayamón and Artist Rafael Tufiño in an art exhibition*

20. *Soccer game of the Puerto Rico Islanders, first soccer professional franchise in Puerto Rico*

# Replenishment of capital factors

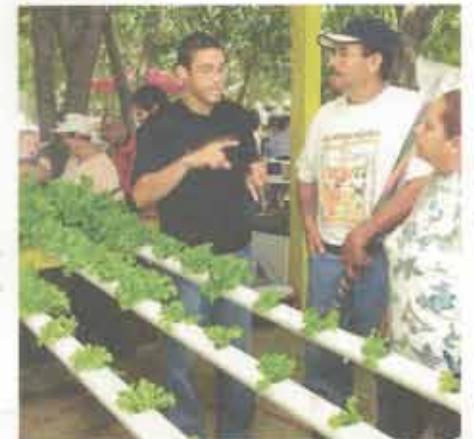
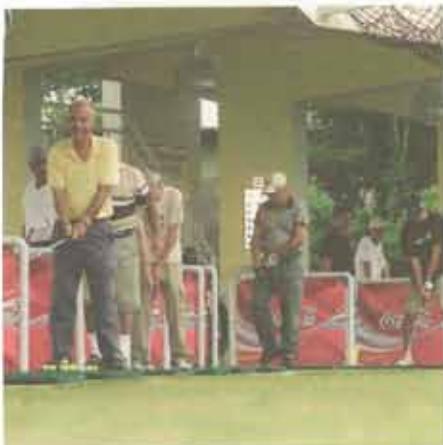
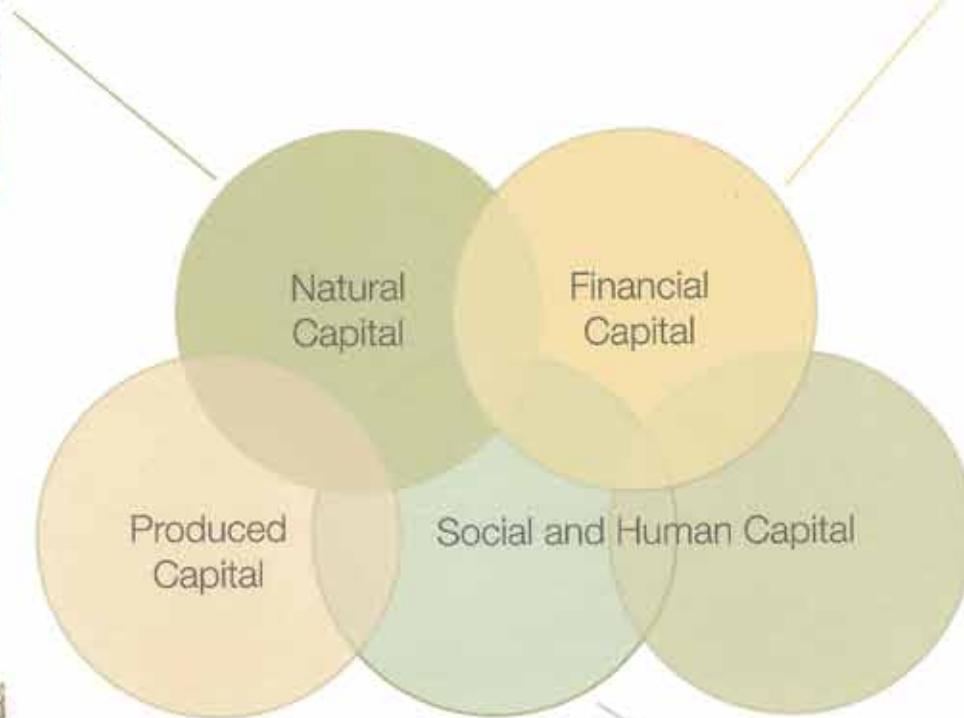
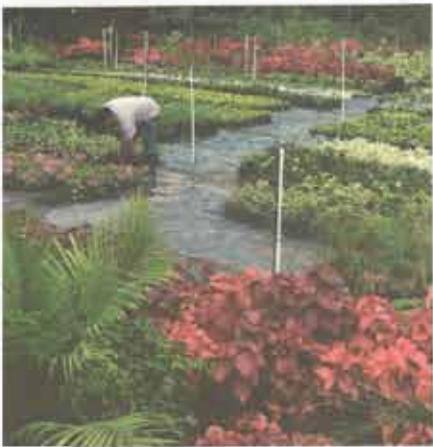
Environmentally Sensitive Practices

Enhancement of the Landscape

Community Involvement

Planning for the Future

Heritage Management



# IV. The Island: Domestic Context

## General Information

Puerto Rico was a Spanish colony from 1493 to 1898 when it became part of the United States as a result of the Treaty of Paris, which ended the Spanish American War. Puerto Rico became a possession of the United States in 1898, US citizenship was granted to its inhabitants in 1917 and the island became a semi autonomous US Commonwealth on July 25, 1952.

Puerto Rico is the the smallest of the greater Antilles in the Caribbean. A 100 x 36 miles island east of the Dominican Republic. The climate is tropical, mild with little seasonal temperature variation. The terrain is comprised of mostly mountains and coastal plain belt all around the island. The population consist of 3,916,632.

## The city: Bayamón

Bayamón is located along the North coastal plain of Puerto Rico and is the second most populated municipality of the Island. Its population according to the year 2000 Census was 224,044 inhabitants, which compares to the data of 220,262 inhabitants in 1990. It has territorial limits with other seven municipalities, and these altogether represent an interacting population of 801,255 people. Bayamón's territory is 44.4 square miles and its geography defines three regions, the coastal plain, the moderate hills and the mountain area. The majority of the coastal plain is covered with urban development. As one moves along a perpendicular axis in relation to the coastal line, there is a great suburban area developed through hills of moderate height. The mountain area consist of an irregular spread of rural development.

Located near the Bayamón and Río Hondo rivers, until 1950, with a population of 48,000. Bayamón was as many other settlements throughout the Island of Puerto Rico. A town organized under the influence and directives of Spanish settlements and the Law of the Indies. Originally the "pueblo" was a well organized quadric layout, with a central meeting plaza, surrounded by institutional and public activities. Main roads for commerce and residential uses were located at the nearest surroundings. Farmlands extended outside the urban location and floodplains as well as the "pueblo" itself were greatly impacted by the river overflows.

In the face of this challenge, Bayamón has seized the opportunity by reformulating and transforming its traditional Development Model into an Environmentally Sustainable Socio-Economic Model emphasizing local development with global connectivity.



21.



22.



23.

21. Paseo Río Bayamón, Bicycle Track and Walkway

22. 23. Many historic buildings and settings have been restored and returned to the public through uses for cultural education or recreation

# V. The solution: Facing the Modern Challenge

## A. First Completed Project: Paseo Rio Bayamón Golf Course:

### Project Rationale

The objective was to attempt to design and construct the facility within the context and the best possible alignment with the principles and objectives of the applicable MEA's and environmental Protocols and Treaties like: Convention of the Law of the Sea 1982, The United Nations Framework Convention on Climate Change, Kyoto Protocol, Rio Declaration on Environment & Development, The Cartagena Protocol on Biosafety and the Basel Convention on Toxic Substances.

### Project Description

- 62 Station Sheltered Driving Range within an 11 acre tract of land , originally used as an open earth garbage dump
- 19,000 square feet of putting green
- Chipping green
- Pro shop
- Lake
- Future 9 hole golf course in a 40 acre tract of land right on the delta of Bayamón and Guaynabo rivers

### Project Benefits

#### Enhancement of the landscape

- Planting of 11 acres of grass and 3 acres of 10 varieties of bushes and 5 varieties of palms
- Construction of 8,076,532 gallons of water

The landscape has been designed by a dasonomist utilizing primarily indigenous species and with particular attention to develop a "soto" forest or small forest to guarantee the generational continuity of the species when older species mature. The arrangement is appealing in its colorful arrangements and dramatic vistas that carefully and deliberately combine expressive topographic features with natural vistas. Altogether provide the visitor and community in general unique multisensory experience.

### Heritage Management

- Community identity and awareness of the historical legacy of the original settlements established around the river Basins

Bayamón is the product of significant historical events throughout four centuries of accelerated socioeconomic development. The projects presented reveal a didactical, interactive recreational – historical endeavor that takes us through a chronological journey in time. Celebrating and recreating Bayamón's metamorphosis into modernity; from the beginnings in 1500, the first settlements on 1645, the pre-industrial & agricultural economy of the 1770, the awakening of the city in 1791, and the industrial and modern development from 1820 to the present.

### Environmentally Sensitive Practices

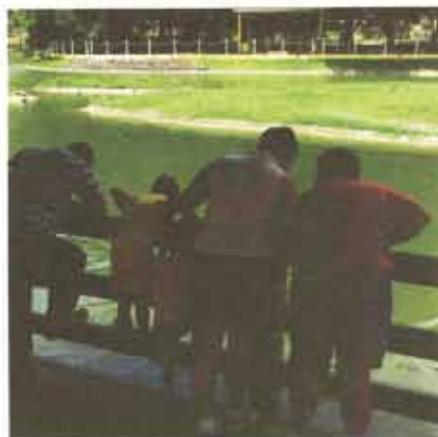
- Erosion and sedimentation control
- Reforestation and conservation of biodiversity
- Enhancement of river conveyance to avoid flooding
- Rescue of dilapidated Industrial area and increased valuation of properties
- Contribution to decrease of global warming, reduction of CO 2 emissions
- Environmental Management & Accounting, CSR, SRI

### Community Involvement

- SME's involvement and participation including transfer of knowledge and capacity building
- To counteract the dualistic vision characterized by simplistic binary opposites and a lack of acknowledgement that reality consists of intermediate degrees, flexible borders and changing vistas. A mutual gains negotiation and conflict resolution approach was implemented all throughout the design and construction phases to integrate the community and all major stakeholders
- Many sponsors have adopted the project in one way or another

### Planning for the Future

- Increased valuation of area properties
- Rekindling of economic activity of the area
- Contribution to poverty reduction by exposing underprivileged children to golf. (22 during the first week)
- 9 holes are already designed on a 43 acre tract of land adjacent to the driving range, to be constructed during the current year
- Maintenance of physical health through exercise.



## B. Second Project: Paseo Río Bayamón

### Project Rationale

The objective was to attempt to design and construct the facility within the context and the best possible alignment with the principles and objectives of the applicable MEAs and environmental Protocols and Treaties like: Convention of the Law of the Sea 1982, The United Nations Framework Convention on Climate Change, Kyoto Protocol, Rio Declaration on Environment & Development, The Cartagena Protocol on Biosafety and the Basel Convention on Toxic Substances.

### Project Description

- Two nine kilometers parallel bike and pedestrian nature trails
- Green architecture embodied in multiple activity kiosks
- Utilization of recycled materials

### Project benefits

#### Enhancement of the landscape

- Reversed desertification
- Intense reforestation: 1,500 trees of 10 different species were planted, 1.5 million square feet of grass, 50,000 bush plants of 25 varieties, and 6 varieties of ground cover were planted
- Identification of biodiversity and species inventory for didactical purposes

#### Heritage management

- Maintenance of social and human factors of production: approximately 10,000 people use it weekly, fostering social bonding, individual physical health, and community identity and awareness of the historical legacy of the original settlements established around the river basins

#### Environmentally Sensitive Practices

- Conservation and enhancement of biodiversity
- Erosion and sedimentation control
- Increased valuation on properties. Positive impact on produced and financial Capital
- Contribution to decrease of global warming, reduction of CO 2 emissions
- Environmental Management and Accounting, CSR & SRI
- Emission reduction through sequestration

#### Community Involvement

- To counteract the dualistic vision characterized by simplistic binary opposites and a lack of acknowledgement that reality consists of intermediate degrees, flexible borders and changing vistas. A mutual gains negotiation and conflict resolution approach was implemented all throughout the design and construction phases to integrate the community and all major stakeholders
- SME's involvement and participation including transfer of knowledge and capacity building

#### Planning for the Future

- Rekindling of economic activity of the area
- Contribution to poverty reduction by increased valuation of properties
- Social bonding and networking
- Extension of the Paseo up to Ensenada Boca Vieja in the North Atlantic
- Maintenance of physical health through exercise



## C. The Future Project: Paseo del Mar

### Project Rationale

A Calibrated Regional Environmentally Sustainable Socio Economic Development Model coupled with Implementation of Second Generation Model II Reforms with **Global Connectivity**

### Project Description

A regional allegiance between the Municipalities of Bayamón, Toa Baja and Cataño with Bayamón acting as project team leader to develop an 80 square kilometers along the east and west bank of the twin Bayamón and Rio Hondo Water channels, and up to Isla de Cabras to the east and up to Punta Salinas to the west.

- Municipal governments as facilitators
- Relying primarily on local and international private investment clean FDI's
- Calibrated mixed use development, housing, active and passive recreational activities, ecotourism, commercial, retail, cultural, high tech industrial use of channels for recreational transportation

### Project Benefits

#### Enhancement of the Landscape

- Intense reforestation, and landscaping
- Desertification
- Emission sequestration

#### Heritage Management

- A celebration and recreation of the original sea routes utilized during 17 century.

#### Environmentally Sensitive Practices

- Conservation and enhancement of biodiversity
- Erosion and sedimentation control
- Increased valuation on properties. Positive impact on produced and financial capital.
- Contribution to decrease of global warming, reduction of CO<sub>2</sub> emissions
- Environmental Management and Accounting, CSR & SRI

#### Community Involvement

- To counteract the dualistic vision characterized by simplistic binary opposites and a lack of acknowledgement that reality consists of intermediate degrees, flexible borders and changing vistas. A mutual gains negotiation and conflict Resolution approach was implemented all throughout the design and Construction phases to integrate the community and all major stakeholders.
- SME's involvement and participation including transfer of knowledge and capacity building

#### Planning for the Future

- Rekindling of economic activity of the area
- Contribution to poverty reduction by increased valuation of properties
- Education and wealth creation
- Emphasis on the development of the SME'S and services sector which is our comparative advantage.
- Emphasis on education, transfer of knowledge and capacity building, knowledge based development
- Development of export capacity for goods and services to enhance the competitive advantages of the region





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