

# **Land Tenure Development in Puerto Rico**

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## **ABSTRACT**

Puerto Rico is a country still in transition - from the Indians to the Spaniards, from the Spaniards to the United States. Since the 16th century there has always been someone meddling in their economy and political affairs. If it wasn't for the multitude of U.S. aid sent to Puerto Rico every year it would still be one of the poorest countries of the Caribbean. In its 101 years of possession by the U.S., many bills have been enacted, programs initiated, and money allocated to create a more equitable and improved land tenure system. This article describes Puerto Rico's economic, political, and social history that has molded its land tenure system over time. There is a current cadastral conversion project underway to re-map the island. It will initially be for taxation purposes, but future plans are to integrate the system and its resources into all governmental and non-governmental entities.

## **INTRODUCTION**

Puerto Rico is a single large island and several small islands located in the central West Indies (see Figure 1). Along with Cuba, Jamaica, and Hispaniola (Dominican Republic and Haiti) it makes up what is now as the Greater Antilles. It is located 1,000 miles east southeast of Miami, Florida and 2 1/2 hours by air. It measures 100 mi by 35 mi, has an area of 3,434 sq mi, with 311 mi of coastline. The topography varies having three main geographical regions - the

mountainous interior with the Cordillera Central mountain range stretching from east to west, the northern plateau region, and the coastal plains in the south. In the northeast lies the rain forest of El Yunque. The capital is San Juan with a population of 3.8 million (1997 estimate). There are approximately 2.5 million Puerto Ricans residing on the U.S. mainland. The island has a tropical climate with an average annual temperature of 80 degrees F. Spanish is the official language of Puerto Rico. English is a mandatory second language in schools and is widely used in business, research and education.

Christopher Columbus originally named the island San Juan Batista. When Ponce de Leon arrived, he established a colony and named it Puerto Rico. Later due to feuds with the Indians he had to move the colony to the coast. In 1521, the island and the colony changed names.

The currency used in Puerto Rico is the U.S. dollar. Puerto Rico is part of the United States so there are no travel restrictions, customs, duties, or quotas on shipments between the mainland and the island. Products manufactured in Puerto Rico have the "Made in the USA" label. No federal income tax is collected from the residents on ordinary income except from Federal employees.

Puerto Rico is self-governing within the U.S. constitutional system. The government consists of the Executive, Legislative and Judicial branches. The legislature consists of a Senate and House of Representatives. Legal protection is provided by the Constitutions of Puerto Rico and the United States, with ultimate appeal to the U.S. Supreme Court. Puerto Rican citizens do not vote in national elections. They are represented in the U.S. Congress by a Resident Commissioner who has a voice in the U.S. House of Representatives, but no vote.

## **PRE-CONQUEST**

### **Borinquen Indians**

The first group to populate the island was the Borinquen Indians, for which the island was named Boriken. They came from Venezuela between 5,500 and 3,500 B.C. It is estimated that they totaled between 30,000 to 50,000. The implements and instruments of the Borinquen Indians were constructed out of rudimentary stone, shell and wood. They experimented with sea transportation (Bonilla, 1993, p 90) and were responsible for the first plant domestication in the Antilles. The people survived by gathering wild food, fishing, and hunting. The men spent their time hunting, fishing, and playing ball games while the women gathered wild foods and provided the labor for cultivating the root crops (yucca, batata, and mani). The kinship system of Totemism was the basis for the major social unit, which was the village. Each village had a Chief (Cacique) who was the leader of that clan's totem. The land was held in common by the members of the clan. The Borinquenos led a peaceful existence with one another. Despite the fact that the land was held in common, there were very few conflicts between the clans. Tradition and custom dominated their economic system and the concept of private accumulation of wealth did not exist (Curtis, 1935, p 213).

### **Arawak Indians**

With intermittent frequency, between 400 B.C. to 700 A.D., the Arawak Indians came to the island of Boriken from South America. The new inhabitants conquered and assimilated the Borinquen Indians. The Arawaks had a more sophisticated culture that had mastered agricultural and pottery technology. They initially employed the slash-and-burn agricultural method, but later developed a mound system of cultivation. This type of system made it possible to have greater production and greater surpluses (Curtis 1935, 90). There were two different periods of

the Arawak Indians. The earlier Ingeri period, and the later Taino period. By the time of the Spanish conquest the Arawak Indians were in the Taino period. The Arawaks of the Taino period had a mixed economy of hunting, gathering, and settled agriculture. Their political structure was based on a system of related Chiefdoms. Under a tribal-tributary relation it was required that the most important of the Chiefs, Agueybana (Old One), be paid a tribute by the other Chiefs. There was distinct class systems in place during this time period oppose to that of primitive communism as with the Borinquen Indians (Curtis 1935, 92). The Chiefs (Cacique) were commanders of the labor process and appropriated the surpluses. The Shamans (Bohite) were in charge of having contact with the gods. The Clan Heads (Nitaynos) were enforcers and supervisors of the Laborers (Naborias). This period of Arawak also had a religion. It was based on the spirit forces that controlled the forces of nature (Curtis 1935, 91-2).

## **SPANISH FEUDALISM**

### Arawak Indians

In the late 15th century the population of Arawak Indians on Boriken Island was estimated to be around 50,000. Columbus landed on the island in 1493, performed the ritual of possession and claimed the island and its inhabitants for Spain. He then renamed the island San Juan Batista. In 1508, Ponce de Leon and about 50 Spanish Conquistadors arrived on the island looking for gold. One of the first things Ponce de Leon did was to make friends with Chief Agueybana and had him show him where they found the yellow metal they used for ornamentation. The gold they found was tested and showed to be of a high enough grade to be worth mining. Ponce then made a deal with the Chief. In return for protection from their enemies (other warring tribes in the area), the Arawaks would provide labor to build a city, grow food for the soldiers, and mine gold (Bonilla 1993, 94). The Spanish Crown authorized Ponce to colonize the island and made him

its first governor. His chief obligations as governor were to Christianize the natives and take as much gold as possible and send it to the crown. The standard distribution of gold was one-fifth for the king, two-fifths for the treasury for support of the colony, and the remainder to Ponce for the cost of mining and smelting of the gold. The Conquistador's share of the wealth depended on the total amount of gold discovered and the cost of production. This encouraged the exploitation of the natives as slave labor. (Curtis 1965, 215) Under the encomienda system the Indians were given to the Spaniards and used as serfs. The first year of colonization was peaceful, but the natives were getting restless. They were treated as mere slaves and forced to mine for gold. It was hard work for them and strange because they didn't place a high value on the gold. The missionary zeal and the Spaniard's continuous insistence for them to change their ways created resentment toward the Spanish. Three years later, in 1511, Agueybana's brother, Agueybana II, staged an uprising. The Arawaks were initially the victors killing 350 Spaniards. In response, Ponce de Leon staged a pacification campaign where he pacified (killed) thousands of Indians. In 1544, the encomienda system was abolished. Between a devastating hurricane in 1515, a small pox epidemic five years later, and the severe repression of the Spaniards, the governor read the proclamation to only sixty Indians (Curtis 1965, 96).

### Blacks In Puerto Rico

As the native population dwindled more black slaves were imported for labor. Slaves had been brought to Puerto Rico, as early as 1511, but by 1520 the labor force was almost completely comprised of black slaves. Around the lowlands where the native population had died, African slaves constituted the highest proportion of laborers on the island. Slaves were an expensive commodity at the time and life in Puerto Rico for the black slave was short, nasty and brutal. They were seen as chattel by their masters. Slavery didn't flourish in Puerto Rico until the 18th

and 19th centuries (Bonilla 1993, 98-9). Slavery was not just a form of labor or economic enterprise, but a socioeconomic complex held together by law and custom. There was a three-tiered system subdivided into classes. At the top were the Europeans, in the middle were the free non-whites, and at the bottom were the slaves and Indians. Each tier had its own set of legal rights and social privileges. That varied from place to place. In the plantation-based economic units the rights of slaves and free persons of color tended to be restricted. The greater the demand for labor the more domination and discrimination that was exercised against the African sector. In the coffee, cattle, and fishing areas the social mobility was greater and class distinctions more relaxed and less formal. In the towns and cities Africans filled occupations just as other free members of society did, from menial and unskilled jobs to commerce, the professions, and government (Puerto Rico 1999). In 1812, Puerto Rico requested Spain abolish slavery, but was refused. At that time free blacks outnumbered slaves in Puerto Rico by nearly half the total population. The Spanish Moret law was passed in 1870, freeing the offspring of slaves, those 60 or older, and those who fought for Spain in the Ten Years' War in Cuba. Slavery was abolished in Puerto Rico in 1873. After the period of slavery, ex-slaves bought up abandoned or bankrupt estates outside of the sugar zones expanding the trend to peasant production.

## Economics

By 1536, the mineral deposits in Puerto Rico had been exhausted, the labor force (the Arawak Indians) had been decimated, and the attacks by warring native tribes and French privateers made an economic crisis that was so severe that the small number of Spanish settlers started migrating to other Spanish colonies. In order to stop the Spanish settlers from leaving the island the governor of Puerto Rico issued an order forbidding anyone from leaving the island without

written permission from him. He cut-off the legs of those that tried (Bonilla 1993, 97). Puerto Rico was no longer bringing material wealth to the Crown, however, it was still regarded as militarily strategic. The Crown was anxious to develop a cash crop on the island. One that would grow well in the region, be easy to ship, and be in demand in the export market. The Crown gave assistance in developing the sugar industry. Those that would grow sugar were granted more land, the purchase of slaves and building sugar mills were subsidized, tax debts of the sugar growers were pardoned, they were given loans of 6,000 pesos and a royal order was extended to the entire island forbidding foreclosure on slaves, tools and materials needed for the operation and building of sugar mills. This economic surge lasted for only 20 years and by 1600 the island was in a state of sustained depression. Spain withdrew financial support of Puerto Rico in favor of more profitable colonies and rigidly enforce trade restrictions were placed on the island. Only raw materials could be produced and they could only be shipped to Spain on Spanish ships. During the 17th and 18th centuries the island was in economic stagnation. Between 1679 and 1690 not one commercial ship stopped at the island (Curtis 1965, 223). At this time a local hacendado elite began to emerge. Their economic power was based on the cultivation of commodities such as tobacco, sugar, coffee, ginger and cattle ranching for the extraction of hides. The chief economic activity of this period was smuggling which was carried on with the English, Danish, Dutch, and French. In response to this situation Spain issued the Cedula de Gracias (Decree of Grace). The trade restrictions were relaxed which increased trade and gave a boost to the economy and made it possible to further develop a cash crop economy. By the late 19th century the population tripled and the acres under production had more than doubled. In 1825, Secretary of State Henry Clay recommended to the Spanish government that they make peace with the new Latin American republics to prevent interference with the islands'

trade with the United States. By 1860, more than half of its exports were being sent to the United States compared with 6 percent going to Spain. At the same time one fourth of Puerto Rico's imports were being bought from the United States (Puerto Rico 1999; Heine 1983, 7). A timeline showing some of the major events in Puerto Rican history through and beyond this era is shown in Table 1.

## Politics

The United State's interest in Puerto Rico was not just limited to expanding markets. It recognized the military and strategic considerations as being very significant as a coaling station for the U. S. Navy and a key base to protect access to the waterway in time of war. It could be to the Panama Canal what Malta was to the Suez Canal. The Spanish-American War was a culmination of a long-standing U.S. interest in Puerto Rico (Heine 1983, 8).

For 400 years Spain ruled Puerto Rico despite attempts by other countries to wrest control. In 1808, it was awarded representation in the Spanish Parliament. A few times during the 19th century uprisings against Spanish rule occurred, but were quickly suppressed. In 1897, Spain granted Puerto Rico a liberal Autonomy Charter. One which provided a significant measure of self-government including the right to enter into commercial treaties with foreign countries. The next year the Spanish-American War broke out lasting less than two weeks. With the signing of the Treaty of Paris in 1898, the war ended and Puerto Rico became a territory of the United States placing Puerto Rico under a more traditional colonial rule.

## Land Tenure

By right of discovery the Spanish Crown owned all of the land in Puerto Rico. The Crown gave land grants called an *encomienda* to the overlords. Along with the land grant came the *repartimiento*, the distribution of natives for use as a labor supply. The overlord then had the responsibility for the material and religious welfare of the Indians allotted to them.

The first distributions of land and labor were in 1509 and 1510. A total of 1,060 Indians was distributed among nine Conquistadors to work in the mines. After the rebellion of the Arawaks in 1511 and their pacification by the Spanish overlords, there was another distribution. This time over 4,000 natives including women and children were split-up, distributed, and treated as beasts of burden (Curtis 1965, 218).

After the mining ran dry, the only source of wealth on the island was land. Only a few officials and favorites of the Crown owned land at the time. A small number of upper class Spaniards were granted large feudal holdings. These owners went on to claim land that they had no legal right to, creating a landless peasantry composed of Spaniards, a few Indians, and mixed bloods. This landless peasantry either went into the mountains or worked on the plantations beside the slaves.

The economy was stagnant during the 17th and 18th centuries and the population had declined. In 1815, Spain issued the *Cedulas de Gracias* (Decrees of Grace) to stimulate the sugar industry. One of the provisions of this decree was intended to stimulate migration of foreign capital and foreign Catholics. Among other things, land was granted to these enterprising foreigners in quality and proportion to the number of slaves introduced into the island (Curtis 1965, 226). On the local level it executed land reform by transforming a substantial amount of land held in *hatos* (cattle land) into *estancias* (productive farms) (Bonilla 1993, 104). By 1545, the lowlands were

by law reserved for the production of sugar cane exclusively. All of the flat and most fertile land was placed in the hands of a few large plantation owners.

It eventually become too expensive to maintain large slave holdings so most of the plantation owners set them free. Years of isolation from the outside world influenced the economic and social make-up of the island's population that in turn influenced the land tenure system. (Curtis 1965, 223) A small farmer peasantry developed composed of Spaniards, Negroes, Pardos (mixed bloods), and a few Indians. Because of the population distribution in relation to land and the need for the island's products, these people had access to the land even though they had no legal right to it. They were mostly subsistence farmers that went into the mountains and lived in isolation from the wealthy planters and military officials. It is from this group that the modern day small farmers (jibaro) are descended.

## **U.S. COLONIALISM**

### **Economics**

Upon taking possession of the island in 1898, the U.S. initiated programs to Americanize the Puerto Ricans and improve the quality of life on the island. Diseases such as Malaria and Tuberculosis were brought under control and a road building program was instituted. English became the language of instruction in the school system and Protestant missionaries came to challenge the hold of Catholicism (Heine 1983, 8). Congress enacted the Foraker Act in 1900. One of the things it did was aid commercial expansion into Puerto Rico. The dollar replaced the peso as the island's currency, at 60% of its value, and island products were included in the American tariff system, which gave them free access to the U.S. markets. Sugar production rapidly expanded 17 fold between 1896 and 1940. Coffee was the main export crop at the time

of the ruling transition, but it declined during the same period, probably because it was mainly sold to Europe (Heine 1983, 8-9).

Most of the economic growth that occurred in the first 30 years of the 20th century was due to an expansion in the sugar industry. During the last part of the 18th century technological progress had revolutionized the industry, but producers could not keep up and became noncompetitive. With unrestricted access of the U.S. market, American investors took advantage of the credit policies established by the U.S. administration to buy land and modernize and consolidate sugar production. Between 1899 and the 1930's sugar-planted acreage increased fourfold. Yields per acre were tripled from use of new varieties of sugarcane and fertilizers and production increased. Sugar became the foundation of the island's economic structure. By 1940, the sugar industry accounted for 20% of Puerto Rico's gross national product (GNP), 62% of all exports, 40% of total employment, and 21% of the total salaries and wages paid on the island (Heine 1983, 11).

The prosperity that the sugar industry brought the island transformed the social structure and the nature of politics. American corporations controlled the best land, which gave them enormous economic and political control over the affairs of the island. The large landowners, hacendados, were unable to compete with the modern plantation system and were forced to leave the haciendas and move to the cities or take jobs as hired hands and cut sugarcane. Even though these were the highest paid salaries in agriculture, the sugar workers were only employed half the year during harvest season, January to June, and lived in wretched conditions. Political decisions made in Washington greatly affected the core economic activity of Puerto Rico (Heine 1983, 13). In 1934, sugar production quotas were imposed leading to a loss of 15,000 jobs and a 35% drop in sugar production for the next year.

There are two different agricultural systems on the island. One is the small farmer producing mainly subsistence commodities. These account for nearly half of the amount of farms and the average size is less than 10 acres. The other is the large farm producing goods for export. Only about 1700 farms exceed 100 acres in size but account for the main share of agricultural products sold. The most valuable crop is coffee, followed by vegetables, sugarcane, bananas, pineapples, tobacco, and rice. Dairy products, poultry, and beef cattle are also important sources of income.

In 1947, Puerto Rico launched Operation Bootstrap, a massive effort to attract U.S. capital and investors. Industrialization seemed the only way toward progress and development. The strategy was to offer full tax exemption for investors in manufacturing facilities. There were also incentives like loans and research assistance. Apparel making is the leading manufacturing industry in terms of employment, followed by the production of electronic goods, processed foods, and chemicals. Other major manufacturing industries include pharmaceuticals, industrial machinery, printed materials, rubber and plastics, metal items, precision instruments, timepieces, footwear, and alcoholic beverages.

By the 1980's Puerto Rico was once again facing economic challenges. The unemployment rate was reaching 25%, U.S. corporations were investing less, and there was an excessive dependence on Federal funds such as welfare, food stamps, social security, etc. In 1996, the U.S. Congress voted to repeal Section 936 of the tax code ending tax breaks for American companies that established businesses and invested profits in Puerto Rico. Incentives for companies already established in Puerto Rico are being phased out over a ten-year period.

Politics

A military government under the supervision of the U.S. War Department ruled the island for the first 2 years. In 1900, the U.S. Congress established a civil government on the island, but a great debate on the meaning of democracy and empire ensued. Was the U.S. going to be true to its origin and make its new acquisition equal as a state within the Union or grant Puerto Rico independence, or was it going to hold colonies? It was argued on one hand that there was no power given by the Constitution to the Federal government to establish or maintain colonies, but on the other hand, could Puerto Rico be held permanently as a colonial dependent? In 1901, the Supreme Court adopted the definition of "appurtenant to but not a part of the United States" classifying it as an unincorporated territory (Heine 1983, 8-9).

Congress passed the Foraker Act in 1901. It gave Puerto Ricans the right to elect their own members of the Lower House of the Legislative Assembly and elect their own mayors. The White House and U.S. War Department still appointed the island's executive branch and upper house. The first political crisis came in 1909 when the Unionist party refused to approve the governor's budget deadlocking the legislature. The bill was amended so in the future if the budget was not approved then the previous year's budget would take affect. Congress did not achieve tight enough control over the local elite like they had planned by this amendment so they started deliberation on a new omnibus bill and put the island under the bureau of Insular Affairs in the War Department (Heine 1983, 10).

In 1912, the Democrats came to power in the U.S. and with it came a new perspective on the relationship with Puerto Rico. Where the Republicans stressed territoriality the Democrats stressed the rights of the residents. The Jones Act was passed in 1917 granting Puerto Ricans U.S. citizenship and subjected them to the military draft. In addition, it established a fully

elected bicameral legislature. The President of the U.S. still appointed the Governor, the Auditor, the Commissioner of Education, the Attorney General, and the members of the Supreme Court, but the rest of the cabinet was subject to approval by the Puerto Rican legislature. This gave the citizens more participation in the political decision making but still didn't relieve the difficult relationship the U.S. had with Puerto Rico's political elite (Heine 1983, 10).

On June 4, 1951, Puerto Rican voters approved in a referendum, U.S. Public Law 600 that granted them the right to draft their own constitution. In March 1952 the electorate approved the new constitution, and on July 25th the Governor proclaimed the Commonwealth of Puerto Rico. The attainment of commonwealth status did not halt agitation for total independence. Pro-independence sentiment, which had led to an attempt on the life of U.S. President Harry S. Truman in 1950, again erupted violently in March 1954, when four nationalists fired, shots into the chamber of the U.S. House of Representatives, wounding five members.

### Land Tenure

Another feature of the Foraker Act of 1900 was the 500-Acre Law under which no person or corporation was allowed to own or control over 500 acres on the island. This was an attempt to keep the best agricultural lands from being appropriated to only a few corporations. In 1910, 1917 and 1936 attempts were made at either eliminating the law altogether or increasing the acreage restrictions, the attempts failed. In 1936, a cycle of litigation began establishing the legality of each step necessary for enforcement of the law. In 1921, the Homestead Commission created workingmen's settlements in cities that built houses for artisans and laborers and developed subsistence farms for laborers to lease. Until 1935 this was the only land tenure improvement agency operating on the island.

On May 28, 1935, the Puerto Rico Reconstruction Administration (PRRA) was formed. The purpose of this agency was to construct garden homes (1 acre), establish subsistence farms (2-3 acres), family farms (4-20 acres), and large-scale farms (60-500 acres) for various social classes according to their respective means and ability. Land was obtained from mortgaged farms in danger of foreclosure by the Federal Land Bank. The Federal Government supplied the funds and the Homestead Commission built the dwellings and furnished seed, animal, and technical help. The farms were leased to settlers with the right of eventual ownership. The large-scale farmers were assisted by a loan from the PRRA for the purchase of a medium sized sugar mill to be operated cooperatively by 19 farms. While the PRRA was at its peak, the Bankhead-Jones Farm Tenant Act was enacted and the Farm Security Administration was created to administer it. The program established on owner-operated family farms, tenants, sharecroppers and laborers from the sector of landless farm people; rehabilitate farm owners and tenants; and establish other rural people on leased land. The Land Law of 1941 was established to take over the responsibilities of the PRRA, which was being dismantled. The purpose of this law was to end large cooperate holdings and prevent their appearances in the future, assist in the creation of new landowners, and provide the means for squatters and slum dwellers to acquire parcels of land.

#### Geodetic Network

In 1899, the U.S. Coast and Geodetic Survey (USCGS, now the National Geodetic Survey) started surveying the island with the purpose of defining the hydrographic coast. This job was mainly Third Order, but since 1941 the surveys have been of Second Order or better. In 1965 the Department of Public Works and Transportation jointly with the USCGS conducted a new and more specific Triangulation Network observing the norms of a Second Order First Class geodetic

survey using Datum Puerto Rico. The NGS has since recalculated the main network of the island using Datum NAD 83 as a base to recalculate the general stations for photogrammetric control (Rosario 1991). The geodetic network was re-adjusted in 1997 after the NGS discovered an error in one of their 1992 1000+ kilometer baselines back to the U.S. (Keating 1999).

#### Fiscal Cadastre

On May 9, 1947, by Law Number 117, a fiscal cadastre was created in Puerto Rico of all real estate and personal tangible property for valuation, appraisal, and taxing purposes (Rosario 1992). This cadastre system was based on the 19th century Spanish Colonial Mortgage laws when Puerto Rico was sparsely populated and had a single crop economy based on the sugar industry (McGarigle 1997, 14). The cadastre itself was constructed using the geodetic network from the 1960's. Due to population growth and economic development, land transactions have been accelerated to the point that the old system can not keep up. Until April of 1991 the fiscal cadastre was the responsibility of the Secretary of the Treasury.

### **CONTEMPORARY SITUATION**

#### Economy

Puerto Rico has benefited in many ways from its U.S. ties. Many U.S. companies have established operations on the island due to federal tax exemptions, cheap labor, and free trade with the U.S. The industrial sector includes pharmaceuticals, chemicals, electrical machinery, refining, and food processing. Agriculture includes coffee, sugar, plantains, yams, bananas, and gunge peas. Agriculture accounts for only a small percentage of the labor force and gross domestic product (GDP). The service industry accounted for more than 57.12% of the gross domestic product (GDP) in 1993. Tourism is also an important industry for Puerto Rico.

## Education

In the 20th century Puerto Rico greatly improved its educational institutions. By the early 1980's close to 90% of the adult population was literate compared to 67% in 1940. Students in Puerto Rico are bilingual. The requirements for primary and secondary school are similar to those in the United States. The University of Puerto Rico has nine campuses on the island. The university system traces its roots to 1900, when a teacher-training school called the Puerto Rico Normal School was founded in San Juan. In 1903 the legislature of Puerto Rico renamed the school the University of Puerto Rico. Other institutions include the Inter-American University, the Catholic University, the Central University, the World University, and the Puerto Rico Junior College.

## Technology

Since 1988, the USGS has been developing a GIS for spatial analysis in hydrologic studies in Puerto Rico. The conversion of 67 topographic quadrangles for the region to digital data has been completed. The information includes political boundaries, transportation features, hydrography, topographic contours, soil and land use, geology, ground water wells, slope maps, and watershed boundaries. Regional planners use this information to assess the effects of urban and industrial development on the resources of Puerto Rico.

## Population

According to the 1990 census, Puerto Rico had 3,522,037 inhabitants. That is an increase of about 10.2% over the 1980 figures. The average population density in 1990 was 387-people/sq km (1002/sq mi). Most Puerto Ricans are of Hispanic background with Spanish being the

official language of the commonwealth. About 80% of the population are Roman Catholic. In 1990 71% of the inhabitants lived in urban areas.

### Politics

In the 1990's there are three dominant political parties. The Popular Democratic Party (1938), which advocated the maintenance of a commonwealth status, the new Progressive Party (1967), which advocates Puerto Rico becoming a U.S. state and the Puerto Rico Independence Party (1946), which favors independence for the island.

### Statehood

Puerto Ricans today are divided by the issue of whether to request U.S. statehood, remain a commonwealth, or choose full independence. In a national referendum in November 1993, the decision to remain a commonwealth passed by a slim margin. The referendums in 1967 and 1981 approved the commonwealth status by a greater margin. Again in 1998, Puerto Ricans once more voted to remain a commonwealth with less than a 1% difference in voting. Public opinion continues to be divided over the statehood issue as Puerto Rico observed the centennial of the Spanish-American War in 1998.

### Land Tenure

Today the fiscal cadastre in Puerto Rico is highly obsolete with the existence of many land parcels or real property interests that have not been officially identified or appraised. The Register of the Property records the contracts and acts that affect the personal and real estate property with the purpose of identifying the owner. However, the law does not require the purchaser of property to record the transaction (McGarigle 1997, 14). The fiscal cadastre only

identifies the parcel of land to impose taxes. The Registry of Property and the Fiscal Cadastre are seen as unrelated entities in Puerto Rico, but in reality they both have much in common (Rosario 1992).

The Legislative Commission of the Institute of Surveyors of Puerto Rico proposed an island-wide cadastral project with the intention of giving Puerto Rico a "multifinality" cadastre (Sanabria 1993). The purpose of this multifinality cadastre will be to aid the government in identifying its properties, resources, uses, right-of-ways, etc and serve the citizens and private institutions in different manners. It will also guarantee the right of property by allowing only a single registration for each parcel. Among other things this will facilitate the buying and selling of property and banking transactions.

In 1991, a quasi-governmental, autonomous entity called CRIM (Centro de Recaudación de Ingresos Municipales/ The Municipal Revenue collection Center) was formed consisting of the mayors of all 78 municipalities of Puerto Rico. Oversight is provided by a nine member Board of Directors that includes seven municipal mayors, the President of the Government Development Bank (GDB) and the Commissioner for the Office of Municipal Affairs (OCAM). This group is responsible for maintaining and administering the fiscal cadastre system (Keating 1997).

Around 1995, CRIM began a 56 million dollar project to establish an automated system to produce and maintain a multi-purpose cadastral map of Puerto Rico for the purpose of providing a more equitable system of tax collection for the population by modernizing tax collection and updating the property tax records (Keating 1997, 2). The project involves establishing geodetic controls, aerial photography, digital orthophoto production, planimetric compilation, cadastral

conversion, and the population of a Land Records Information System for the entire island (Eastcan website).

CRIM began by obtaining funding from the banking community. In return for funds, CRIM assigned a portion of the future tax collection as collateral. Next, they contracted companies to develop an organizational structure for CRIM and develop short term revenue generation plans; perform a market study to determine other potential users of the end products; design and install new technology and train employees; and convert the records and maps to a digital format (Keating 1999).

To date the project is in the data conversion and mapping phase. The company managing this part of the project contracted three mapping companies to convert the maps into a digital format. The area of Puerto Rico was then split-up between the three mapping contractors. The project managers and the mapping contractors then developed a set of specifications and general mapping and QA/QC procedures. Each company then developed from these guidelines in-house specifications and procedures to meet the outcome of the project specifications. To ensure that each contractor was producing the exact end product and to iron out technical and procedural matters, peer review sessions were held periodically with the project managers and the contractors. Each contractor would bring examples of their work and the team would review them for problems and cartographic presentation. This led to many revisions in the specifications and procedures.

For the maps to be converted into a digital format reference files had to be created. The existing cadastral maps were scanned and loaded into the computer to use as a starting point for creating the individual parcels and for data such as boundary measurements, text information (names of

roads, parks, planned communities, barrios and municipalities, etc), and existing block and parcel numbers. Planimetric maps showing features such as right-of-ways, buildings, waterways, fences, lines of occupation, pools, etc. were created from orthophotos. This made-up another layer of reference files that is used as a general guide for boundary placement. For the maps to be digitally created these two files are loaded-up and the mapping technicians use them to interpret the two data sets in relation to one another. Then, with a little artistic freedom, the boundary lines are placed, the map is annotated, and a new numbering system is applied. The new system is a concatenation based on a grid of the island mapped at a 2,000 scale. The numbering system starts in the most northwest corner and goes from left to right, top to bottom adding the new block and parcel number on a parcel by parcel basis, the ending product being a 9 digit number (Sullivan 1999). This effort will merely get the existing maps and information in a digital format. The Department of Taxation will then have to bring the maps up to date from here. As problems areas are found they are sent to be investigated and resolved.

Implementing the technology to integrate all the entities interested in using the data via the web will be the next phase undertaken. Surveyors are being trained to put new properties on the system and university students are being trained to understand what CRIM is and what the products are so they will know how to operate the various systems. Some follow-up projects include tying in entities such as the registry, building permitting, utility companies, and working with the planners in using and sharing information (Keating 1999). If the project is taken to full fruition as planned, only veering from their plan and timeline when absolutely necessary, this will be a positive step for Puerto Rico. It is estimated that there are 30 - 50% of the parcels missing from the tax records (Sullivan 1999). Just the added revenue that will be produced in taxes alone will justify the expenditure of the effort and the cost of the project. On the other

hand if the project is not completed or utilized as planned it will be a good starting point for the future.

## **CONCLUSION**

Puerto Rico's central location made it a target for colonial powers who saw it as the "key to the New World" (Bonilla 1993, 89). If it had not been for this strategic location, Spain would have probably left the island by the middle of the 16th century when its gold supply had been depleted (Curtis 1965, 210).

In its efforts to force industry on the island to stimulate the economy, Spain overlooked the inherent potential of the island to develop a viable economy and culture of its own. The establishment of smuggling to sustain the economy during the time period of abandonment by the Crown proves that a natural economy was emerging.

In the last decade Puerto Rico has made changes like attempting to begin decentralizing the government, privatizing certain industries, and improving the technology and information that can be used by decision makers. This is a move in the right direction toward getting Puerto Rico's own unique culture and identity back. The current cadastral project will modernize information used by the decision-makers and put it at their fingertips. The focus on training students in the universities in the products and processes and using local manpower is a positive move to insuring long-term success for the country.

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**Table 1. Timeline of major events in Puerto Rican history.**

5,500 - 3,500 B.C. Borinquen Indians settled the island.

400 B.C. - 700 A.D. Arawak Indians invaded and settled Boriken Island.

November 19, 1493, Christopher Columbus landed on Boriken Island, claimed it for Spain and changed its name to San Juan Batista.

1508, Ponce de Leon returned looking for gold and built the first Spanish settlement.

1511, Revolt of the Arawak Indians from Spanish domination.

1521, Island changed name to Puerto Rico.

1544, Encomienda system abolished.

1950, Assassination attempt on President by several Puerto Ricans.

1808, Representation in the Spanish parliament.

1815, Spain issued the Cedula de Gracias.

1870, Spanish Moret law passed.

1873, Slavery abolished.

1897, Spain granted Puerto Rico an Autonomy Charter.

July 25, 1898, U.S. troops landed in Guanica, on Puerto Rico's southwest coast.

December 10, 1898, Became a territory of the United States by the signing the Treaty of Paris, which ended the Spanish-American War.

1900, Foraker Act passed.

1909, Foraker Act amended.

1917, Congress passed the Jones Act granting Puerto Ricans U.S. citizenship.

1921, Homestead Commission created.

1922, Unionist Party founded.

1929, Women who could read and write were granted the right to vote.

1933, Puerto Rican Emergency Relief Administration (PRERA) founded.

1935, Puerto Rican Reconstruction Administration replaced the PRERA..

1936, Universal suffrage was established.

1938, Popular Democratic Party founded.

1941, Rexford Tugwell appointed governor.

1946, Puerto Rico Independence Party founded.

1947, Operation Bootstrap launched.

July 1950, the U.S. Congress enacted Public Law.

July 25, 1952, Puerto Rican Constitution took effect.

1967, New Progressive Party founded.

1971, Vote given to 18-year-olds.

1998, Last plebiscite to determine commonwealth status.



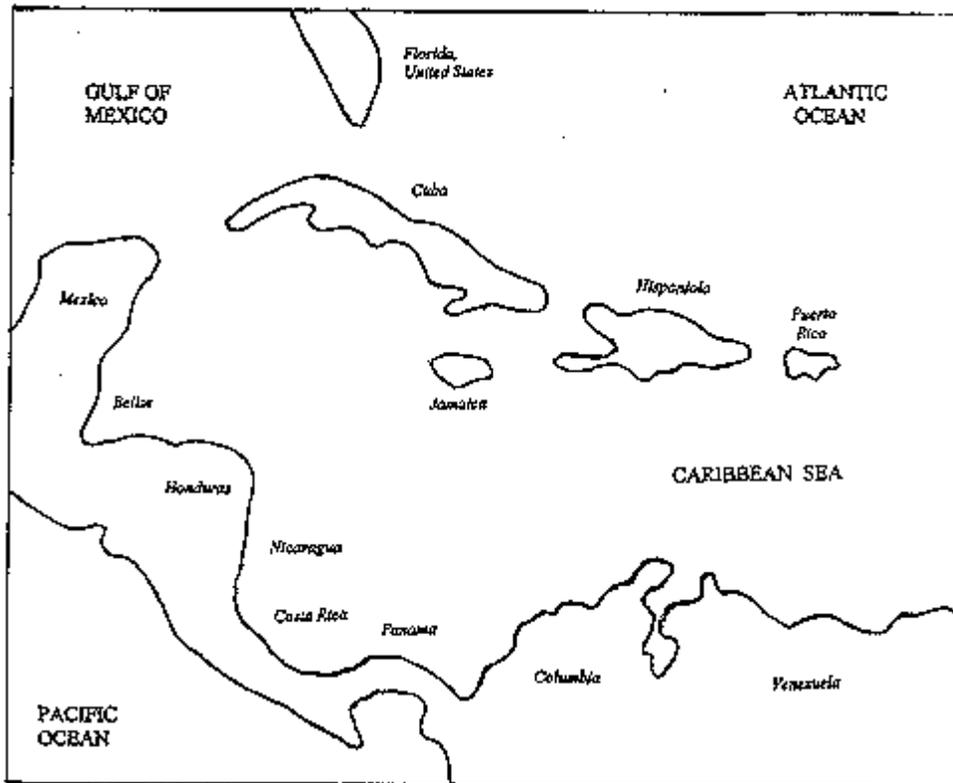


Figure 1. Puerto Rico located east of Hispaniola in the central West Indies.