

Performance Measurement System: Contextual Measures

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Introduction

The Department of Natural and Environmental Resources is developing strategies and instruments to implement the Performance Measurement System of the Puerto Rico Coastal Zone Management Program (PRCZMP).

The System consists of a series of performance measures that assess how the program complies with the objectives of the federal Coastal Zone Management Act. It also includes several contextual indicators that provide information associated with environmental and socioeconomic factors that influence the actions of the Program.

Each one of the states and territories should implement the System and report to the National Oceanic and Atmospheric Administration (NOAA) the results of the performance measures annually and the results of the contextual measures every five years. This system of indicators will serve to inform stakeholders, including the U.S. Congress, the importance of the Program.

This report includes the protocols and tools recommended for the contextual measures data gathering process.

Summary of actions taken to perform the project

To conduct the proposed project, a methodology was designed based on a multimethod approach, which involved the review of secondary sources and interviews.

Some of the tasks performed at the time include the following:

- Preparation of a work plan.
- Identification of the key informants.
- Evaluation of secondary information sources to conduct the interviews. The documents reviewed include the following:
 - Government Accountability Office. (2008). Coastal Zone Management: Measuring Program's Effectiveness Continues to be a Challenge. Report to the Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard, Committee on Commerce, Science, and Transportation and U.S. Senate.
 - National Oceanic and Atmospheric Administration. Office of Ocean and Coastal Resources Management: Strategic Plan, 2007-2012.
 - Office of Ocean and Coastal Resources Management, National Oceanic and Atmospheric Administration. (2009). Coastal Management Program Performance Measures Guidance.
 - Puerto Rico Coastal Zone Management Program. (2010). Semi-annual Progress Report: NA09NOS4190164, October 2009-March 2010.
- Design of a research instrument to carry out interviews with key informants. It consisted of a semistructured guide with questions designed to obtain information on the following aspects:
 - responsibilities of the respondent in relation to the Program: information collected,
 - information needs,
 - recommendations to implement the performance measures, and
 - information sources.

Measure 16: Percent of the public that feels they have adequate or better access to the coast for recreation.

Purpose of this measure

Describe the level of satisfaction the public feels about recreational access in the coastal zone.

This measure will focus on the number of people who respond that access to the coast is adequate or better.

Report the following

- (1) Number of people that responded to a survey on recreational access.
- (2) Number of people surveyed who responded that public access to the coast for recreation is adequate or better.
- (3) Type of survey conducted
- (4) Geographic coverage of the survey
- (5) Year when the survey was completed

Data collection methods and sources of information

Computation

This measurement requires a telephone survey. The instrument prepared for this survey is attached in Annex 1.

Methodology to conduct the survey

Information will be collected through a representative sample of the Puerto Rico population by region, age and gender.

The sampling type employed will be stratified probability. The criteria for the stratification will be geographic, according to the seven regions used by the DNER, and a pre-determined number of interviews will be conducted.

The sample size will be 385 surveys and the maximum sampling error for the total sample would be +5.0%.

The sample will be allocated uniformly across all of the regions so that the same numbers of surveys are conducted in each region. In this case, it would be 55 surveys per region. It is worth mentioning that if this type of allocation is used, when you get the results at the level of Puerto Rico, a weighting system must be applied based on each one of the seven regions.

This exercise eliminates the possible bias that could cause some regions to be over-represented and/or under-represented due to its population. According to the above, each stratum or region will be given a weight (Wh) determined by the number of people living in that region.

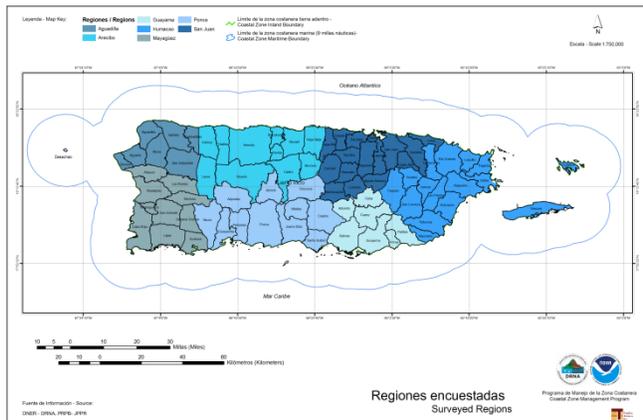
The surveys will be conducted by telephone using the Computer Assisted Telephone Interviewing (CATI) system. For selecting the phone numbers to be called in each stratum (region), a random sampling system would be applied based on "Random Digit Dialing". In this sampling system, the phone numbers to be called would be randomly obtained from a procedure based on the Mitofsky-Waksberg method.

The information needed regarding the number of the adult population in Puerto Rico would be obtained from the US Census of 2000. The sampling frame will consist of people residing in homes of Puerto Rico with an active home phone at the time of the survey and for those 18 and older who reside in these homes.

To ensure the sampling frame is representative of the population, the timing of surveys will be conducted from 3:00pm-8:00pm, Monday through Friday, and from 10:00 am-6:00pm, Saturdays and Sundays.

The validation of the data collection instrument would be done through a pilot test. The instrument will be provided to ten (10) people representative of the population under study, using the same parameters and logistics of the survey.

Map 1. Regions to be surveyed



Data collection year

2010

October 1st of 2006- September 30th of 2010.

Frequency of the measurement

Every five years

Results

At the moment, the research instrument has been validated. The results of the pilot test are included in Annex 2

Limitations

To ensure adequate representation of the general population, the survey must be provided by telephone, which requires personnel to do the survey, personnel to process the results, and equipment.

Measure 17: Number of acres in the coastal zone that are available for public access.

Purpose of this measure

Describe the number of acres available for public recreational use within the Commonwealth's coastal zone.

Report the following

- (1) Number of acres in the coastal zone (public and private).
- (2) Number of acres of public lands that are available for public access.

Considerations

- Describe the scale or resolution for the data source and the method of measurement (i.e. satellite images, aerial photography, topographic maps, etc.).
- The number of acres in the coastal zone will remain constant unless the Program coastal zone boundary is altered in the future.
- *Available for public access* means that the property is publicly owned, there is a public access easement, or the property is otherwise designated for recreational access for the general public.
- Report all properties, including offshore islands that provide recreational access to the general public in the coastal zone, including land owned by local, state, and federal agencies and not-for-profit organizations.
- Areas available for public access should include publicly owned properties such as parks, but can also include properties owned by not-for-profit organizations such as land trusts or foundations that have

designated the property as open to the general public.

- It is acceptable to have a small fee charged to the public for using these properties; however, the fee should be minimal
- Properties such as privately owned campgrounds (e.g. KOA) and properties restricted to members only (e.g. yacht clubs) should not be included in this measure.

Data collection methods and sources of information

- This measure was performed using Geographic Information Systems (GIS).

Calculation

- (1) *Number of acres in the coastal zone (public and private).*
 - A GIS layer in shapefile format was used for this process, (*Jurisdicción_PMZC*). This layer contains the geographic extension of the coastal zone in two polygons: the marine jurisdiction and the land jurisdiction.
 - The area of the jurisdictional extent of the PRCZMP was calculated using GIS. For this process, a column was created (Area) to calculate the polygon's area in acres, using the *Calculate Geometry* tool. The sum of the records "*Límite Terrestre* and *Límite Marino*" (*terrestrial limit and marine limit*) in the Area column provides the number of acres in the coastal zone (public and private).
- (2) *Number of acres of public land in the coastal zone that are available for public access.*
 - For this exercise, the GIS layer of Puerto Ricos' Natural Protected Areas (ANP, by its Spanish acronym), was used. It contains the protected lands

that are property of the Government of Puerto Rico, Federal Government and NGOs (*DRNA_ANP_2010*). This layer was combined with the GIS layer of the National Parks Company of Puerto Rico (NPC) to create a layer that contains public and private lands available for public access.

- In this layer, the GIS tool “*Select by location*” was used to select those polygons that “intersect” the jurisdictional limits of the coastal zone. Polygons selected were exported to create a new layer with only the public and private lands that provide recreational access to the coast.
- The buffer zones of the Natural Reserves were deleted from this layer.
- In order to calculate the area of lands that provide access to the coast, the GIS *Dissolve* tool was used to eliminate overlapping between polygons. The “dissolve” created a new layer.
- A new column was added to this layer to calculate the area using the *Calculate Geometry* tool in acres. The sum of the records in this column will provide the number of acres in the coastal zone that are available for public access.

Information sources

- **Jurisdicción_PMZC** – GIS layer that delimits the legal jurisdiction of the Puerto Rico Coastal Zone Management Program (PRCZMP). It was generated based on topographic maps, aerial photo interpretation and remote sensing analysis. Resolution 1:20,000. Completed in 2000. The layer can be obtained from the DNER Coastal Zone Division.

- **DRNA_ANP_2010**- GIS layer of the Puerto Rico’s Natural Protected Areas. The information in this layer comes from several sources. It was generated based on topographic maps, land survey plats, property cadastre data from the Center for Collections and Municipal Income (CRIM, by its Spanish acronym), aerial photos interpretation and remote sensing analysis. Resolution 1:20,000. Revised in August 2010.
- **Parquesnac2**- GIS layer from the National Parks Company of Puerto Rico (NPC) provided by the Puerto Rico Planning Board. This layer was generated based on the land survey plats of NPC properties in year 2006.

Data collection year

2010

Frequency of the measurement

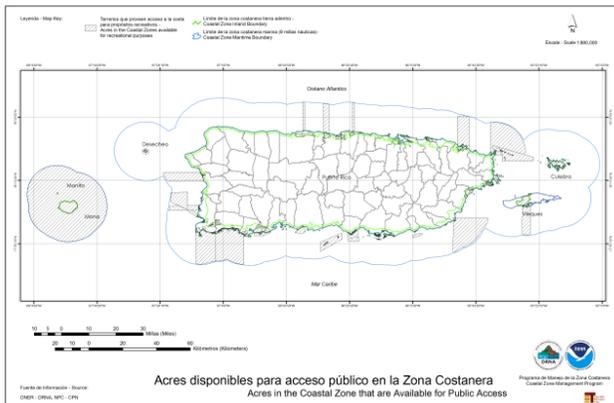
Every five years

Results

Measure	Acres
(1) <i>Number of acres in the coastal zone (public and private).*</i>	235,716.12
(2) <i>Number of acres of public lands that are available for public access.</i>	891,082.61

*A total of 3,486,260.28 acres are within the jurisdictional limits of the Coastal Zone Program, including terrestrial and marine boundaries; 235,716.12 acres within the terrestrial boundary.

Map 2. Acres available for public access



Limitations

- The GIS layer of the NPC properties (*Parquesnac2*) does not include some recreational areas, such as Punta Santiago Public Beach (*Balneario de Punta Santiago*).
- This measure considers only properties from the following agencies and NGOs: National Parks Service, US Fish and Wildlife Service, Forest Service, Department of Natural and Environmental Resources, National Parks Company and the Puerto Rico Land Trust. It does not include areas that provide public access to the coast that are owned by the coastal municipalities, since this information is not available in GIS format.

Measure 18: Miles of shoreline available for public access

Purpose of this measure

Describe the amount of the shoreline available for public access within the coastal zone.

Report the following

- (1) Number of miles of shoreline.
- (2) Number of miles of shoreline that are available for public use.

Considerations

- Describe the scale or resolution of the data source.
- Describe the source of data and method of measurement (i.e. satellite images, aerial photography, topographic map, etc.)
- *Available for public access* means that the property is publicly owned, there is a public access easement, or the property is otherwise designated for recreational access for the general public.

Data collection methods and sources of information

This measurement was performed using Geographic Information Systems (GIS).

Calculation

- Using the GIS layer “*pr_municipios*” from the Puerto Rico Planning Board (PRPB), the extent of Puerto Rico’s coastal line was calculated.
- This layer was in polygons; therefore, it was necessary to convert it to lines. First, the GIS tool “*Dissolve*” was used to create one polygon for the whole Commonwealth. This polygon was then converted to lines using the tool “*convert polygons to polylines*” from the GIS Xtools.

- In this line layer, the length of the Caribe Hilton’s hotel was delimited, since this is the only private beach where public access can be restricted. Using the GIS tool “*Split*”, and an aerial image of 2007, the layer was cut following the coastline where the Hotel is located. This was done on a scale of 1:1,000.
- A new column was created in this line layer to calculate the length of the shoreline. The GIS tool “*Calculate Geometry*” was used to calculate the length in miles.

Information sources

GIS layer *pr_municipios* from the PRPB.

Results

Measurement	Miles
Miles of shoreline	799
Miles of shoreline available for public access*	798.81

*According to existing regulations, the entire coast of Puerto Rico must be accessible for public use for recreational purposes. The only shoreline that could be excluded from public access is the beach of the hotel Caribe Hilton, whose coastline is estimated at 0.19 miles. This exclusion is due to a concession granted for a term of 999 years.

Map 3. Miles of shoreline available for public access



Data collection year

2010

October 1st of 2006- September 30th of 2010.

Frequency of the measurement:

Every five years

Limitations:

- The extent of the shoreline where public access can be restricted is not clear. The calculation was estimated based on photo- interpretation.

Measure 19: Number of Coastal Management Programs that have habitat restoration plans for coastal habitat, by category.

Purpose of this measure

Describe the role of the CZM Program in planning for the restoration of habitat in the coastal zone.

Report the following

(1) Indicate (yes or no) if the Coastal Management Program has a habitat restoration plan for the following types of habitat and the date the plan was completed or substantially updated:

- Tidal wetlands
- Beach or dune habitat
- Nearshore (intertidal, subtidal, submerged) habitat
- Other types of habitat in the coastal zone

Considerations

- Habitat restoration plans can include plans to guide habitat restoration that are developed by the State, regional organizations, or local governments to meet State or CZM planning requirements.
- At a minimum, the components of the habitat restoration plan should provide data and information about the type of habitat targeted, resources and tools available for restoration, and identify potential opportunities or priorities for restoration.
- If one restoration plan covers multiple habitat types, then it should be counted for each habitat type included in the plan.
- This measure, however, should not include site specific restoration plans.

Data collection method and sources of information

Data can be obtained through interviews with public agencies and NGOs.

Calculation

This measure could be obtained by adding the public agencies and NGOs that responded with a Yes.

Information sources

The information may be collected by interviewing the following sources:

- (1) Department of Natural and Environmental Resources, Terrestrial Resources Division
Contact information
Telephone: 787-999-2200 ext. 2613.
- (2) San Juan Bay Estuary Program
Contact information:
Tel: 787-725-8165
Fax: 787-723-8165

Data collection year

2010

October 1st of 2006- September 30th of 2010.

Frequency of the measure:

Every five years

Results

Habitat	Yes/No has a restoration plan	Year
Tidal wetlands	No	
Beach or dune habitat	No	
Nearshore (intertidal, subtidal, submerged) habitat	No	
Other types of habitat in the coastal zone	No	

Limitations

- Any habitat restoration effort to be initiated by Commonwealth, regional, or municipal agency, will required an endorsement from the DNER, since this is the agency responsible of administering these resources in Puerto Rico. However, if any entity initiates a habitat restoration process without consulting the DNER, it will be very difficult to consider it in this measure.

Measure 20: Number of Coastal Management Programs that have mapped inventories of coastal habitat, by category.

Purpose of this measure

Describe the role of the CZM Program in supporting comprehensive planning, conservation, and management of coastal habitats in the coastal zone.

Report the following

- (1) Indicate (yes or no) if the Coastal Management Program has a mapped inventory for the following types of habitat and the date that the inventory was completed or substantially updated:
- Tidal wetlands
 - Beach or dune habitat
 - Nearshore (intertidal, subtidal, submerged) habitat
 - Other types of habitat in the coastal zone

Considerations

- Mapped inventories should, at a minimum, provide data for at least 30% of the area within the coastal zone where the habitat type would be expected to occur.
- The mapped inventory may include data on habitat location, general information on the ownership/protection status of the site, and the date that the inventory was completed or the underlying data was substantially updated.
- Inventories developed by another organization or agency can be reported if the CZMP has access to it.

Data collection methods and sources of information

This measure was performed through interviews with public agencies and NGOs.

Calculation

This measure could be obtained by adding the available inventories indicated by the respondents.

Information sources

- (1) Department of Natural and Environmental Resources, Coastal Zone Division
Staff responsible of tasks 3.1A- GIS-RS Support to PRCMP.
Contact information: 787-999-2200 ext. 2732
- (2) International Institute of Tropical Forestry, Mr. Bill Gould, PI Puerto Rico GAP Analysis Project
Contact information:
Telephone: 787-766-5335, ext. 302
Email: wgould@fs.fed.us
- (3) Conservation Trust of Puerto Rico Natural Protected Areas and Scientific Investigation
Contact information:
Telephone: (787) 722-5834
Email: [baezj@fideicomiso.org] o [toledog@Fideicomiso.org]

Data collection year

2010

October 1st of 2006- September 30th of 2010.

Frequency of the measure

Every five years

Results

Habitat	Yes/No has mapped inventory	Year
Tidal wetlands	No	
Beach or dune habitat	No	
Nearshore (intertidal, subtidal, submerged) habitat	No	
Other types of habitat in the coastal zone	No	

(*Mapa de Vida*), which purpose is to validate the results of the GAP. Both initiatives are underway, so they cannot be reported now.

Limitations

For this measure were contacted Ms. Coralys Ortiz, who works with GIS in the Coastal Zone Division, Mrs. Glorimar Toledo, from the Puerto Rico Conservation Trust, and Mrs. Olga Ramos, from the International Institute of Tropical Forestry (IITF).

From the interviews, it appears that the following mapped inventories of coastal habitats currently exist:

- NOAA benthic habitats - published in 2001.
- Wetlands Inventory - the inventory of wetlands for Puerto Rico is part of the National Wetlands Inventory (USFWS). This inventory was begun in 1977 and was published as a draft in 1979.
- Environmental Sensitivity Index - This document contains information on areas managed by federal and state agencies, and was published in 2001.

However, none of these inventories can be reported since their completion dates are prior to the reporting period.

Currently, the IITF is working on an inventory of coastal and benthic ecosystems as part of Puerto Rico GAP Analysis Project. Moreover, the Conservation Trust of Puerto Rico is carrying-out a project known as Map of Life

Measure 21: Number of acres of coastal habitat (a) restored and (b) protected through acquisition or easement using non-CZM or non-CELCP funds.

Purpose of this measure

Describe trends in the restoration and protection of coastal habitat conducted by the State using non-CZM funds or non-Coastal and Estuarine Land Conservation Program (CELCP) funds.

Report the following

- (1) Number of acres of coastal habitat restored using State, non-CZM or non-CELCP funds
- (2) Number of acres of coastal habitat protected through acquisition or easement using non-CZM or non-CELCP funds

Considerations

Projects reported for this measure can include non-CZMA federal funds or private funds in addition to State funds.

Data collection methods and sources of information

This measure was performed through interviews with public agencies and NGOs.

Calculation

This measure could be obtained by adding the public agencies and NGOs that responded with a Yes.

Add all the acres of land within the coastal zone that have been ceded, expropriated, transferred by easement or by other means, purchased or donated to the DNER.

From the interview conducted with the Director of the DNER's Division of Property (*División de Bienes Inmueble*) follows the information about the restored and protected areas. This division has an

inventory of all land acquired by the Agency. The *División de Bienes Inmueble* also has information of land transferred to the DNER after being restored.

Information sources

Department of Natural and Environmental Resources, *División de Bienes Inmueble*
Mrs. Mabel Román, Director
Contact information:
Tel: 787-999-2200 ext. 2268
Email: mcrivera@drna.gobierno.pr

Results

Measure	Acres
Number of acres of coastal habitat restored using non-CZM or non-CELCP funds.	This information was requested to the DNER Property Division "División de Bienes Inmueble"
Number of acres of coastal habitat protected through acquisition or easement using non-CZM or non-CELCP funds.	409

Data collection year

2010

October 1st of 2006- September 30th of 2010.

Frequency of the measure

Every five years

Limitations:

This information does not consider other lands owned by other agencies, such as the Land Authority.

Measure 22: Number of communities in the coastal zone that use setbacks, buffers, or land use policies to direct development away from areas vulnerable to coastal hazards.

Purpose of this measure

Describe the role of the CZM Program in increasing local capacity to protect coastal areas that are vulnerable to hazards through the use of location requirements or land acquisition.

Report the following

For Coastal Management Programs that do not use state-established numerical setbacks or buffers to direct development away from hazardous areas, report the following:

- (1) Number of communities in the coastal zone that are required to develop and implement land use policies to direct development away from hazardous areas that are approved by the state through local comprehensive management plans.
- (2) Number of communities that have approved state comprehensive management plans that contain land use policies to direct development away from hazardous areas.

Considerations

- A *community*, for the purposes of this measure, is the unit of local government with the authority to enact or enforce the setbacks, buffers, or other policies to direct development away from hazardous areas. In the case of Puerto Rico, the municipalities are considered as communities.
- At a minimum, setback or buffer requirements should include

development restrictions that prevent new construction of commercial or residential buildings in inappropriate, hazardous coastal areas through geographic designation, zoning, or regulatory jurisdictional lines.

- Land use policies are policies other than setbacks or buffers that are used by communities to direct development away from hazardous areas.

Data collection methods and sources of information

This measure was performed through interviews with public agencies and NGOs.

Calculation

This measure could be obtained by adding the public agencies and NGOs that responded with a Yes.

For this measure it was considered that the Planning Regulation No. 13, Special Flood Hazard Areas Regulation, is applicable throughout the Commonwealth and hence, to the coastal municipalities.

Information sources

- (1) Puerto Rico Planning Board, Land Use Plan Subprogram, which has the role of advising and evaluating the municipal land use plans.
Contact information:
Mr. Max L. Vidal Vázquez, Director
Tel: (787) 722-2780
- (2) Federal Emergency Management Agency
Federal Pre-Disaster Mitigation Program, Contact information: Ms. Carmen Iris Delgado, Program Coordinator
Phone: 296-3507
Email: carmen.delgado.@dhs.gov
- (3) Coastal Hazards Center, University of Puerto Rico, Mayagüez Campus, Contact information:
Mr. Aurelio Mercado, Director
Tel: 787-265-5461 (direct)

787-832-4040 x 3201
Fax: 787-265-5461
E-mail: Aurelio.mercado@upr.edu

Results

Measure	Acres
Number of communities in the coastal zone that are required to develop and implement land use policies to direct development away from hazardous areas that are approved by the state through local comprehensive management plans.	44
Number of communities that have approved state comprehensive management plans that contain land use policies to direct development away from hazardous areas	0

Data collection year

2010

Frequency of the measure

Every five years

October 1st of 2006- September 30th of 2010.

Limitations:

- There are difficulties in obtaining data on the number of municipalities, if anyone, that has an approved plan to direct development away from hazardous areas.

Measure 23: Number of communities in the coastal zone that have a mapped inventory of areas affected by coastal hazards, by category

Purpose of this measure

Describe the role of the CZM Program in supporting comprehensive planning, conservation, and management of areas in the coastal zone affected by natural hazards.

Report the following

- (1) Total number of coastal communities in the coastal zone.
- (2) Number of communities that have a mapped inventory of areas affected by the following types of hazards and the date the inventory was completed or substantially updated:
 - Flooding
 - Storm surge
 - Geological hazards (including earthquakes, tsunamis)
 - Shoreline erosion (including bluff and dune erosion)
 - Sea level rise
 - Land Subsidence
 - Other (please specify)

Considerations

- At a minimum, a mapped inventory should include data on specific areas affected, general information on the current land use and provide data for at least 30% of hazardous areas in the coastal zone.
- For each hazard, provide the date the inventory was completed or when the data was substantially updated.
- The inventory may have been developed by another organization or agency, but the community must be aware of the inventory and have access to it.

- A coastal community is a unit of local government, local governmental organizations, or special units of government.

Data collection methods and sources of information

This measure was performed through interviews with public agencies and NGOs.

Calculation

This measure could be obtained by adding the public agencies and NGOs that responded with a Yes.

Information sources

- (1) Coastal Hazards Center, University of Puerto Rico, Mayagüez Campus,
Contact information:
Mr. Aurelio Mercado, Director
Tel: 787-265-5461 (direct)
787-832-4040 x 3201
Fax: 787-265-5461
E-mail: Aurelio.mercado@upr.edu
- (2) Puerto Rico Seismic Network
Contact information:
Tel: 787-833-8433
Email: staff@prsn.uprm.edu
- (3) Commonwealth Agency for Emergency Management and Disaster Administration, Center of Information Systems
Contact information:
Tel: 787-724-0124
- (4) Puerto Rico Planning Board, Floodplain Management Authority
Engineer Rafael Morales
Tel: (787) 722-2780 X-2161

Results

Measure	Units	Year when the inventory was completed
Number of communities in the coastal zone	44	
Number of communities that have a mapped inventory of the areas affected by the following risks:	44	2009
Flooding		
Storm surge	44	
Coastal erosion	0	
Sea level rise	5	2008
Geologic hazards	0	
Land subsidence	0	

Data collection year

2010

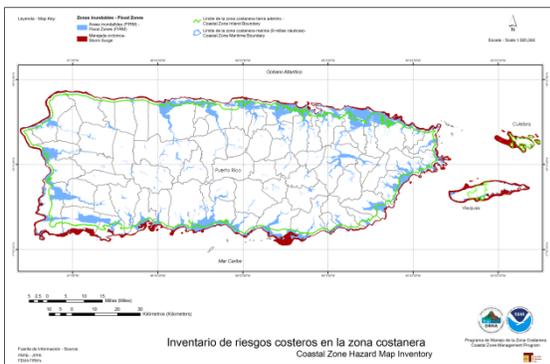
Frequency of the measure

Every five years
October 1st of 2006- September 30th of 2010.

Limitations

- Municipalities are supposed to prepare multi-risk mitigation plans for submission to FEMA. These plans should contain information about the risks to which coastal communities are subject. However, it is not known which municipalities have inventories in coastal risk maps, since the information is scattered and not always available to the public.

Map 4. Example of map inventories of coastal hazards



The Puerto Rico CZMP and the University of Puerto Rico PR, jointly, made a projection of a flood of 1m by sea level rise using AdCirc-BusinessQ model and a study of projections by the NGO Citizens of the Karst. In both cases, the projections have a margin of error that requires a review using the new vertical datum that the National Geodetic Service of NOAA is close to completing.

Appendix I

Survey instrument



Introduction:

The Coastal Zone Division of the Department of Natural and Environmental Resources is conducting a survey on public perception of recreational access to the coasts of Puerto Rico.

Your participation on this survey is voluntary and will approximately take only 5 minutes. The information you provide will be confidential and used only for the purposes of this study.

Survey information

Day of the survey: Su / M / T / W / Th / F / Sa

Date: ___ / ___ / _____

Time of the survey: _____ : _____
[am] [pm]

Filter question

1. Have you visited a beach during the past five years for recreational purposes?

Yes [1]

No [2] *If he/she says no, inquire further. If the answer is still no, the survey is complete.*

2. In a typical month, how many times approximately, do you visit a beach for recreational purposes?

Less than once a month [1]

One to two times a month [2]

Three to four times a month [3]

Five or more times a month [4]

3. When was the last time you visited a beach for recreational purposes?

Less than a week ago [1]

One to two weeks ago [2]

Three to four weeks ago [3]

A month ago [4]

Two to three months ago [5]

Less than three months ago [4]

4. What are the beaches that you visit frequently for recreation? *List the top three and the municipality where located.*

a) _____ Municipality: _____

b) _____ Municipality: _____

c) _____ Municipality: _____



5. Indicate the main recreational activity practiced when visiting the beaches of Puerto Rico:
[Interviewer: let the interviewee indicate the activities first, then after, probe by mentioning the alternatives that were not mentioned]

Family outing	[1]
Recreational fishing	[2]
Surfing, windsurfing	[3]
Kayak and other passive activities	[4]
Exercise	[5]
Contemplation/reflection	[6]
Photography	[7]
Camping	[8]
Swimming or sunbathing	[10]
Boating	[11]
Riding a jet ski	[12]
Snorkeling/scuba diving	[13]
Others, indicate: _____	

6. For access to the beaches, we mean that the beach offers a path located on public property and free of physical or moving barriers that prevent or constrain the pace. How would you describe the access to beaches in Puerto Rico for recreational purposes? Do you believe that it is....

Adequate	[1]
Inadequate	[2]
Don't know	[3]
Does not want to indicate	[4]

7. If indicated inadequate, ask: Why do you believe access to the beaches is inadequate?

8. According to your experiences visiting Puerto Rico's beaches, the access to the beaches in the Island is better, equal or worse than the access five years ago?

Better	[1]
Equal	[2]
Worse	[3]

9. What factors, if any, make access to the beach better/equal/worse?

10. Do you have recommendations on how to improve access to the beaches in Puerto Rico?



Demographic Profile

Gender: _____

Can you tell me your age? _____

Marital status

- Single [1]
- Married [2]
- Divorced [3]
- Widow [4]
- Cohabit [5]

What is your current occupational status? **YOU CAN SELECT MORE THAN ONE**

- Employed (Occupation: _____) [1]
- Student [2]
- Housewife/househusband [3]
- Unemployed [4]
- Retired or disabled [5]

Could you indicate your highest level of education completed?

- Eight grade or less [1]
- Some high school [2]
- High school degree [3]
- Some university [4]
- Associate degree [5]
- Bachelor [6]
- Master [7]
- Doctorate or professional degree [8]

Number of people in your household (including yourself) _____

Of the people that make your home, how many are 18 years or less? _____

Of the people that make your home, how many are 65 years or more? _____

At home, does anyone have any physical, mental or sensory disabilities?

Yes [1] What type? *[Interviewer read the alternatives.]*

- Physical [1]
- Mental [2]
- Emotional [3]
- Developmental [4]
- Disabled elder [5]



No [2]

Which of the following categories includes your annual household income?

Less than \$10,000	[1]
From \$10,000 to \$14,999	[2]
From \$15,000 to \$19,999	[3]
From \$20,000 to \$24,999	[4]
From \$25,000 to \$29,999	[5]
From \$30,000 to \$39,999	[6]
From \$40,000 to \$49,999	[7]
From \$50,000 to \$74,999	[8]
More than \$75,000	[9]
Don't know / not indicated	[10]

Thanks for your participation.

Appendix 2

Results of the validation of the questionnaire

Results of the validation for the research instrument

Research instrument

The instrument design for collecting information consists of a questionnaire of mostly closed-ended questions. The questionnaire content was determined according to the parameters required for this measure in the Performance Measures Guidance. The post-pilot version of this instrument is included as an annex.

Logistics validation

The validation of the instrument was conducted through a pilot test that aimed to know whether:

- the questions meet the objectives of the research;
- the structure and formulation of the instructions and questions are understood by the target population, and
- the logistics used for selecting the sample and collecting the information are adequate.

The instrument was provided to ten people representative of the population under study, using the same parameters and logistics of the survey. The pilot test was held on Friday, September 24, 2010, during the period from 3:00pm to 8:00pm, and on Saturday, September 25, 2010, between 10:00am and 2:00pm

Findings

The findings of the pilot test, by section of the instrument, are the following:

Introduction

It is necessary to specify:

- age of survey participant
- time duration of the survey

- identify who is providing the survey (DNER or Estudios Técnicos, Inc.)

b. Filter question

When asking whether the survey subject had visited a beach for recreation, it is necessary to specify a period of time prior to the survey during which the participant visited a beach. At this point, the participants were unclear about how long ago should be indicated, so they paused to think about the answer.

Question 5

It is recommended that the interviewer let the participant indicate what activities he/she has practiced. Then, inquire about the alternatives that have not been mentioned. For this purpose, a note will be included in the instrument.

Overall, in the process there were no major difficulties with the content of the questionnaire. The estimated time duration was reduced to an average of five minutes.