

Linking Decisions to Stakeholder Values in the Guánica Bay Watershed, Puerto Rico

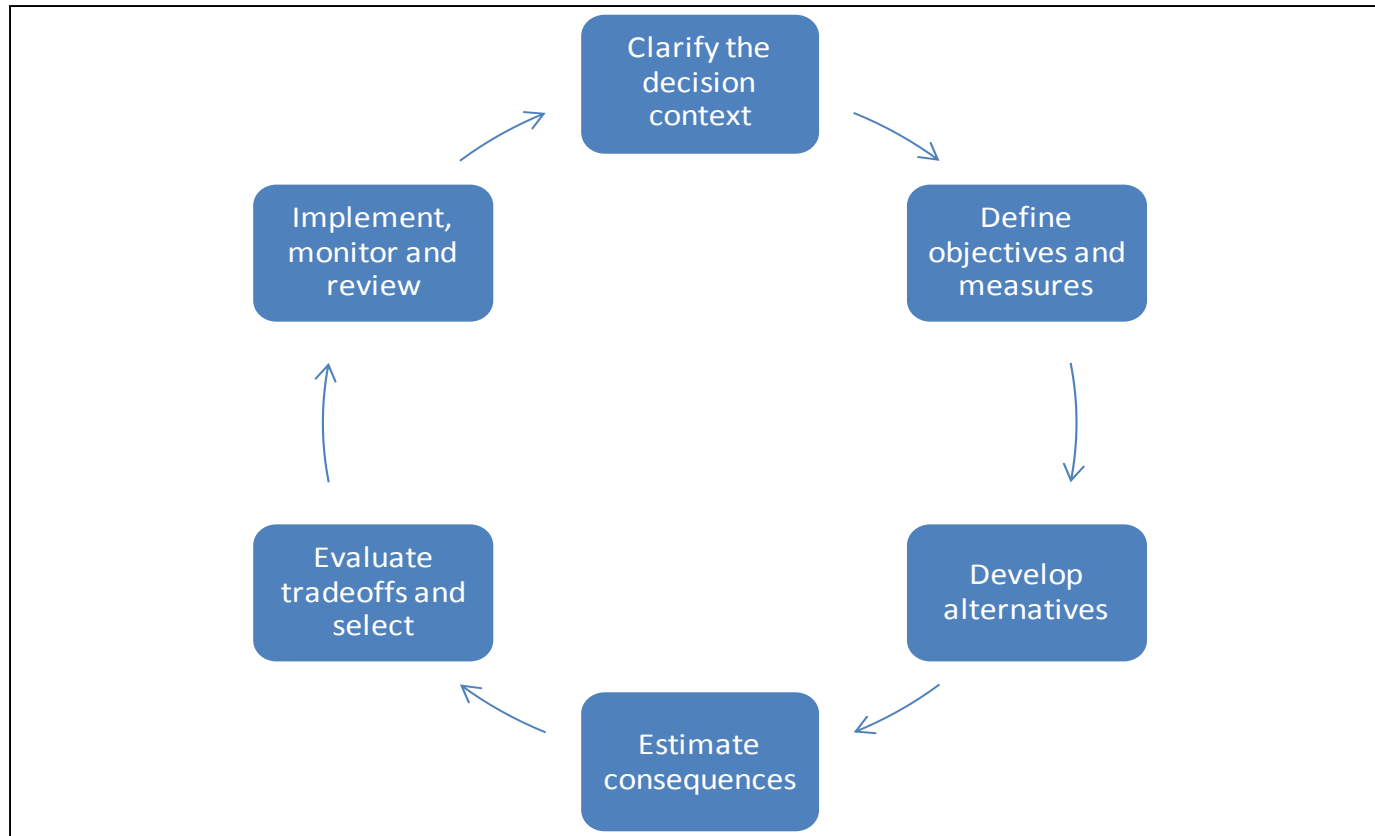


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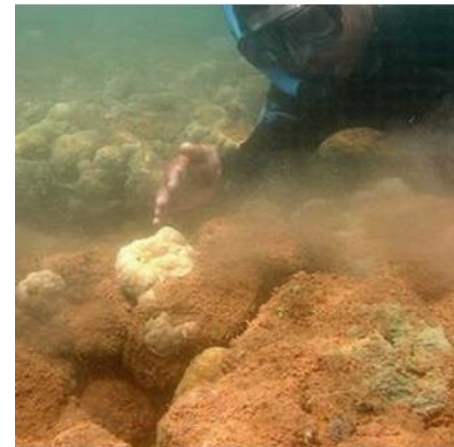
Structured Decision-Making

An organized approach to integrate facts (Scientific Knowledge) and values (Stakeholder Concerns)



The Decision Context

- The problem, issue, or reason for making a decision.
- Defines the scope of the information that will be needed.
- The USCRTF Guánica Bay Watershed decision context focused on land-based sources of pollution and potential impacts on coral reefs.



Coral Reef Ecosystem Services

Tourism & Recreation



Fishing



Ecosystem Integrity

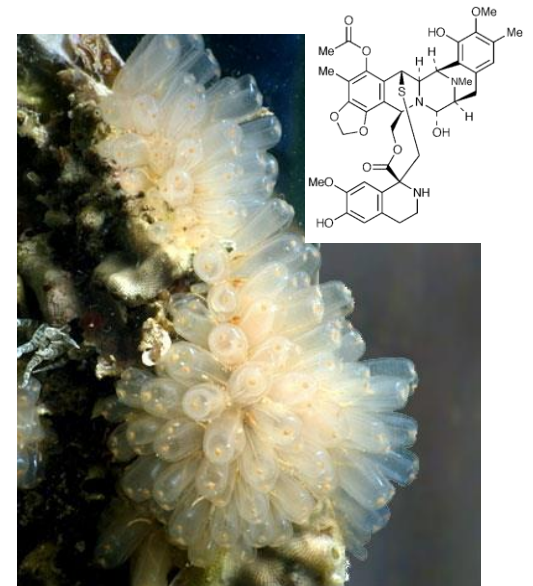


(supporting service)



Shoreline Protection

Natural Products



Decision Support Workshop

La Parguera, PR – April 2010

- Focused on 2008 Watershed Management Plan
- Delivered information on ecosystem services
- Identified priority environmental issues
- Characterized what decisions are made and how
- Elaborated potential management options
- Engaged clients



**Response
Decisions**

Response: What are the options under consideration?

**Drivers
Economic
Sectors**

Drivers: What socio-economic sectors may be impacted by decisions?

**Pressures
Human
Activities**

Pressures: Why is this management action proposed?
What pressures might be associated with it?

**State
Ecosystems**

State: What affect do these pressures have on the ecosystem?

**Impact
Ecosystem
Services**

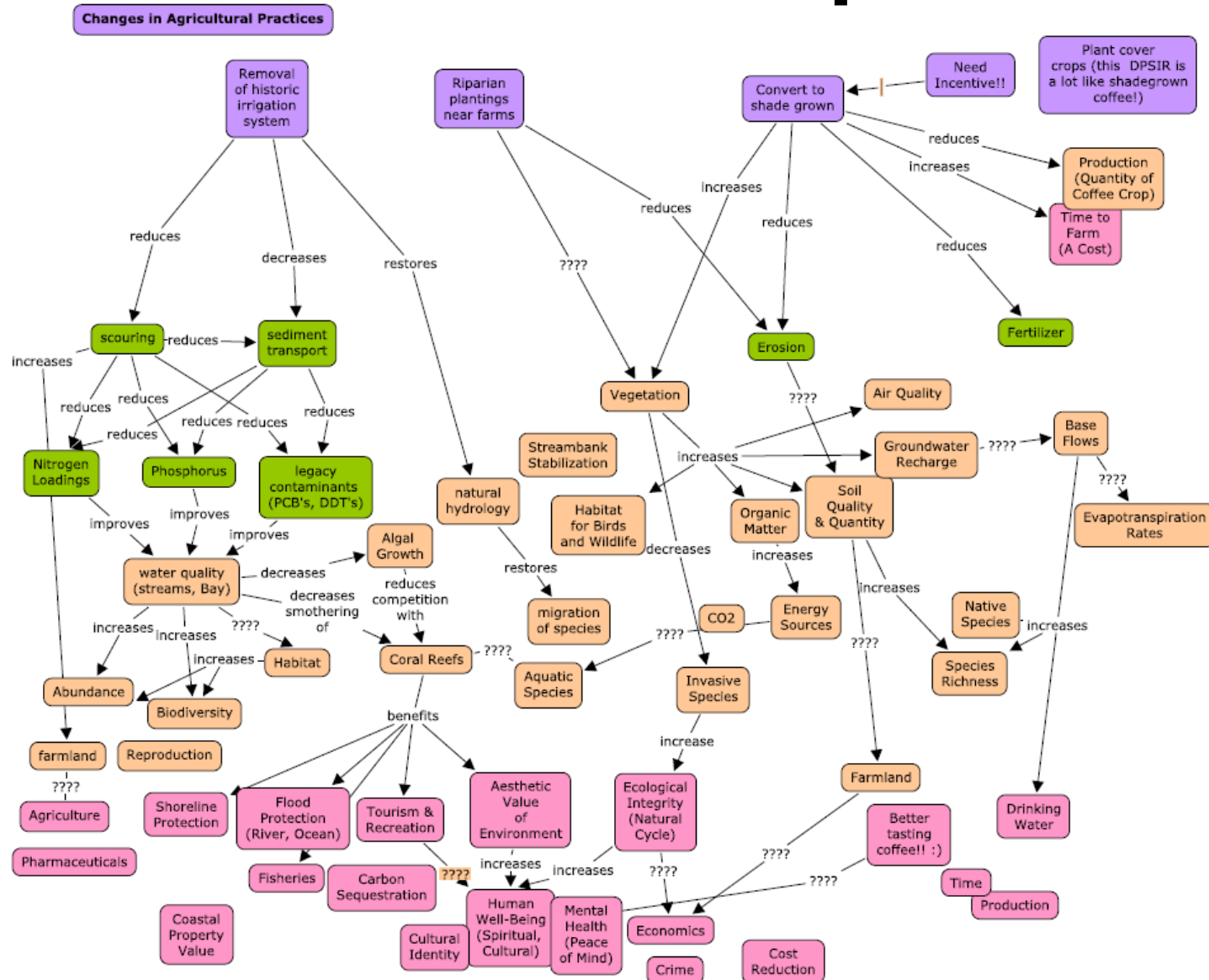
Impact: Why do we care?
What benefits from the reef do we stand to lose?

DPSIR Framework

Proposed Management Actions

- **Agricultural Practices**
- **Lagoon Restoration**
- **Reservoir Restoration & Maintenance**
- **Sewage/Waste Management**
- **Riparian Restoration**

Breakout Group



Decision Landscape

A characterization of issues surrounding a potential decision, such as the scale, science underpinnings, decision-makers and affected stakeholders

Workshop participants elevated several important factors for developing a complete decision landscape:

- Communities linked by a complex hydrologic system
- Impact of LBSP on coral reefs is not understood
- Need to develop potential tradeoffs between management options
- The positive effects of reducing sediment in the watershed reach far beyond protection of coral reefs.
- Authorities for action are unclear.

Archival Research

April 2012

A type of primary research that involves locating, evaluating, and systematically interpreting and analyzing information from original archival records.

Archival research was focused on:

- 1) construction of infrastructure (hydroelectric plants, dams, and other infrastructure for electricity; sanitary sewer systems and municipal stormwater systems; and irrigation infrastructure to support farming and provide drinking water)
- 2) agriculture (shifts from sugar cane to other crops, and from shade-grown to sun-grown and back to shade-grown coffee; draining the historic Guánica Lagoon and the decision to make Lajas Valley an agricultural reserve)

Archival Research

Results

The Guánica Bay watershed has:

- A rich cultural history (Taino Indians, Spanish colonization, African slaves)
- A long history of agriculture
 - Prior to 1600s - subsistence farming
 - mid-1600s - tobacco the main export crop
 - 1900s – sugar cane the main export crop
 - 1980s – rise of sun-grown coffee
- A history of exploitation (first Spain and then the U.S.)
- Operation Bootstrap – industrialized agriculture along the southern coast of Puerto Rico by providing irrigation and cheap hydroelectric energy for pumping water onto fields

Decision-Making Workshop

August 2012

Purpose:

To examine how decision-makers and natural resource users engage in the management of non-market resources in the Guánica Bay watershed.



Decision-Making Workshop

Findings

- Lack of local involvement and influence in decisions being made
- Decisions were often contradictory to local needs and local vision
- Agriculture, fishing and eco-tourism are important, but need active management to become sustainable

Public Values Forum

January 2013

Goals:

- Identify stakeholder objectives across the Guánica Bay watershed
- Examine tradeoffs and intended/unintended consequences
- Prioritize possible management actions for achieving multiple values

Making decisions based on 'what is important' is the basis of *value-focused* decision-making and is fundamentally distinct from the more common *alternative-focused* decision-making.

Public Values Forum

Process

Breakout groups to discuss what they felt was important in the watershed

- Developed and presented an initial list of objectives
- Created performance measures for each objective
- Developed a list of high priority actions



Public Values Forum

Results

- Stakeholders have a wide range of values for the watershed, including: coral reefs, agriculture, fishing, human health, law enforcement, water availability, and environmental education
- Participants gained an appreciation for the effects that any given decision might have on the multiple objectives and a better understanding of the need for valuation and tradeoff analysis
- Groundwork was laid in the workshop for recognizing the difference between value-focused thinking (why) and alternative-focused thinking (how)

Conclusions

- Watershed restoration projects should be as much a social undertaking as an ecological one.
- Putting values at the forefront of decision-making brings less contention as the public has greater awareness that agencies are working for the common good.
- Using a systems-thinking framework (DPSIR) is essential when dealing with complex problems.
- Engage the stakeholders at the beginning and throughout the process.