Caribbean Planning for Adaptation to Climate Change
Component 8

Market-Based Instruments for Addressing Impacts Of Global Warming in the Caribbean

A Report Based on a CPACC Regional Meeting in St. Kitts-Nevis
August 28-September 1, 2000

Sections

Preface

This report summarizes major issues related to economic incentives as a means for achieving environmental goals, particularly in mitigating the impact of sea level rise from global warming. It is based on a regional meeting of participating countries, in St. Kitts-Nevis, August 28-September 1, 2000 of Component 8 of the Caribbean Planning for Global Climate Change (CPACC). The sub-regional workshop in C8 activities was organized jointly with a regional meeting on Component 7 in a workshop entitled "Economic Decision-making Tools for Developing Policy for Climate Change Adaptation."

Section 1 provides a background discussion on economic incentives as a basis for augmenting command and control environmental regulatory policy. Section 2 briefly surveys the role of economic valuation in making a case for market-based instruments (issues related to economic valuation are covered by Component 7 of CPAC C). Section 3 reviews market-based instruments and the considerations that must be taken into account when assessing their use. Section 4 examines the process of developing a strategic approach to employing economic incentives in pilot projects in Antigua-Barbuda and St. Kitts-Nevis. Section 5 highlights key concerns in developing a program of economic incentives. Section 6 summarizes major findings from the meeting in St. Kitts-Nevis.

Background

The Caribbean Planning For Adaptation to Climate Change (CPACC) brought together representatives from eight Caribbean nations in a workshop at St. Kitts-Nevis from August 28 to September 1, 2000; its purpose was to foster discussion on how economic, or market-based, incentives can be realistically employed in their countries for reducing human impacts on the environment, particularly those related to sea level rise as a consequence of global warming. Sea level rise is a serious threat to the integrity of island and coastal ecosystems, island economies and public health — while there is some controversy over the extent to which human activities contribute to sea level rise, there is general agreement worldwide that such activities are exacerbating the impacts. The workshop's particular focus was on pragmatic issues that planning and implementation of economic instruments must consider and on two pilot projects, in Antigua-Barbuda and St. Kitts-Nevis, that have been engaged in identifying issues potentially amenable to economic incentives and developing plans to address them.

The four-year CPACC project originated at the Global Conference on Sustainable Development of Small Island Developing States. In 1997, the World Bank approved CPACC and designated the Organization of American States as the executing agency. Its primary goals are to: (1) define Caribbean resources at risk; (2) improve understanding of economic valuation techniques such as benefit-cost and impact analyses; (3) synthesize potential solutions to resource management and the role that economic valuation can play; and (4) synthesize feasible and practical interventions to improve environmental effectiveness in policy making. Goals related to economic valuation are covered by Component 7 of CPACC, while those related to economic incentives are covered by Component 8.

CPACC's premise is that impacts of sea level rise can be mitigated or at least slowed by changes in human behavior that are less damaging to terrestrial and aquatic ecosystems. Prospects of economic growth, however, have most often trumped these environmental concerns. In the Caribbean, as Keith Nichols observes, "The drive to secure economic growth, stability and a comparative developmental advantage has in most cases led to the unbridled development of shore and marine (coastal) areas." Nichols, representative of the Natural Resources Management Unit of the Organisation of Eastern Caribbean States (OECS/NRMU), note that decision makers have often given "scant regard if any to the negative impacts of growth on the natural physical environment. The links between national development, economic stability and the maintenance of the integrity of the natural environment is hardly recognized."

Nevertheless, as Nichols adds, there has been a growing recognition among Caribbean governments that environmental degradation can have severe impacts on those natural resources that are the foundation of Caribbean economies, particularly in tourism and agriculture. It is for this reason that nations worldwide have been more responsive to enacting environmental laws and regulatory policies to better protect natural resources — still, this recognition of detrimental impacts over the long-term often comes into conflict

with the demand for economic growth over the short-term. The challenges facing policy makers are how to balance economic development with sustainable environmental protection.

Public policies for meeting environmental goals are largely enacted through top-down or command-and-control regulations, in which goals are set by government agencies that industry and business, public utilities, and citizens must meet. If these don't meet them, then there is the potential of legal action. While command-and-control regulation has had important successes, it also has numbers of limitations. To begin with, says Nichols, "command and control does not cater to public or private sector involvement and thus can trivialize the role of communities in the decision-making and planning process." Furthermore, such controls do not usually reward innovative achievements or those that go beyond minimum requirements, let alone surpass them. Command and control policy making can be heavily bureaucratic and expensive. However, by integrating economic incentives as a component of regulatory policy making that involve public sector interests in the development of goals, it should be possible to more effectively optimize the means for achieving sustainable environmental protection.

It is for such reasons that governments throughout the world — in North and South America, the Caribbean, Europe and Asia — have been exploring and, in many instances, adopting the use of economic incentives in policy making aimed at achieving environmental goals. The use of economic incentives aims at changing behavior by enfranchising community stakeholders (e.g., industry, agriculture, fishing, community organizations) in the consensus-based environmental goal setting that leads to regulatory policy. There are a score of economic instruments currently in use throughout the world.

While economic incentives as an instrument in environmental policy are not likely to replace command-and-control regulations, they can serve as a significant complement to them, if not a more effective approach in some cases. (Market-based techniques are summarized and assessed in the CPACC Component 8 report, "A Review of Economic Instruments and Methodologies for Meeting Environmental Goals.") Over the long term, while economic incentives can help improve environmental decision making, they can also serve to educate all public sectors on the importance of stewardship of our natural resources.

The Role of Economic Valuation

In assessing the potential of market-based instruments to achieve a specific environmental goal, a key question will be the economic implications, e.g., what are the costs, what are benefits? After identifying a resource at risk, for example, a beach area slated for development, and assessing the array of economic instruments that could help protect against further beach degradation, the economic costs and benefits of protection could be important factors in final decision making at ministerial or cabinet levels.

Four important economic approaches for undertaking such measurements are cost-benefit analysis, economic impact analysis, cost-effectiveness analysis and natural resources assessment.

From an economics perspective, value is anthropocentric, that is, a natural resource does not have an intrinsic value but only that which human beings associate with it. For example, because of sea level rise, several island beaches may be at varying degrees of risk. With limited funding to undertake restoration of all the teaching, how are priorities established for taking protective action. While political and historical factors will play key roles in decisionmaking, the economic implications are likely to be significant as well. What are the economic costs of investing in each beach? What are the economic benefits? How do we determine the value of beaches or other natural resources? After all, they are not traded in markets.

Methods of Economic Analysis

Cost-Benefit Analysis. Compares gains and losses associated with investment projects or policies. Gross benefits are compared with the opportunity costs. Such an analysis can provide insights into the economic efficiency of management and regulatory actions.

Economic Impact Analysis. Estimates how a change in policy or market conditions affects income, output, employment or expenditures in a region or an economic sector; unlike cost-benefit analysis, it does not account for opportunity costs.

Cost Effectiveness Analysis. Measures only costs and is often employed when the monetary benefits of a policy or regulation either cannot be measured monetarily or it is impractical to do so.

Natural Resource Damage Assessment. Determines liability to natural resources that can result from the release of hazardous materials. Its primary use is to estimate the value of damages to an injured resource so that these amounts can be recovered from those held liable by courts.

Adapted from Letson and Milon (In press) and Lipton et al. 1995)

In cases of "non-market goods" — these pertain especially to environmental resources such as beaches, wetlands, coral reefs — economists have developed different techniques for trying to assess such values. These are based on the concept of willingness-to-pay, or WTP. The WTP may be based on an individual's interest in using a resource — referred to as its *use value* — or simply on the fact of its existence alone — referred to as its *non-use value*. If value derives from use (e.g., from

island residents or tourists who go to beaches and make choices among them), then there are behavioral or economic "footprints" that enable economists to employ methods for estimating value based on individual choices (Lipton et al. 1995).

Three methods for estimating economic value make use of "footprints," or *indirect* market information, to infer just what values a market might reveal if it did exist; these include travel cost methods, random utility models and hedonic pricing. A *direct* method for determining value is contingent valuation, though this is based not on economic footprints but rather on questionnaires that ask individuals what they would be willing to pay. Benefits transfer is a techniques that draws upon or adapts existing valuation studies in order to estimate values and not take on the expense of a full-scale, new study

Techniques for Valuing Non-Market Goods and Services

Travel Cost Methods. Have been employed widely to estimate the value of recreation by focusing on the costs of trips; with such methods, researchers can determine the economic costs for traveling to a recreational site as an estimate of a user's willingness to pay for recreation.

Random Utility Model s (RUM). Similar in concept to travel cost methods, the RUM approach is broader in that can explain the choices of a recreational site or activity as a function of the characteristics of all available sites.

Hedonic Pricing. Compares the prices of property to assess values as a function of such environmental attributes as water or air quality, or potential hazards, thus identifying how much of a property value differential between alternatives results from an environmental quality difference and how much people are willing to pay for environmental improvement.

Contingent Valuation. The one technique for estimating non-use value of a resource, it is direct in that individuals can state their preferences of willingness to pay based on a hypothetical situation; it requires detailed surveys. It is the only way to obtain the existence value of a resource.

Benefits Transfer. Applies data or results from one or more valuation studies of a particular resource to another context.

See Letson and Milon (In press) and Lipton et al. (1995)

Economic valuation of natural resources will play an important role in decision making — it speaks the language of finance ministers. Still, it must be remembered that economic valuation is a tool and at best represents partial value of a natural resource. The dollar values that are calculated in a travel cost or random utility study are based on use; they do not account for aesthetics (non-use), nor do they account for ecological benefits or services which resources such as reefs or beach provide. Important as they are in contributing to cost-benefit and impact analyses, the tools of economic valuation are still limited by their anthropocentric frameworks.

Economic Incentives and Environmental Policy

The aim of employing market-based incentives in regulatory policy is to modify environmental behaviors so that they reduce the impact of human activities on natural resources. If stakeholder groups — industries, businesses, agriculture operations, community organizations — have an economic self interest in meeting environmental goals (i.e., that they can reduce their costs and thereby save money), they are more likely to comply with those regulations and, depending on further incentives, even reach beyond them. Increasingly over this last decade, countries throughout the world, including Caribbean nations, have been adopting various types of economic instruments as a complement to command and control regulation as a means for achieving policy objectives; they have had some demonstrable success (for example, see Huber et al. 1998 and Perch 2000).

From the perspective of developing policy, there is no recipe or simple method that can match a particular instrument with a particular goal. Because of social and equity issues, political and legal considerations, and economic valuation outcomes, an instrument that is effective in one country may not be so in another. At the same time, case studies of successes and failures can serve as cautionary guides (Huber et al. 1998; Perch 2000).

Market-based instruments cover a gamut of applications, many of which such as tax relief and tax holidays have been used by Caribbean countries, though not for achieving environmental objectives. They have been used to attract new investment for development. It is important to note that such subsidies have often had detrimental impacts on natural resources because environmental protection (i.e., mitigation, conservation) were not linked to development, nor were there provisions for assuring penalties (e.g., performance bonds) could be collected. Unless economic incentives also consider environmental implications and account for their potential impacts, they can have negative effects and, in the long run, lead to greater economic costs than benefits.

Among the many economic instruments that are being employed by governments worldwide are the following (see Perch 2000 for detailed discussion; also CPACC 2000):

- **Pollution Charges.** A payment or fee charged to the polluter which varies with the quantity of pollutants being emitted.

- **Subsidies.** A payment or tax concession that provides financial assistance for pollution reduction or plans to mitigate pollution in the future.

- **Deposit-Refund Systems.** A system that imposes an up-front charge to pay for potential environmental damages which is later returned as a refund for some positive action, e.g., bottle recycling.

- **Permit Trading Systems.** Rights to allow a certain amount of pollution are distributed and then allowed to be traded.

- **Performance Bonds and Liability Payments.** A bond is placed to guarantee compliance with environmental requirements and then refunded when compliance is achieved. Liability payments are made to compensate for damages caused by pollution or another activity.

- **Final Demand-Information.** Disclosure to final consumers regarding environmental performance, e.g., eco-labeling.

The Limits of Command and Control Regulation: A Case Study on the Importance of Stakeholder Participation in Conflicts Over Competing Uses of Natural Resources

A clear example of a command and control approach doomed to failure occurred in Soufriere Bay, St. Lucia, in the initial attempt to resolve a resource-use conflict. According to Keith Nichols, before the late 1980s, Sourfriere's economy centered on agriculture and fisheries. During the late 1980s and early 90s, however, tourism increased significantly, including day-boat charters, SCUBA diving, snorkeling, water taxi services, yachting, increased beach use by locals); this activity led to an increased demand and stress on water resource, as well as user conflicts.

The Department of Fisheries initiated measures to deal with these conflicts, among them, between commercial diver operators and fishers over use of coral reefs, between yachters and fishers over anchoring in harvesting areas, between local community and hoteliers over access to beaches. A legal declaration of Marine Reserves as well as Fishing Priority areas were set; delimitation of the reserves was based on resource distribution, though little consideration was given to the socioeconomic consequences for the fishers. This attempt at top-down control led to increased conflicts, particularly between fishers and everyone else. Fishers felt marginalized and confrontation between them and tourism-based users escalated to the point of near violence.

To try and resolve the issue more equitably, all previous decisions were declared null and void, and a conflict resolution process was initiated in which all stakeholders were invited to participate in developing a compromise. From stakeholder meetings, recommendations for new zones and other solutions were developed, as well as the Soufriere Marine Management Area, which is, says Nichols "a great success story today."

In considering the use of market-based instruments, whether for a new policy, a replacement for command and control policies, or a complement to them, planners must first be specific in defining their goals. The first question planners must ask is "what exactly do we want to achieve?" An assessment will need to consider numbers of other questions, among them the following:

1. What economic instruments can best meet these goals?

2. Which instruments are the most appropriate in terms of effectiveness, efficiency, social considerations (i.e., who wins, who loses), equity (i.e., the

distribution of costs)? Are they an improvement over current command and control regulation or would a combination of both be better?

3. What are the likely changes that will occur for each of these instruments?

4. What is the political feasibility of each? The political and legal implications?

5. What are the economic implications, that is, what type of economic analysis can be used to assess costs, benefits, impacts?

Answering these questions are critical but not sufficient in themselves. Caribbean nations, Richard Huber of the World Bank has pointed out, have often passed good environmental laws but then have not provided the sound support to enforce them. "There is often a disconnect," he says, "between the demand for regulatory policies and the supply of regulatory options."

Economic Incentives to Reduce Reliance on Gasoline Use

Richard Huber argues that economic incentives should be more widely used in Caribbean countries to reduce the use of fossil fuels. For most of these countries, fossil fuels are imported and therefore cost foreign exchange dollars. "The less fuel we burn," says Huber, "the fewer dollars that countries have to spend for its purchase." He argues for wider adoption of incentives for hotel and other industries that employ technologies that reduces their reliance on fossil fuel. Barbados and St. Lucia, for example, provide economic incentives for the use of solar water heaters. There should be such incentives for other technologies, for example, wind power; at the same time, we should be trying to phase out as much as possible our reliance on gasoline. "Such practices will not only reduce pollution," says Huber, "they will also reduce foreign exchange costs." For these reasons, he argues, there should be a tax on air conditioners, rather than covering them as duty-free imports in order to attract development. While the elimination of air conditioners may not be likely in the near term, innovative incentives can be developed for installing systems such as room keys that automatically turn air conditioning off when leaving a room and turning it on when entering. This is an example of a win-win-win situation, says Huber: "hotels reduce energy costs and increase profits, air quality is improved by less emissions from diesel generations, and less foreign exchange leaks out of the economy from the importation of hydrocarbons or fossil fuels."

Perch (2000) and CPACC (2000) provide guidelines that government agencies can use in developing methodologies to implement market-based incentives, particularly in relation to global climate warming and sea-level rise. It is such guidelines that have been employed in two pilot projects in Antigua-Barbuda and St. Kitts-Nevis.

Pilot Projects

A key element in the CPACC, Component 8 project, is to apply market-based concepts in pilot projects in two countries, Antigua-Barbuda and St. Kitts-Nevis.

The objective has been for teams in each country to:

1. Identify specific environmental issues related to sea level rise and
2. Engage in a process that defines clear goals and economic instruments to achieve them.

In undertaking their respective projects, both teams had to first conceptualize the problem in order to develop strategies that would enable them to complete their work within the CPACC timetable. At the conclusion of the process, the economic instruments would be proposed to the prospective ministry or cabinet in each country.

Antigua-Barbuda

Tourism in Antigua-Barbuda contributes seventy percent of the gross domestic product; in this regard, beaches are a primary resource and a chief attraction to the country. For this reason, the planning team, led by Hendren Parker, chose to focus on beaches, selecting four pilot sites for study. In undertaking an assessment of how market-based instruments could be employed to better promote wise use of the beaches, and the economic instruments that could best serve this purpose, the team needed to clearly define its objects. To do this, they first undertook an analysis that described the beach environments, identified the economic activities associated with beaches, characterized the various stakeholder interests and their numbers, and conflicts among these groups. This initial assessment was a key element of the beginning process as was early consultation and discussion with representatives of stakeholders.

Sand Conservation in Antigua-Barbuda

The team from Antigua-Barbuda identified the mining or bulk excavation of sand for export as an industry that could be potentially amenable to market-based instruments aimed at improving sand conservation. Sand is a critical natural resource in this confederated island state and large-scale mining for construction activity in the country and for export to other Caribbean nations has destroyed some beaches. Without a clear mining policy and economic incentives to achieve that policy, the likelihood is that sand resources in Barbuda would continue their decline. While these losses could affect opportunities for future development and other uses, sand excavation is especially worrisome because of sea level rise — indiscriminate mining would further exacerbate erosion that is occurring from natural processes and result in a loss of scenic amenities.

The team held a meeting with stakeholders to discuss the issue of climate warming, the projected impacts on sea level rise and the implications for Antigua-Barbuda's natural resources, its economy and other related issues; they also introduced the concept of market-based regulatory approaches that the Caribbean Planning for

Adaptation to Global Climate Change (CPACC) was promoting. The team assessed the local situation for resource management issues — they needed to understand the flow of dollars, Parker says, in order to identify gaps where economic instruments could apply.

It became clear that sand was a critical natural resource and that it would have everyone's interest; it is critical to a wide range of businesses and industries. The team then did a further analysis of key stakeholders, their interests, their legal and political strengths, in order to determine how to include powerful groups without their dominating less powerful ones. They then reviewed legislation and institutions involved in sand management, for example, who has rights, just what the rights are, what could and could not be done, and what agencies had authority over sand in Antigua-Barbuda.

To their surprise, the team found that there was no clear and definable policy on sand, which accounts for why it was difficult to prosecute people for sand removal from Antigua's beaches — the definition of a beach as "the high water mark" is too loose for definitive interpretation by the courts. The first need, then, before proceeding with economic instruments was development of a national policy on sand as a critical national resource. In addition, they argued, legislation was necessary to give a legal definition to beach sand, so that regulations on its protection could be enforced and penalties for misuse could be levied. Finally, the team found a conflict of interest in the issuing of sand mining licenses. Beaches in Antigua-Barbuda come under five government institutions, including, Public Works and Communication, Development Control Authority, Royal Police, Attorney General's Office and the Environment Division. The Director of Public Works heads up sand mining, which immediately presents a conflict of interest in terms of policy: the Public Works ministry is a prime user of sand for construction and it oversees its use. For this reason, the team recommended a change in authority over sand management, though they offered three options: retain the existing structure, form an interdepartmental oversight committee, or reposition responsibility.

They then discussed three possible economic instruments: (1) an environmental fund, which would be tax-based, (2) a performance bond, and (3) a sand mining tax. With the building boom continuing in Antigua, sand remains an important aggregate in the making of fine quality concrete. The price of sand has been affordable because sand-mining operations are not paying the "real" value (given that sand is virtually a non-renewable resource — it takes many years to accumulate). In fact, it has essentially been a free resource. Costs to the sand mining industry have largely consisted of the costs of mining and transportation. By Antigua-Barbuda declaring sand a national resource, it would be possible to set a price for its use. While such an action could lower demand, it could also lead to higher prices.

Among the problems that the nation faces is that most large-scale sand mining is in Barbuda where sand is held communally and mining is regulated by the Barbuda Council. To encourage Barbuda to manage its sand resource so that mining does not further compromise the ecological integrity of its beaches, the team examined a number of options, among them, alternative sources for sand used in construction (either from

offshore or through importation), and incentives for alternative marketing that would maintain prices but reduce sand removal.

Based on these considerations, the team set out to develop an implementation plan that would accomplish the following:

1. Produce a legislative and institutional framework that would regulate the use of sand resources.
2. Restructure commercial sales of sand to incorporate its economic value, while promoting alternative aggregates for the construction industry.
3. Create a capability for promoting high-value retail sales of sand for householder markets.

Appendix I summarizes the implementation strategy and identifies the steps that must be taken in meeting each of the three goals.

For the implementation strategy to have any chance of success, sand resources must first be recognized at the cabinet level as critical to the national economy. In addition the team identified a number of actions that would need to be taken:

• Develop a policy of sand management within coastal zone and coastal resources policy.
• Undertake a program of public education on the value of sand as both a natural resource and integral to economic activity.
• National legislation and management infrastructure.
• Training programs for government agencies involved in implementing sand policy.
• A sand mining tax based on "real" economic costs of using a non-renewable resource.
• A diversified construction aggregate market based on activities to produce alternatives for sand in construction.
• Efforts to import sand from alternative sources.
• Retail sales market.

St. Kitts and Nevis

The St. Kitts-Nevis team, led by June Hughes, decided that they would focus on issues of environmental sustainability of development projects on beach fronts. After choosing beach sites for the pilot project, the team held a first meeting with stakeholders. After much discussion, the participants agreed that their general theme would be beach conservation, particularly with regard to hotel and residential development and other built structures. To move ahead, there was a need for a consensus on the meaning of sustainable use. The stakeholder group agreed to the following definition: "the quantity and pattern of hotel development that can be allowed within a coastal area that does not

seriously degrade the health and functioning of coastal ecosystems, including coral reefs, mangroves, sea grass beds, and beaches."

A second meeting with stakeholders led to a decision to develop environmentally friendly standards and guidelines for construction and operations of phases of coastal development in the coastal zone. Based on this meeting, the team prepared a report for the Ministers of Health and Environment and Tourism; its primary purpose was to advise those officials about the project, the benefits of reaching consensus agreements with stakeholders and the development of economic incentives as a basis for influencing change**.**

In considering economic incentives to influence hotel operators, the team looked at hotel development in two phases: construction and operational. During the construction phase, instruments were considered that could influence hotel developers on setbacks, for example, tax credits that would encourage setbacks further from the shore. During the operational phase, they considered instruments such as eco-labeling and water conservation techniques, for instance, water-saving toilets (these toilets use a third of the water per flush compared with conventional toilets) or low-flow faucets, which could conserve water and cut usage rates to the hotels.

With ministerial support, it would then be possible to extend economic instruments to cooperating hoteliers who agreed to import environmentally-friendly products. It is critical that such practices be maintained, which require the development of an infrastructure for inspection, rewards and penalties.

There is a need to demonstrate to hotel operators that sustainable practices are business decisions that could have financial benefits — reducing costs naturally mean higher income. In addition to lowering expenses through water saving toilets, low-flow faucets, optimal lighting and air conditioning practices, hotels could receive St. Kitts-Nevis Green Bush certification (a proposal by the team) and then be marketed as such through the Ministry of Tourism in brochures and websites. Other options include: (1) utilization of gray water for landscaping; (2) preservation of steep slopes and forest remnants; (3) preheating of water through solar panels; (4) development of grid-based wind and solar PV electricity; (5) encouragement of designs that do not require air conditioning.

While the team found hotel operators initially resistant to the kinds of economic incentives it was proposing, there was confidence that once hoteliers recognized the financial benefits that could accrue to their operations they would be more responsive. There are other constraints to undertaking such market-based incentives and those reside in government ministries which would have an integral role in implementing such a program of economic instruments.

Since the meeting in St. Kitts, the team has developed an implementation strategy that will employ three market-based instruments for trying to meet the Green Bush Initiative, hotel development that is consistent with sustainable use of the coastal zone.

The proposed instruments are (1) eco-labeling, (2) environmental charter and (3) set back limits. Appendix II summarizes the strategy and identifies important actions that must be taken, among them the following:

1. Identify the kind of marketing programs that would promote those hotels who participate in the Breen Bush Initiative.
2. Develop liaisons with international and regional entities that have successfully instituted related environmental management programs.
3. Seek approval from the appropriate cabinet-level ministry for granting tax concession for importing environmentally-friendly products.
4. Secure commitment by hotel operators for the Greenbush Initiative by demonstrating cost savings that will result from implementation.
5. Ensure that guidelines are developed and effective public outreach programs.

Beyond the Pilot Projects

While economic incentives for achieving environmental objectives have demonstrated their effectiveness in numbers of cases, no country is likely to switch from command and control regulation — they have an important role to play in achieving policy. The issue that governments in the Caribbean need to examine is whether employing economic incentives can be more effective in achieving some objectives than command and control. In those cases, the question is how to implement and then integrate them into efficient regulatory policy making.

A major consideration in developing market-based incentives as a component of regulatory policy is how to ensure their long-term financing. While appropriations from general government funds might initially launch market-based incentives such as eco-labeling or a deposit-refund program or tradeable permits, those appropriations may not be available to ensure their continuation. There are numbers of possibilities that agencies can consider in developing economic instruments for policy goals, for instance, dedicated funds from hotel taxes, boat departure taxes, user charges, penalties. Economic valuation and the use of cost-benefit or impact analysis could be an important means of "selling" such programs at the cabinet and ministry levels.

Experience with market-based instruments to date (Huber 1998; Perch 2000) and the pilot projects in Antigua-Barbuda and St. Kitts-Nevis demonstrate that legal and institutional considerations are singly important in any proposal to employ market-based instruments for achieving environmental objectives. There must be effective laws and regulations in place with commensurate penalties for not meeting them. Moreover, economic instruments must have political feasibility. As important as it is to market and sell the concept of incentive-based programs to commercial stakeholders and island citizens, it is equally important to do the same for ministers and legislators. In general, there is often resistance to change — for this reason, a clearly defined program of outreach and education at all levels must be an integral component of market-based incentives.

While each Caribbean nation has a unique set of natural resources and political and cultural conditions that affect natural resource decision making, there are issues that could benefit from regional compacts and agreements that relate specifically to climate change and mitigating the impacts of sea level rise. These include such issues as consistent set-back policies, departure taxes (a portion of which can be set aside and explicitly targeted for environmental education and outreach programs) and watershed management. Such compacts could further strengthen the case for sustainable practices among investors and developers who want to do business in the Caribbean.

Principal Considerations for Employing Economic Incentives in Environmental Policymaking

The following is a summary of major findings related to market-based instruments and their use in the Caribbean. These findings are based on the presentations at the Regional Workshop in St. Kitts-Nevis.

- THE NATURAL RESOURCES OF CARIBBEAN COUNTRIES ARE KEY TO ITS ECONOMIES TODAY AND FOR ECONOMIC GROWTH IN THE NEAR FUTURE.

  Policy and decision making must take into account the impact that climatic effects and resource use — e.g., through tourism, agriculture, industry, fishing — will have on the well-being of natural resources themselves and, therefore, on the well-being of each country and its citizens.

- MARKET-BASED INSTRUMENTS ARE ALREADY IN USE IN THE CARIBBEAN.

  Wide-ranging environmental regulations are in place in most countries — while most significant regulations are based on top-down or command and control enforcement, there are numbers of instances in which economic incentives are being employed to try and mitigate stresses on natural resources that threaten the environmental and economic well-being of Caribbean island countries.

- MARKET-BASED INSTRUMENTS ARE NO SUBSTITUTE FOR COMMAND AND CONTROL

  Both are costly to implement, time consuming, require effective monitoring and enforcement. For MBIs to be effective, they must be part of a command and control strategy with enforceable penalties.

- EFFECTIVE REGULATIONS AIM TO CHANGE BEHAVIOR.

  The most effective regulations will likely be those in which citizens, businesses and industry leaders, tourists and others act in an environmentally beneficial way because they recognize it is in their own self-interest. While appeals to altruism can be made, economic self-interest is essentially the driving force.

- MUST DEVELOP AND IMPLEMENT A CONSENSUS-BASED APPROACH TO MARKET-BASED INSTRUMENTS

  If stakeholders do not buy in, market-based instruments will fail. These instruments must demonstrate to different stakeholders, including politicians, how they will benefit from the use of economic incentives

- DEVELOP MARKET-BASED INSTRUMENTS THAT HAVE POLITICAL FEASIBILITY

  There is often a disconnect between short-term political needs and long-term environmental requirements. Develop MBIs that have political payoffs. (Education and outreach strategies are important here.)

  Political Will is informed by education and outreach, directly and indirectly.

- EDUCATION AND OUTREACH *MUST* BE AN INTEGRAL COMPONENT OF ANY REGULATORY AND POLICY STRATEGY

  Sustained education at all sectors, ministerial, legislative, industry and business — both large and small — is critical. Without a clearly defined comprehensive education and outreach strategy, market-based instruments are not likely to be successful. Nor will there be any change in citizen behavior.

- LINK MARKET-BASED INSTRUMENTS TO ECONOMIC ANALYSIS AND HUMAN HEALTH

  Economic analysis can be critical in making the case for market-based instruments (e.g., cost-benefit analysis, cost-effectiveness, economic impact analysis).

- REGIONAL COMPACTS ARE AN IMPORTANT NEED FOR ADVANCING SELECTED ENVIRONMENTAL GOALS OF INDIVIDUAL COUNTRIES

  Regional compacts could in common issues related to environmental goal setting environmental goal setting for addressing impacts of climate change, particularly sea-level rise. This could include such issues as set-backs, watershed management, restoration and mitigation.

- MUST AIM FOR AN INTEGRATED APPROACH TO ENVIRONMENTAL PLANNING AND MANAGEMENT

  For example, Barbados, Trinidad, Tobago and Jamaica have administrative units that play a coordinating role in environmental management or for directly implementing new environmental legislation.

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Appendix I. Implementation Strategy
St. Kitts and Nevis

Background

Component 8 of the CPACC project is expected to demonstrate the design and use of economic and regulatory approaches to coastal and marine management, in response to the threats of sea level rise. It will show how innovative approaches to environmental management, such as the use of economic incentives can provide flexible, cost-effective alternatives to more traditional regulatory policies.

Methodology

Stakeholder participation played an integral part in the C8 pilot project.
An introductory meeting was held to inform stakeholders about the Component 8 and to request their involvement in the process. Another meeting concentrated on the identification of the issue that would be dealt with. A matrix was used to identify the most important issue that affects the coastal and marine environment. After going through a detailed identification process, the Sustainable Use of the Coastal Zone with major emphasis on hotel development.

The group then developed meaningful and measurable standards that needed to be met in hotel development. For example, a range of environmentally friendly practices for both the construction and operational phases of hotel development was identified.

Once the standards were established, three main instruments were identified- Eco-labeling, Environmental Charter and Set back limits

A mechanism was then developed as to the workable nature of the instruments. A few critical activities were identified to ensure success:

a. Identification of the type of Marketing to be done so that properties that adhere to and adopt an environmental plan and policy would get the necessary marketing exposure as a result of their support of the Green Bush Initiative project.
b. To liaise with International and Regional Institution that have mastered the implementation of an environmental management programes and/or best practices.
c. Seek approval from Cabinet for the granting of tax concessions for the importation of environmentally friendly products
d. Get Hotel Operators commitment to this process by demonstrating the cost savings that can be gained by the implementation of these best practices.
e. Ensure that Guidelines were developed and that an appropriate outreach programme be formulated.

Two specific geographic areas were selected: Frigate Bay in St. Kitts and Pinneys Beach in Nevis. The reason being that major hotel development is concentrated in these areas which have an effect on the coastal zone, which is affecting the quality of coastal resources in St. Kitts.

The Green Bush Initiative Project

Due to the greening concept of the project, the Green Bush Initiative was chosen as the most appropriate name to convey this concept.

Goal of the Green Bush Initiative

This Initiative was developed to demonstrate the use of market-based instruments to generate changes in behaviour with the long-term goal of mitigating against the effects of climate change.

This project is intended to create interest in the marketplace so that hotel operators, hotel staff and the general public on a whole can become aware of the cost benefits and opportunities that are affiliated with the implementation of a sound environmental program.

The minimum conditions of satisfaction required order to declare this project a success is the adoption of the of the programme by at least three (3) hotels

The method of confirming this achievement is for each hotel to develop an environmental checklist, and environmental policy and practices.

Scope, Impacts and Interdependencies

The Green Bush Initiative has the potential to be integrated into the Product Development Unit of the new "St. Kitts Tourism Authority." This is a quasi-governmental institution, which has sole responsibility for the tourism marketing and product development initiatives in the country and has revenue-generating capacity.

The newly established Bureau of Standards can assist by putting a strategy in place for the execution of an Environmental Management Standards Plan for the Tourism Sector.

Under the OAS Small Hotels programs, the environmental management programs will be developed to assist small hotels sector with achieving cost savings and sustainability through stronger environmental management practices at their properties.

Examples include the development of an environmental "walk through" system to alert small hoteliers to areas where they can achieve cost savings and an environmental

certification program for those interested in proceeding to achieve environmental certification.

The OAS project has focused on technology training for small hotels. The OAS has been able to deliver over 30 specialists to the region, assisting over 300 small hotels with technology needs ranging from computer upgrading to website development.
These services can be utilized to assist in website development for the GBI project.

The economic instrument for the construction phase of the hotel development has not been fully explored. This is mainly due to the fact that the pilot area of Frigate Bay is already built up and will benefit extensively from a greening programme that concentrates on the hotels' operations.

Benefits

The implementation of the GBI environmental guidelines (Energy and Water Conservation) will contribute to increased cost savings.

The non-financial benefits are in the area of:

- The anticipated marketing opportunities than will be derived
- The contribution of the project/activities in assisting in mitigating against the effects of climate change.

The Green Bush Initiative will certainly enhance the hotel operations and contribute to increased staff morale and commitment in addition to an increased level of service.

Risk and Opportunities

Risks

- Legislative changes re: incentives for environmental projects
- Delay in implementation due to lack of resources
- Political environment

In order to minimize these risks, it is imperative that the hoteliers (as a special interest group) are educated and re-educated on the cost savings and the good business sense advantage of the implementation of an environmental programme.
It is also important that a contingency of about two (2) months will have to be built into the schedule in the event that implementation might be delayed.

Opportunities

- The recognized importance of "saving the environment"
- Interdependencies with other projects and availability of technical assistance

Appendix I. Implementation Strategy
Antigua and Barbuda

The objective is to develop a coherent management mechanism for sand in Antigua that takes into consideration the many and varied uses of sand and the virtually non-renewable nature of the resource.

This can be viewed under three strategic areas. The first area is producing a sand management framework that provides laws and institutions to stop illegal activities. The second is the restructuring of commercial sand sales to incorporate the economic value of the resource in the price build up of the aggregate while promoting an alternative that support the needs of the construction industry. The final area is the creation of a retail sand sale to service the small household do-it-yourself person providing access to the resource in the appropriate amount without violating the law.

In order to achieve this the Local Consulting Group identified the following activities:

- Elevate the importance of the resource to a position of prominence by Cabinet declaration of sand as a resource critical to national economic development
- Promote the development of a sand management policy that falls within an overall coastal zone/coastal resource policy
- Public awareness program to further advance the realization of the true value of sand as a natural resource and as an integral part of economic activity
- Create a suitable legislative and institutional framework for management of the resource
- Training for implementing agencies
- Introducing true value of sand in the economic system by introducing a sand mining tax that accounts for real economic cost of the resource
- Support the development of a more diversified construction aggregate market by promoting activities to produce alternatives for sand in construction
- Support efforts to import sand from alternative sources
- Support the development of a retail sand market

Sand Management Framework

The fundamental nature of the change required suggests a short to medium term timeframe. There must be full integration of the policy development and formulation process into the other processes taking place within the Ministries of Environment and Agriculture. The management framework must also be in place to stop illegal sand mining activities. The legislation needs to be amended to transfer responsibility to Development Control Authority and to create the sand Management Committee and give it the support of law to make and enforce measures to manage sand use in Antigua.

Steps involved

- Seek Cabinet's endorsement of the draft management proposal outline (prepared from C8 implementation)
- Seek an Executive Declaration by the Prime Minister making sand a national resource critical to economic development (included in Minute to Cabinet from C8 Implementation)
- Facilitate the development of a Green Paper on Sand Management Policy and endorsement by key stakeholders (currently been developed under C8), the result of which will be included in a White Paper
- Seek Cabinet's endorsement of the recommendations of the White Paper
- Support Cabinet's mandate to the Legal Department to make legislative changes based on the White Paper
- Support Parliamentary Approval of the legislative changes based on the White Paper
- Provide Training of new agency personnel
- Implementation at the Ministry level of recommended institutional changes

Commercial Sand Sale

The price of sand sold in Antigua reflects mainly the cost of mining and transportation plus profit. It does not take into account the economic value of the resource. This will be corrected by the introduction of a sand mining environmental tax, that takes into consideration other aspects of the economic value, using some of the methods from Component 7.

Mining Cost
Mining Tax
Transportation Cost
Profit
Total

The resulting price adjustment will then reduce the artificial disparity between local sand and imported sand. Sand can be imported from Guyana at the cost of @#$&*. There are no border charges on sand importation thus the price is landed cost plus profit.

Most of the authorized sand mining activity is done in Barbuda directly by the Barbuda Council. Sand sale is an important revenue generating activity for the Council. It is unlikely that the tax could be applied to them; thus it is recommended that this tax be designed as a sale tax. It is recommended that the proceeds from this tax be collected and paid to the Barbuda Council as a part of Antigua's contribution to the Council's operation (see country report).

Cost
Freight and Insurance
Landing and Transportation cost
Profit

Total

The second strategy being pursued is promoting the use of alternative aggregate to sand in construction. The Antigua Masonary Product plant produces sand from "Blue Bitch" stone at its quarry. The mining company affirms the strength and durability of concrete products using this stone based sand. However they cite two factors contributing to its low level sales; the price and inexperience of practitioners using this aggregate. Contractors however suggest that price is the only factor, since companies are not motivated to try the new aggregate while sand is still significantly cheaper. In adjusting the price of local sand the price differential is expected to become less of a determinant in aggregate selection. These measures combine to restructure the economic market surrounding commercial sand by removing the invisible price subsidy on local sand sale and making place for other products.

Steps involved

- Cabinet endorsement of the draft management proposal outline (prepared during the implementation of C8)
- Approval by Barbuda Council (put forward via the Joint Consultative Committee)
- Economic valuation of the sand (building on the results of C7)
- Cabinet endorsement of economic valuation of sand and proposal for mining tax
- Drafting of legislation for introduction of sand mining tax by Legal Department
- Submission to Parliament for approval
- Introduction of tax

Retail Sand Sale

In Antigua there is currently only a small businessman involved in retail sand sale. Bagging is done manually and sold on a small scale to householders for small do-it-yourself projects. A client that wishes to embark on such projects will either purchase a “yard” of sand (the equivalent of a pickup truck load) from large commercial suppliers or opt to illegally take sand from the beach. The first option results in waste, since often most of the sand is not needed for the project. The other option will hopefully disappear with the strengthening of legislation and institutional mechanisms for sand management. Thus an intermediate market will be created for retail sand sale.

However, increasing the price of local sand is expected to negatively affect the sale of sand from the Council. The intermediate market in reality presents an opportunity for expansion into new areas with greater value added. Further secondary processing will provide greater employment opportunities, and create new retailers and exports into nontraditional market. Whereas sand is sold wholesale at US$17.00 per ton a ninety pound bag could possibly be retailed at US$ 3.00. A cap on sand mining would be required to be set at a sustainable yield. This sustainable yield would be a combination of a revenue target and a marginal sand mining carrying capacity.

Steps involved

- Seek Cabinet's endorsement of the draft management proposal outline (prepared during the implementation of C8)
- Prepare Business Proposal for retail sand sale partnership
- Seek the endorsement of Barbuda Council of business proposal
- Seek the endorsement by Antigua Masonary Product of Business proposal
- Facilitate a feasibility study and full business plan preparation
- Support the implementation of business plan