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**FINANCING REGIONAL SEAS CONVENTIONS:  
PAYING FOR A REGIONAL PUBLIC GOOD**

## PREFACE

In decision 20/19A, the Governing Council of the United Nations Environment Programme at its Twentieth Session called for the UNEP Secretariat to strengthen the regional seas conventions and action plans as its central mechanism for the implementation of its activities relevant to Chapter 17 on Oceans of Agenda 21. Subsequently, the revitalization of the Regional Seas Programme was discussed at the Second Global Meeting of Regional Seas Conventions and Action Plans convened by the Executive Director in The Hague in July 1999. At this meeting, attention was drawn to the urgent need to assist the more fragile regional seas programmes in attaining a more stable financial base.

This was followed by requests from several conventions and action plans for greater assistance by UNEP in addressing inadequate funding of their programmes. In one particular case, for example, the Ninth Intergovernmental Meeting on the Action Plan for the Caribbean Environment Programme and the Sixth Meeting of the Contracting Parties to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean, held in Kingston, Jamaica from 14 to 18 February 2000, decided to send a letter to the Executive Director of UNEP citing the recent Governing Council decision to strengthen the regional seas programmes and the financial constraints under which the Caribbean Environment Programme (CEP) is functioning and requesting the Executive Director to assist CEP financially. At the meeting of Subcommittee 1 of the Committee of Permanent Representative to UNEP on 27 September 2000, a further call was made for UNEP to prepare a strategy for addressing the financial difficulties being faced by a number of regional seas conventions and action plans in Latin America and the Caribbean, Africa and Asia.

UNEP is employing a four-track approach to addressing and resolving the financial difficulties of the more fragile regional seas conventions and action plans. First, it is providing strategic programmatic support to their programmes of work, particularly where they interface with the priorities of UNEP's Programme of Work such as the Global Programme of Action for the Protection of the Marine Environment from Land Based Sources of Pollution, the Global International Water Assessment, the International Coral Reef Initiative, integrated coastal area management and interlinkages with global environmental conventions and related international agreements. Second, it is assisting regional seas programmes in mobilizing resources from the Global Environment Facility, the United Nations Foundation, regional development banks and bilateral donors. Third, it is promoting the innovative twinning between the more mature and the less developed regional seas programmes through which the former provide technical assistance and cooperation to the latter. For example, a Twinning Arrangement Between the Baltic Marine Environment Protection Commission and UNEP as the Secretariat of the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention) was signed on 30 May 2000 in Malmö. Finally, UNEP in collaboration with the secretariats of regional seas conventions and action plans is studying the applicability of new financial mechanisms for funding regional seas programmes.

The paper that follows corresponds to the fourth track of this approach. Prepared by Theodore Panayotou of the Center for International Development at Harvard University, the paper is a provocative and bold look at a different funding strategy, analyzing new sources and mechanisms for strengthening the financial base of the regional seas programmes for the Wider Caribbean and the North-East Pacific. Because of the afore-mentioned request received from the

Contracting Parties of the Cartagena Convention and the opportunity provided by the establishment of the new North-East Pacific programme, the decision was taken to focus on these two programmes. Moreover, because of geographic proximity, eight countries participate simultaneously in both programmes and the potential for collaboration on a financial strategy for the two is a possibility as well as an opportunity.

The purpose of this paper is to stimulate a dialogue that will hopefully lead to new funding strategies for UNEP's regional seas programmes and not just for the Wider Caribbean and the North-East Pacific. UNEP is looking at a four-step process. First is the preparation of the report. The paper will then be presented for discussion at the Third Global Meeting of Regional Seas Conventions and Action Plans in Monaco in November 2000. Following the Monaco meeting, a small team comprised of the heads of the secretariats of four or five regional seas programmes (Wider Caribbean, North-East Pacific, East Asian Seas, the African Regional Seas Joint Umbrella Mechanism and the Mediterranean) will be established for the purpose of (a) assessing the practicality of the proposed measures contained in the paper and (b) for preparing proposals to be submitted to the intergovernmental meetings of the North-East Pacific and the Wider Caribbean and, subsequently, to other programmes. Finally the proposals will need to be considered and decided upon by the respective intergovernmental bodies.

Certainly not all of the funding sources and measures proposed can be applied across all regional seas programmes. The challenge facing the regional seas programmes is to realistically assess from an economic and political perspective which sources can be accessed in their regions and what mechanisms would be the most efficient and effective. Ultimately, the decision to adopt a strategy for sustainable and predictable financing will rely on the political will of the member states.

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Executive Director  
9 October 2000

**FINANCING REGIONAL SEAS CONVENTIONS:  
PAYING FOR A REGIONAL PUBLIC GOOD**

by

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## 1. Introduction

The Regional Seas Conventions are designed to implement the core provisions of UNCLOS for the protection of the marine environment within a regional context. Their emergence is in recognition of the fact that the nature and relative importance of the threats to the oceans and coastal areas tend to vary from region to region. Moreover, countries sharing common seas are thought to share more of a sense of ownership for regional solutions they jointly arrived at to address common problems than for global solutions and therefore they would be better motivated to take action and to allocate scarce resources for their implementation. Towards this end, UNEP established in 1974, its Regional Seas Programme, and encouraged groups of countries sharing common seas to enter into legally binding regional conventions. Within the framework of these conventions, intergovernmental meetings, representing the authority of the contracting parties adopt, and implement, periodically revised action plans. Over the past 25 years, the Programme grew to encompass 14 regional seas programmes facilitated by UNEP and 3 partner regional seas programmes (see map1), covering more than 140 countries.

Following the UNCED conference in Rio in 1992 and the adoption of Agenda 21, and the subsequent adoption of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (Washington, November 1995), UNEP revitalized its Regional Seas Programme into a "control mechanism for implementation of its activities relevant to chapter 17 of the Agenda 21". Through two Global Meetings of the Regional Seas Conventions and Action Plans, UNEP sought to develop a strategic action program to facilitate collaboration among the Regional Programs and their global counterparts. At the same time, UNEP is seeking expansion of its Regional Seas Programme into new areas, most recently into the Northeast Pacific.

The administration of the Regional Seas Conventions and the implementation of the Action Plans have generally been financed through the establishment of a Trust Fund for each regional sea. The Trust Fund is capitalized through contributions, usually of a voluntary nature, of the participating countries according to a mutually agreed scale taking into account the UN scale of assessment. Additional resources are also mobilized from partnerships with other UN organizations, intergovernmental organizations, NGOs and the private sector for specific activities. However, funding has always been a challenge as actual contributions lack

behind commitments. For example, during the 1980's, the Caribbean Trust Fund experienced significant reduction in payments, cutbacks in commitments and pledges by some countries, and even total lack of commitment by some countries to finance any of the costs.

Considering the modest amounts involved, the lack of interest of contracting parties not only in paying their share, but also in participating in the intergovernmental meetings may reflect the lack of demonstrable concrete benefits accruing to members from regional cooperative actions. It may also be due to the lack of appropriate financial mechanisms to mobilize resources and institutions to collect them. Some Regional Seas Programmes have been more successful than others in mobilizing resources. For example, the Barcelona Convention and its Mediterranean Action Plan have been relatively well funded. The Wider Caribbean Programme has also improved, somewhat, its financial base since its slow start in the early 1980's, especially after the establishment of a regional coordinating unit. However, financing still remains a key challenge for all the Regional Sea Conventions.

The purpose of this paper is to examine alternative and innovative financial mechanisms for mobilizing resources to support the secretariat of the Convention and the activities of the plan for action for the Northeast Pacific and Wider Caribbean regional seas. A second objective of the paper is to propose institutional arrangements for the implementation of these mechanisms, and the collection of the revenues. A third objective is to estimate the likely revenues from these resources, and a fourth and final objective, is to analyze the sustainability of these sources of revenue in the socio-political and economic context of the countries in the region.

## 2. Key Features of the Regional Seas Conventions

Regional Seas Conventions are legally binding agreements between countries that share a common sea. They can best be described as unique legal instruments designed to protect shared environmental interests or regional commons. The objective of the agreement is to find regional solutions to problems they face as a result of their use of these seas for resource extraction, transportation, and waste disposal. It is recognized that the bulk, though by no means all, the influences on these seas come from within the region. Even if one country's impacts by themselves are minor, the combined effects of all countries are substantial. A Regional Convention helps deal with the "open access" and "public good" aspects of regional

seas: (1) free riding is discouraged by both peer pressure and by legal commitment, (2) conflicts over resources or downstream pollution effects are discussed, mitigated, and hopefully, solved within the context of the Regional Convention, (3) a common front and collective action against impacts from outside the regional sea is also made possible, and (4) financial and other resources are pooled together by participating countries to deal with problems, which no single country can address by itself, either because of scale or multiple jurisdictions.

Thus, the object of the Regional Seas Conventions is the provision of a regional public good, which is the protection of the shared resource, the regional sea, from the threat of pollution and other forms of degradation, which no single country (or stakeholder) would or could accomplish on their own. Public goods have the property of being non-exclusive in consumption (enjoyment) but exclusive in production (have significant opportunity cost). No single country would have the incentive to incur substantial cost of pollution control and resource conservation, if it is to share the benefits with others who do not help defray part of the costs (free riding). Moreover, since cost effectiveness often requires control at the source, and participation of all major sources, the regional approach tends to be both the most effective and the least costly. Regional solutions, however, do not always mean collective action by the entire region; often cooperation refers to coordination of national action towards a common objective; furthermore, action does not necessarily mean uniform action. Common, but differentiated obligations are more the norm than the exception in international and regional conventions because of the great diversity and variation in levels of development, geography, and the share of costs and benefits from interventions aiming to solve common or shared problems.

The Regional Seas Programmes were designed to be independent of each other and of any central program or authority. Although the approach is similar, each convention has been tailored by the contracting parties to fit their own circumstances both situational and environmental. Thus, while similar in structure, regional conventions are different in the specifics which are detailed in the protocols to each convention which address specific problems (e.g. oil spills, land based pollution sources, etc.). This decentralization and independence is a positive feature: it encourages a sense of ownership, it provides flexibility, and it tailors solutions to the problem. Regionalism also creates good will as each country's interests become increasingly vested in their neighbors' wellbeing. It also avoids the creation

of central bureaucracies that tend to be both costly and inefficient. UNEP has used its convening authority to play a catalytic role in bringing about the emergence of these programs and nurturing them into self-sustainable independent regional programs.

However, fragmentation and independence have their cost as well. Enforcement of legally binding regional conventions may not avail of the same force and instruments as global conventions. Moreover, the exchange of information and experience across Regional Sea Programs may suffer as a result of too much independence and decentralization. In recognition of these issues, UNEP, as of the past three years, has been organizing annual joint Global Meetings of the Regional Seas Conventions and Action Plans, to facilitate collaboration among them and interregional cooperation towards more effective protection of the marine and coastal environment.

Another key feature of the Regional Seas Conventions and Action Plans is that they share common objectives with other UN institutions, specialized UN agencies, international organizations, and multilateral and bilateral assistance agencies. Besides UNEP, UNDP, UNESCO, FAO, WTO, IMO, WMO, IOC, IAEA, GEF, the World Bank, the regional development banks, and bilateral aid agencies have strong interest in the protection of marine and coastal environment. In addition, there is a large number of international conventions that address specific problems within the regional seas such as, the Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter, the London Convention for the Prevention of Pollution from ships (MARPOL), the International Convention for the Prevention of Pollution of the Sea by Oil, the Convention on Biological Diversity (CBD), the Framework Convention on Climate Change (UNFCCC), the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Bonn Convention on the Conservation of Migratory Species of Wild Animals (CMS) and, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. At the same time there are related regional sub-commissions that have a degree of overlap and synergy with the regional seas conventions. For example, in the Wider Caribbean Region of the Cartagena Convention there is the IOC Sub-Commission for the Caribbean based in Cartagena, Colombia. The significance of this multitude of agencies and conventions with related mandates and overlapping geographic scopes lies in the opportunity for collaboration, partnership, and synergy that can mobilize resources and increase the effectiveness of their use, as well as avoid duplication of effort and confusion. Ultimately, the Regional Seas



Programme comprising of Conventions, Action Plans, and Protocols in 17 regional seas can serve both as a foundation and as catalyst for the emergence of a global system of ocean governance. Its mission is also gradually broadening beyond the protection of the marine environment to the integration of environment and development towards sustainable development.

### 3. The Wider Caribbean and the North-East Pacific Regional Seas and their Special Features

#### 3.1 The Wider Caribbean Regional Sea

The Wider Caribbean Regional Sea is comprised of all the insular and coastal states and territories of the Caribbean Sea, the Gulf of Mexico and their adjacent waters, from the US Gulf coast states and islands of the Bahamian chain.<sup>1</sup> The Action Plan for the Caribbean Environment Programme was adopted in April 1981 and the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, known also as the Cartagena Convention, was signed in March 1983 in Cartagena, and came into force in 1986. Three protocols have been signed since:

- Protocol concerning Cooperation in Combating Oil Spills in the Wider Caribbean Region, signed in 1983 and put in force in 1996;
- Protocol concerning Protected Areas and Wildlife (SPAW), signed in 1990;
- Protocol on the Prevention, Reduction, and Control of Land-Based Sources and Activities, signed in 1999. The latter protocol, or LBS as it is known, is particularly notable for the effluent limitations and specific obligations that it requires within a given time frame from particular pollution sources, thus providing measurable means for monitoring national implementation.

Two institutions established to help implement the Convention, its Protocols, and the Action Plan are the Caribbean Trust Fund (CTF) which became operational in September, 1983 and the Regional Coordinating Unit (RCU) which became operational in September 1986, in Kingston, Jamaica.

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<sup>1</sup> This encompasses a region with 36 countries and territories with some of the world's richest and poorest countries.

The Cartagena Convention came into force in October 1986 when the first nine countries have ratified. Today its signatories are Antigua and Barbuda, Bahamas, Barbados, Belize, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, France, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, Trinidad and Tobago, Venezuela, USA, United Kingdom, Netherlands and France.

The very adoption of the convention and its instruments by such a large number of countries despite their diversity and several regional conflicts, is itself a great success, signifying a deep appreciation of the importance of the regional commons and the threats they face, as well as the potential usefulness of this framework for addressing them. The Caribbean Action Plan has led to the implementation of a large number of regional projects including public awareness campaigns, scientific technical studies, capacity building, and institutional development. Among the greatest accomplishments of the Programme have been the scientific and technical exchange among the national institutions in the region, the adoption of common methodologies for monitoring and managing environmental problems such as oil spills and the encouragement of adoption and implementation of national and regional environmental policies. The program's greatest difficulties have been in (a) coordinating related activities among its members in the same subject area; (b) planning follow up activities to projects, and (c) in establishing links and partnerships with other programs with similar objectives, sponsored by bilateral and multilateral sources in the region. The mobilization of financial resources, through the Caribbean Trust Fund, the Environment Fund of UNEP, and counterpart contributions by participating countries and partner institutions has been moderately successful, but nowhere close to what was needed or envisaged.

### 3.2 The Northeast Pacific

The North-East Pacific regional sea convention, the new 14<sup>th</sup> addition to the roster of Regional Sea Conventions, has been under preparation since 1997, following a need identified by an Ad Hoc group of experts meeting, hosted by the government of Panama in March 1996. UNEP through a February 1999 decision offered its assistance to the governments of the East Central Pacific in negotiating a regional agreement and invited the governments of Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Panama to participate in a high-level inter-governmental meeting of experts to "review the

protection of Marine and Coastal Environment of the East Central Pacific Region." The government of Panama offered to host such a meeting. The geographic area of the envisioned new regional sea and Action Plan encompasses the Pacific marine and Coastal region of Central America, Panama, The United States, and Canada, all possible signatories of the North-East Pacific regional Sea Convention. It would thus extend from Alaska to Panama.

Potential partners in such a convention and Action Plan include many international and regional organizations long active in the region, including UNDP, FAO, UNESCO, IOC, IMO, WHO, IAEA, and ECLAC, all of which have been active in the region and have had experience in partnerships with other Regional Seas. UNEP's Global International Water Assessment (GIWA) has already in place a marine assessment program and several international groups are studying the El Nino phenomenon. Several NGO's are also active in the region, including IUCN, WWF, and Conservation International. Furthermore, a North-East Regional Sea Convention can benefit from and draw on an ever expanding web of global and regional conventions addressing specific issues from oil spills to hazardous waste, and from biodiversity to climate change. Most notably, the new Regional Seas Programme would benefit from the Global Program of Action for the Protection of the Marine Environment from Land-based Activities, established in 1995. This program, though global in scope, addresses problems at regional and national levels, with the objective to identify land-based sources of marine pollution and prepare and coordinate action programs to control them.

### 3.3 Special Features of the Wider Caribbean and Northeast Pacific Seas

While these two regional seas are part of two different ocean systems, they share some common features. First, they are both major routes of maritime transportation. Second, they are linked through the Panama Canal and thereby share much of the shipping traffic. The bulk of shipping originating along the Pacific Coast of North and Central America, including oil tankers from Alaska, destined for Atlantic ports travel through the Panama Canal; this means that the two regional seas share the potential for oil spills and ship-borne pollution. The Panama Canal is also a conduit linking two very different marine ecosystems with the potential of introduction of species and pollutants from one to the other. Third, with the exception of El Salvador, which has no Atlantic Coast, all potential signatories of the North-East Pacific Convention are already signatories of the Cartagena Convention of the Wider Caribbean. Fourth, fisheries and tourism are two very important economic activities in both

Regional Seas that are vulnerable to coastal and marine pollution from both land- and sea-based activities of the region's coastal and island states. Spectacular coral reefs in the wider Caribbean, an important resource base of the tourist industry, and extensive mangroves in the Pacific, a key resource base for fisheries, face similar threats from oil spills and haphazard coastal and tourist development.

Sustainable development of marine resources through regional cooperation would help raise living standards as well as strengthen peace and integration in a region that has known much poverty, civil strife, and regional conflicts. Where ninety percent of the population of Central America lives in the Pacific side of Central America, extensive deforestation and land degradation results in growing numbers of landless and marginal farmers advancing to highlands and fragile forest lands at the Caribbean side. Thus, land-based marine pollution and coastal degradation in the two regional seas are intimately related and need to be tackled in an integrated approach, not only within each regional sea, but also through close collaboration between the two programs. The 15-year experience of the Wider Caribbean Programme holds valuable lessons for the fledgling North-East Regional Sea Programme. Furthermore, the institutional and the financial arrangements of the two programs need to be thought in an integrated fashion because of the many common physical, environmental, commercial, and socio-political lines between the two sides of the Central America isthmus.

#### 4. Financing the Regional Sea's Conventions and Action Plans

The financial requirements of a Regional Sea Programme include (1) the cost of the preparatory work and Intergovernmental Meetings to negotiate the conventions and its various Protocols and Action Plans; (2) the cost of the Convention Secretariat; and (3) the cost of coordination and implementation of the Action Plan. In the latter, cost includes the establishment and operation of the Regional Coordinating Unit (RCU) which is responsible for the implementation of the Action Plan, and the administration of the Plan's financial resources. Clearly, the Action Plan is the key substantive instrument of every Regional Seas Programme and accounts for the largest share of the financial requirements of the Programme. In order to fully appreciate the financial needs and funding opportunities of a regional sea program, it is necessary to review its components.

An Action Plan usually has five components:

- Environmental assessment, consisting of baseline studies, research and monitoring of marine pollution sources, ecosystem studies and studies of coastal and marine activities, all aiming to assess the causes, magnitude and consequences of regional environmental problems.
- Environmental management, consisting of cooperative regional projects on management of specific ecosystems such as lagoons, estuaries, mangroves; control of industrial, agricultural, and domestic wastes, and contingency plans for pollution emergencies. Regional training projects are also part of this component.
- Environmental Legislation, consisting of cooperative regional and national actions (legislative and regulatory) derived from the umbrella regional convention and its technical protocols.
- Institutional arrangements, consisting of (a) secretariat for the Action Plan or Regional Coordinating Unit (RCU) as is usually called to coordinate the implementation of the Action Plan; (b) a national focal point (NFP) established by each participating government to coordinate activities related to the Action Plan in each country to act as the contact point between RCU and the government and to coordinate the participation of national institutions and the private sector; and (c) periodic intergovernmental meetings to review progress and approve new activities and budget.
- Financial arrangements. While UNEP and other UN and intergovernmental organizations provide seed money in the early development of the regional sea programs, the expectation is that the participating governments will eventually assume full financial responsibility. Towards this end, a Regional Trust Fund (RTF) is established to receive annual contributions from governments and from other sources. The trust fund is administered by the secretariat of the action plan. Governments may also lend additional support to the plan through participating national institutions and the financing of specific projects.

How successful have regional sea programs been in mobilizing the necessary financial resources to implement their action plans? While their financial performance varies widely based on their maturity, level of development of participating countries, and other factors, it is fair to say that resource mobilization has, in general, fallen behind expectations and needs.

One of the most financially successful action plans has been the Mediterranean Action Plan, which is financed mainly through the Mediterranean Trust Fund (MTF), established in 1979. All the contracting parties to the Barcelona Convention contribute according to an agreed formula based on the UN scale of assessment. The 20 year history of the plan, the advanced level of development of many MAP countries, and the closed sea feature of the Mediterranean are among the factors that contributed to its success. MTF is able to fund several Regional Activity Centres (RAC's) which are national centres performing regional functions on behalf of the Mediterranean community.

The relative success of the Mediterranean Action Plan contrasts with the financial difficulties faced by the Caribbean Action Plan (CAP), initiated in 1976 and adopted in 1981. The CAP stipulated that initial financial support from the UN system would progressively decrease and the Plan would become financially self-supporting as governments assume full financial responsibility through the Caribbean Trust Fund and other mechanisms such as contributions to specific activities (UNEP 1983). Financial resources were seen coming from voluntary contributions from both participating states and territories, and non-participating governments supporting the Action Plan, as well as regional, sub-regional, and international organizations. The First Intergovernmental Meeting that adopted CAP, and established the Trust Fund has set the amount of US \$1.5 million to be achieved during 1982 -83, through voluntary contributions pledged by governments according to an agreed formula. No appropriations were to be made until a minimum of US \$ 250,000 was contributed to the fund. According to UNEP (1988) assessment study in the late 1980's, the minimum was not achieved until September 1983 and the target level of US \$ 1.5 million was not realized as of December of 1987. The UNEP study attributed the shortfall to the following factors: (1) not all countries within the region participated, and (2) contributions decline over time, in some cases dramatically due to lack of political coordination in the absence of a regional coordinating unit (RCU). By 1987, the received contributions were more than 25% below the amounts pledged and only half the target level. In total, a cumulative amount of \$2.7 million was received by 1987 compared to the target of \$4.5 million set by the First Intergovernmental Meeting and appropriations of \$4.86 million from the Fund by the Intergovernmental and Monitoring Committee Meetings for the period 1983 - 87.

While the contributions to the fund were declining, the financial requirements of the Action Plan rose sharply with the establishment of the RCU in September 1986, the entry into force

of the Cartagena Convention and its Protocols in October 1986 and the initiation of new projects. During 1975 -89, cumulative commitments and expenditures from different sources to support project development, coordination, and implementation reached \$16.2 million, most coming from UNEP and other UN agencies and intergovernmental organizations such as IMO, IOC, CARICOM, and OAS and non-governmental organizations such as IUCN and the Sierra Club. The contributions from UNEP's Environment Fund to the Programme rose to \$700,000 for 1988 -89 rather than gradually decrease, as initially planned, to cover part of the shortfall, as contributions from other sources also envisaged in the Action Plan fell short of original estimates of \$3 million by 1983.

While the absence of the RCU in the first few years of the Action Plan and the economic crisis affecting the Caribbean economies may have contributed to the resource mobilization difficulties in the 1980's, the continuation of these difficulties into the 1990's suggest that additional factors may be at work. The diminished participation in the Action Plan, intergovernmental meetings, the cutbacks in pledges and payments, the non-committal posture of certain countries, may be indicating a deeper failure: either the benefits that accrue from regional cooperative action have not been concretely demonstrated or that the "free riding" problem with regard to the provision of a regional public good has not been successfully addressed by the Convention and its legal instruments. Alternatively, the financing mechanisms that were relied upon to mobilize the necessary resources may lack the capacity to achieve financial sustainability. The management difficulties that plagued the RCU in the mid-1990s also aggravated the situation.

##### 5. Financing the Supply of a Regional Public Good

The protection of the regional environment and shared marine resources is a regional public good, which at the one end extends to the coastal area of sovereign states and to the other end to international waters. Thus, while primarily a regional public good, it has elements of both national public and even private good as well as of global public good. Public goods, unlike private goods provided by markets, tend to be under-produced and under-supplied. Public goods that cannot be confined to a single buyer or user, once they are provided, can be enjoyed by many for free; therefore there is little incentive for private provision since the provider would not be able to recover supply cost. Hence, without a mechanism of collective action, public goods will be under-produced. Public goods tend to have large externalities and

diffuse benefits. If no one can be barred from enjoying the good, it is said to be non-excludable; if it can be enjoyed by many without becoming depleted, it is said to be non-rivalrous in consumption. Pure public goods have both these properties; non-pure public goods have these properties to a lesser degree. Public goods can be local, national, regional, or global, and all suffer from under-production. Regional and global public goods are goods whose benefit reaches beyond the grasp of a single nation. Protection of the global climate is clearly a global public good while the protection of a regional sea from pollution is a regional public good but it may also be a global public good.

At both the regional and the global level, the problem of under-provision of public goods is compounded by the lack of a supra-national authority. This is the problem that international and regional conventions aimed to address through self-imposed by contracting parties legally binding conventions. These conventions serve only to address the jurisdictional discrepancy between the national scope of sovereign decision making and the regional (or global) scope of the problem. They do so imperfectly because of the large number of beneficiaries (i.e. contracting state governments and their constituents) and the diversity of interests and priorities arising from different geographies, histories, cultures, and levels of development. Given the large number of actors and beneficiaries and the uncertainty of outcomes of collective action, free riding problems continue to persist despite the ratification of legally binding conventions and protocols.

Free riding and under-provision of regional (and global) public goods continue to persist if two other weaknesses are not fully addressed; one has to do with incentive-compatibility and the other with effective participation. For cooperation in the context of a Regional Sea Convention and a Regional Plan of Action to last and produce the desired results it must be incentive compatible in that it offers demonstrable net benefits to all contracting parties and the distribution of benefits and costs among the parties is perceived to be fair. One way to achieve this is by "internalizing" regional cooperation into national public policy, that is realigning regional (or public) and national (or private) interests.

The diversity of national priorities and preferences among participating countries in a Regional Sea Convention (as large and diverse in membership as the Cartagena Convention) often prevents the realignment of common regional interests with very diverse national interests. One approach to recognizing widely diverse interests and achieving region-wide



incentive-compatibility is a system of compensation payments (or common but differentiated responsibilities). The Global Environmental Facility and the Multilateral Development Fund of the Montreal Protocol are examples of the compensatory approach. Assistance to developing countries in capacity building and technology transfer is another means of ensuring participation in regional (and global) public good provision. In this regard, the regional trust funds should aim not only to finance the convention secretariat and regional projects in the Action Plan, but also to promote active participation by the poorest members that face vastly different priorities than the richest ones. (This goes beyond any progressivity in the agreed formula of country contributions to the Fund, to earmarking a certain percentage as a "regional participants fund").

Another approach to reconciling differing national priorities in a regional (or global) agreement is by linking different issues to allow for potential trade-offs or *quid pro quo* that results in gains for all sides or more equitable sharing of costs. For example, the United States, Canada, France and other industrialized countries, signatories of regional sea conventions have a strong interest in getting developing countries to participate in some way in global efforts to reduce greenhouse gases. Caribbean island states, while naturally concerned about sea level rise as a result of global warming, are more immediately concerned about marine pollution that damages their beaches and coral reefs and threatens their tourist and fishing industries and local livelihoods. By linking these two issues, a mutual reciprocity may emerge that could significantly expand the financial resources available to the Caribbean Regional Sea Programme.

Failure to recognize these linkages and to bargain across countries and issues has resulted in gross under-funding of regional bodies, by participating governments and partner international organizations despite the obvious critical function of regional bodies in formulating customized solutions and in playing the role of an intermediary between national and global levels. The political weakness of regional bodies becomes self-fulfilling as governments and donors do not give to "weak" institutions, thus depriving them of authority, effectiveness, and financial viability. In the words of Cook and Sachs (1999) "the stated regional goods are admirable, and the funding of regional activities miniscule" (p.442), as there is little direct financing of regional institutions and projects initiated and overseen by them. The regional sea programs are no exception despite some success in mobilizing resources from participating governments and partner organizations for specific projects.

Last but not least, the financing and provision of regional public goods suffer from inadequate participation of major actors, including individuals, civil society, and businesses in addition to governments. Their active participation is required in the production and consumption of public goods as well as the setting of priorities among them. In the case of the Regional Seas Programmes, all users of the coastal and marine resources, all contributors to coastal and marine pollution and all beneficiaries of the Action Plan must become involved to ensure effectiveness, fairness, and financial sustainability. It does make a big difference in terms of both efficiency and equity whether public goods are financed by user fees, pollution charges or general taxes. Use of efficient and equitable instruments for controlling local sources of pollution and resource depletion and mobilizing financial resources for participating in international and regional commitments is essential because countries sometimes shy away from such commitments or limit their contribution because of limited capacity to mobilize the necessary resources to meet such commitments.

## 6. Principles of Efficient and Sustainable Financing

Traditionally, the various Regional Seas Programmes were financed initially through seed money from UNEP and other UN organizations. Sustainable financing over the long haul was pursued through the establishment of a Regional Trust Fund to which participating countries agreed to contribute according to a formula based on the UN scale of country contributions (see Tables 1 and 2). Contributions are solicited also from non-participating countries who supported the Action Plan and from inter-governmental organizations, NGO's and the private sector for specific project activities. Ultimately, these are voluntary contributions based on willingness to pay of governments and organizations not related to any particular criteria of responsibility, efficiency, or equity or benefit derived, except that relative country size and level of development are considered to the extent that the UN scale of contributions does.

### 6.1 Principles of Sustainable Financing

Sustainable financing may be based on one or more of the following principles:

- a) Ability to pay: this is based on income level (individual, corporate, or national) and could be regressive, proportional, or progressive; it is the base of income taxes and is often

progressive. At the national level, it can be expressed as a percentage of the country's GDP. It is solely based on capacity to pay and a broad notion of "equitability" and bears no relationship to either damage caused or benefit derived. In the case of country contributions to a regional (or global) body, it can be based on an agreed formula that takes into account both income per capita and population. The UN assessment scale bears some relationship to ability to pay among others factors.

- b) Polluter pays principle: this is based on the idea that those who cause the harm (the polluters) should pay the costs clean up and protection of the environment in proportion to their contribution to the problem. It is thought that this is both fair and efficient since this would induce the polluters to pollute less. However fair it may be, efficient it is not. Efficiency requires that two conditions are met: (a) cost effectiveness (i.e. most of pollution reduction is done by the low cost polluters until the marginal cost of pollution abatement is equalized across all sources; (b) pollution abatement is carried to the point where the marginal cost of abatement (which is equalized among sources) is equal to the marginal benefit of abatement (the avoided damage at the margin). Thus cost effectiveness and efficiency require that the least cost pollution abaters do most of the abatements regardless of their relative contribution to the problems. Fairness on the other hand requires that the cost of abatement is shared in proportion to each source's contribution to the harm. The two goals (fairness and efficiency) can be reconciled through the use of economic instruments such as pollution charges or tradable pollution permits. Pollution charges will constitute both an incentive to reduce pollution and a source of financial revenues to finance public environmental expenditures (on management and enforcement). Tradable pollution permits also provide the right incentive but do not generate financial revenues unless they are sold or auctioned by the issuing public authority.
- c) Beneficiary Pays Principle: According to this principle, those who benefit from environmental protection, rather than those who pollute, are called to foot the bill. This principle is based more on fairness and ability to pay rather than efficiency, although such payments can be structured to result in the optimal supply of public goods, provided that non-payers can be excluded, which is both difficult and undesirable in the case of public goods. Where access to the benefits of a public good can be at least partially limited (e.g. access to certain fishing grounds, beaches, or diving sites) a "club" approach can ensure

those who benefit most pay the largest share of the costs. Three other cases where the beneficiary pays principle is used are (1) where the property rights are recognized to belong to the "polluters" (right of free disposal of waste) or (2) where the polluters are too dispersed (as in the case of non-point sources of agricultural runoff) making pollution charge assessment and collection too costly to contemplate; and (3) where the polluters are too poor to pay in absolute terms or relative to the beneficiaries of environmental protection.

- d) User Pays Principle: It applies to the use of natural resources, infrastructure and public services. It requires that users of natural resources or environmental assets held in common pay a charge that reflects the scarcity value of these resources or, in the case of use infrastructure or public services, the long-run marginal cost of supply. User charges of fees aim to ensure that prices reflect the full socio-economic cost of resource use. In Australia, coastal zone management is based on the user pays principle. In New Zealand, it has been proposed that users of coastal resources are charged user charges or rental fees at levels that aim to ensure sustainable development and use of coastal resources. In the Netherlands, shipping companies pay for the environmental cost of dredging navigation channels. In the Scheldt estuary, oil companies pay a charge for negative environmental impacts of oil drilling in the Wadden Sea; and, infrastructure projects pay charges for lost environmental value.(OECD 1997)

In general, whether one is a resource user or a polluter, he/she may be charged a user fee since pollution and waste may be considered as use of an environmental (or natural) resource for the disposal of waste. Ideally, user charges must reflect the opportunity cost or long-term marginal (social) cost of supply. A system of generalized user fees may be used as an efficient and equitable charge instrument for both regulating the use of coastal and marine environment and for distributing the costs between users (both polluters and beneficiaries of pollution control). It is also a good mechanism for financial resource mobilization on a sustainable basis, since it continues to generate revenues as long as the resource is used or the polluting activity/behavior continues.

## 6.2 The Ideal Financing Mechanism

The "ideal" financing mechanism for institutions and activities that aim to combat a public bad (e.g. degradation of the marine environment) is one that not only generates revenues, but also acts as an incentive to reduce the generation of the bad at its source. In other words, the "ideal" financing mechanism is incentive compatible. Economic instruments such as pollution charges and tradable permits, generally have these characteristics; but as noted earlier, unless sold or auctioned, tradable permits and licenses generate no revenues for the issuing authority.

Another important feature of the "ideal" financing mechanism is ease of implementation and low collection costs. Administrative efficiency is as important as economic efficiency. What counts is the revenues collected net of administrative cost of collection. Administrative efficiency is pursued by selecting financing instruments that can be implemented by existing collection agencies, thus saving the costs of new collection systems and costly bureaucracies. For example, water pollution charges or sewage fees are often collected as part of the water bill by the water utility, even when they are intended for another agency. The water utility retains an administrative collection fee for its collection services. Another device to reduce collection costs is to identify a single stage or point through which a product, a process, or a pollutant passes and impose the charge at that stage. For example, exported and imported products can be taxed more effectively at the point of export or import.

This feature would turn out to be important in financing the protection of the coastal and marine environment of the Northeast Pacific and the Wider Caribbean from shipping pollution and oil spills since the transit through the Panama Canal Provides a convenient collection point, where an efficient collection mechanism is in place for collecting transit tariffs. Of course, one must ensure that the agency and or country that assures the collection of the charges does not bear a disproportionate share of the cost of the provision of the public good (i.e. the protection of the regional coastal and marine environment). Moreover, it should either be compensated for the collection service it provides, or the value of this service should be credited towards its contribution to the financing of the regional public good.

Another avenue for reducing collection costs and improving administration efficiency is to use product charges instead of pollution charges. Since pollution charges require monitoring

and measurement of pollutants released by each source, a capacity lacking or too costly for developing countries, charges or taxes on polluting products are more practical and less costly to implement than pollution charges even though, theoretically, pollution charges are economically more efficient. For example, taxes on pesticides are preferable to taxes on pesticide runoff from farms. In general, product taxes are preferred when dealing with non-point-sources of pollution such as agrochemical or urban runoff into the coastal and marine environment.

### 7. The Rationale for National, Regional, and International Financing Sources

The various principles of efficient and sustainable financing apply to all levels: local, national, regional and international. Regional Sea Conventions and Action Plans aim to provide a regional public good, which has both national and global extensions. The sources of coastal and marine pollution are both land-based and sea-based, and most are to be found within the territory of the coastal and island states participating in the two Conventions and within the geographic scope of the two regional seas. However, some pollution originates from other countries outside the region who are not party to the Regional Convention or from activities in the high seas; both these sets of sources should be regarded as non-point sources from the perspective of the region. Likewise, pollutants generated from the region find their way to the other regional seas and the high seas. The implications of these "leakages" and "linkages" is that protection of the regional sea environment is both a regional and a global public good. Moreover, some of the ecosystems and biodiversity protected by a Regional Sea Convention are part of the global commons.

Therefore, it is reasonable to expect international contributions to the regional seas activities. The extent of such contributions ought to depend on the magnitude of expected global benefits from the regional sea activities that are not captured by the region, because by their nature, they extend beyond the region. In reality, as we have seen, global public goods are under-funded as are regional public goods. However, international donors such as the World Bank, GEF and financing mechanisms or funds attached to international conventions should take a closer look at regional institutions as catalysts and intermediaries between national and global levels.

The magnitude of resources that the Northeast Pacific and the Wider Caribbean Regional Seas would manage to attract is, of course, a function of the regional activities that have demonstrable global benefits and the synergies and partnerships with international organizations that can be established and activated. Given the region's extreme vulnerability to the El Niño phenomenon and coastal natural disasters as well as the large number of members that are island states facing the prospect of rising sea levels destroying costly infrastructure and their single largest industry, the region deserves a generous share of any global mitigation assistance (e.g. through the CDM mitigation charge) that may become available in the coming years.

Regional scopes of financing are of two types (a) regional organizations with mandates that encompass the Northeast Pacific and the Wider Caribbean such as IDB, OAS, ECLAC, CARICOM, and CABEL; (b) economic activities with regional scope such as shipping, oil tankers, cruise ships, sea-bed mining, offshore oil drilling, offshore fishing and regional and international trade that flows through the two regional seas. With the exception of tourism and fishing, which could be both sources and victims of degradation of the marine environment, all the other activities are potential sources of damage.

At least four questions need to be answered: (1) what instrument to use to internalize the damage to the source; (2) if a tax or a charge, what should the tax or charge base be; (3) at what level should the charge or tax be set; and (4) who should collect it considering the lack of a supranational regional entity with tax authority and the need to be administratively efficient (low collection costs)? We will attempt to answer these questions in the next section.

Despite the rationale, necessity, and importance of regional and international sources of funding, financial sustainability cannot be assured without sustained regular contributions by the participating countries (like parties to the regional sea convention) for at least three reasons: (a) the major sources of marine pollution are land-based activities in the coastal and island states in the region without whose control the marine environment cannot be protected; (b) the main beneficiaries of the Regional Seas Programme are the economic activities and residents of these countries, and; (c) without national commitments and contributions from the states in the region, little can be accomplished and non-participating country's international sources are unlikely to contribute significantly.

However, many of the participating countries are relatively poor and their governments face budgetary constraints. For these reasons, their contributions should not come from tax revenues but from pollution charges, user fees, and resource rents that they collect (or should collect) from the activities within their jurisdiction that exploit coastal and marine resources or use the coastal and marine environment to dispose waste. A combination of polluter and beneficiary charges would help both to reduce marine resource pollution and to generate revenues to contribute to the Regional Seas Trust Fund, and to finance national activities that are related to or part of the Regional Action Plan.

The key questions to answer are: (a) what are the land based and coastal or marine activities (over which the country has control) which adversely affect the coastal and marine environment; (b) what are the activities, actors, and groups that will benefit from a cleaner coastal and marine environment and sustainable use of its resources; (c) at what level should polluter charges and beneficiary fees be set to be fair, effective, and raise substantial revenues without significantly affecting the competitiveness and profitability of those activities; (d) what legal and institutional arrangements are needed to collect such fees and charges; (e) what proportion of the revenues or overhead should be contributed to the Regional Trust Fund and how much should remain in-country to pursue policies and actions consistent with the Regional Action Plan? Again, these are not easy questions, but we will attempt to provide some answers in the next section.

Finally, in addition to national, regional, and international sources of funding, there is potential and scope for resource mobilization directly from the private sector. First, there are large private companies, national or multinational, that have extensive operations in the region that either degrade the coastal and marine environment or depend on it, and are likely to benefit from its protection. Even if no direct link can be established, such large companies have a civil responsibility to contribute to the well-being of a region from which they derive a large share of their business and profit. Large companies operating in the region, ranging from shipping to cruise ship operations, and from sea-based mining to offshore oil drilling, could make major contributions to the Regional Trust Funds, as well as help finance specific Action Plan activities.



## 8. Financial Mechanisms for Sustainable Funding of the Northeast Pacific and Wider Caribbean Regional Seas

The protection of the marine environment of the regional seas in general, and of the two regional seas under consideration in particular, requires control of national, regional, and international sources of marine and coastal degradation and its beneficiaries span all these three levels. Correspondingly, the financial resources necessary to implement the Regional Seas Programmes call for resource stabilization from national, regional, and international funding sources. For such funding to be efficient, equitable, and sustainable, it must be linked to, and to the extent possible, be commensurate with each party's contribution to the problem and expected benefits from its alleviation, subject to the principles and considerations we discussed in the preceding sections.

### 8.1 National Sources

The contribution of each country participating in each Regional Sea Convention is currently based on an agreed formula that often takes into account the UN scale of contributions and is usually of a voluntary nature. While this formula bears some relationship to each country's size and level of development and some to its ability to pay, it bears no relationship to either the country's contribution to the problem of coastal and marine degradation, or to the country's expected benefits from reduction of this degradation through the Regional Seas Programme. Not surprisingly, commitments of financing are weak and often inadequate, pledges are not always honored, and funding falls short of the set targets, and even shorter of the need.

Willingness to pay (as distinct from ability to pay), and its sustainability require an evident link to the sources of the problem and expected benefit, as well as institutional arrangements to deal with the free riders problem. Taken to its natural conclusion, this approach to financing, while theoretically correct, would imply that participating country contributions can not be assessed and agreed upon until all the necessary assessments and measurements of coastal and marine pollution sources are made. But this is a major objective of the Action Plan that needs to be funded in the first place. Thus, in practical terms, national contributions should bear some relationship to the source of the problem and the expected benefit, but not a

precise one, since the latter may be difficult to establish and may be subject to temporal variability anyway, requiring frequent changes.

A participating country's contribution to the Regional Seas Programme could be divided into two distinct but related components: (a) the country's direct contribution of funds to the Regional Trust Fund and to regional projects and (b) the country's indirect contribution to the Regional Program through direct control of the sources of marine degradation under its jurisdiction through regulation, use of economic instruments and funding of level projects. Since funds (and policies) are fungible, it is not always clear how much of the local action in support of Regional Seas Programme is additional and incremental attributable to the Regional Seas Programme and how much would have been implemented in any case. Without baselines, it is difficult to judge the "incrementality" of national actions, but as long as such actions have significant regional benefits, they should be considered as part of a country's contribution, especially if they are part of, or closely related to, the Regional Action Plan. They might not, however, be counted against the country's direct funding contributions to the Regional Programme.

Our approach to resource mobilization from national sources to fund the two Regional Seas Programmes under consideration is based on a formula of common but differentiated responsibility that consists of three parts: (a) a fixed membership fee (FMF) that does not vary among member/partner countries; (b) a polluter pays contribution (PPC) based on a rough measure of each country's contribution to the degradation of the coastal and marine environment and (c) a beneficiary pays contribution (BPC) based on a rough measure of each country's likely benefit from protection of the coastal and marine environment. Thus, each member country (or party to the regional sea convention) is assessed a contribution to the regional program or country regional contribution (CRC) based on the following formula:

$$(1) \quad \text{CRC} = \text{FMF} + \text{PPC} + \text{BPC}$$

How is each of the three terms of the formula to be determined? Clearly, the fixed membership fee (FMF) should be set by the Intergovernmental Meeting of the parties to the Convention, at a level affordable by the smallest member since the membership fee should be

the same for all members reflecting common rights and responsibilities. However, this does not preclude Parties from voluntarily providing more than the fixed membership fee.

The challenge is the estimation of PPC and BPC, i.e. each country's differential contribution to the Regional Seas Programme based on its contribution to the degradation of the marine environment and its likely share of the benefits from the regional programme. This is not an easy task. To simplify matters, we propose proxies for each. In order to obtain a proxy for a country's contribution to marine environment degradation, we identify the major activities that are likely to pollute or degrade the coastal and marine environment; (a) population within 100 km from the coast (CPOP); (b) agricultural and industrial activity within 100 km from the coast (CAGR and CIND respectively); (c) sea-based economic activities (SBEA) including coastal and marine tourism, coastal and marine fisheries and aquaculture, coastal and offshore oil drilling and mining; and (d) sea-based trade (SBTR).

Except for population, which is expressed in millions of people, all other activities potentially contributing to marine degradation can be represented by the corresponding sectoral GDP or value added, as a proxy. This is not ideal since a larger sectoral GDP or value added may represent higher efficiency and productivity without necessarily increasing the pollution or depletion burden on the marine environment. However, it is a convenient proxy, in the absence of more direct measures of pollution and resource depletion. In the case of shipping, it may be appropriate to distinguish between sea transport of oil (including via pipelines) and the shipping of other commodities, since oil transport imposes, in addition to regular pollution from ships, the risk of oil spills. However, for simplicity, we represent all shipping activities by one variable, sea-based trade (SBTR), that is the sum of the values of exports and imports transported by sea.

Since one dollar generated from one activity say, coastal tourism, does not generate the same level of pollution as another, say sea-based trade, the different sources must be weighted by different factors; that is the unit charge or parameter attached to each source of coastal and marine degradation to obtain each country's PPC would vary according to the "potency" of the source. Thus, a country's contribution to the Regional Seas Programme based on the polluter pays principle (PPC) is defined by:

$$(2) \quad PPC = a_1 CPOP + a_2 CAGR + a_3 CIND + a_4 SBEA + a_5 SBTR$$

Where:

$a_1, a_2, \dots, a_5$  are parameters or unit charges whose levels are to be determined by the

Inter-Governmental Meeting of each regional sea convention based on the needs of the secretariat and the implementation cost of the Action Plan. Their relative values, however, should be based on an assessment of the relative contribution of each source to the degradation of the coastal and marine environment.

CPOP = coastal population (residents within 100km from the coast)

CAGR = coastal agriculture represented by agricultural GDP generated within 100km from the coast.

CIND = coastal industry represented by industrial GDP generated within 100km from the coast.

SBEA = sea-based economic activity represented by the sum of the GDP generated by coastal tourism, fisheries, and other sea-based activities.

SBTR = sea-based trade represented by the sum of the value of exports and imports transported by sea.

The third and last component of the country regional contribution (Formula 1) is the country's beneficiary pays contribution (BPC) which is based on a rough measure of the country's likely benefits from protection and improved management of the coastal and marine environment pursued through the regional program. We consider only two sources of such benefits: (a) increased income from sea-based economic activity on the premise that fisheries and tourism and other sea-based activities (other than sea-based trade) benefit from marine protection; and (b) ocean front properties on the grounds that such properties tend to capitalize improvements in the coastal and marine environment into higher property values. Thus, each country's BPC can be assessed as:

$$(3) \quad BPC = b_1 SBEA + b_2 CLINE$$

Where:

CLINE = coastline in kilometers

SBEA = income from sea-based economic activity

$b_1, b_2$  = unit charges set by the Intergovernmental Meeting of the parties to the Convention

Substituting formulas (2) and (3) into formula (1) we obtain each country's regional contribution (CRC) as:

$$(4) \quad \text{CRC} = \text{FMF} + a_1 \text{CPOP} + a_2 \text{CAGR} + a_3 \text{CIND} + a_4 \text{SBEA} \\ + a_5 \text{SBTR} + b_1 \text{SBEA} + b_2 \text{CLINE}.$$

**Tables 1 and 2 report our estimates of the variables in formula (4) for the members of the Northeast Pacific and Cartagena Conventions respectively. They are rough estimates based on existing sources that can be refined through further research, which is beyond the scope of this study but very much part of the environmental assessments carried out in the context of the regional action plans.**

Calculation of the revenues that can be obtained by applying formula (4) requires, in addition to the values of the variables given in Tables 1 and 2, values for the parameters of each variable, that is the unit impact charges ( $a_1, \dots, a_5$ ) and unit betterment charges ( $b_1$  and  $b_2$ ). While the level of these values should be set by the Intergovernmental Meeting of the parties to the Convention based on financial needs, their relative magnitude should be based on factual assessment of the relative contribution of each source to impacts and each beneficiary's share of benefits. Here we suggest some relative parameter values based on our own assessment of the relative "footprint" on the marine environment of each activity and the likely benefits of each activity from marine protection.

In the base case we propose a fixed membership fee of US\$50,000 per country party to each regional seas convention regardless of size, contribution to impacts or likely share of benefits. For the polluter pays contribution (PPC) of each county, we propose:

- US\$ 1.00 per 100 coastal residents (within 100km from the relevant coast)

- US\$ 1.00 per US\$ 1,000,000 of agricultural and industrial GDP generated within 100km from the coast
- US\$ 2.00 per US\$ 1,000,000 of sea-based income (i.e. generated from fisheries, coastal tourism, etc.) to account for both marine pollution and resource use/depletion
- US\$ 0.50 per US\$ 1,000,000 of sea-based trade, a pollution charge reflecting the lower impact on the marine environment transported by sea, rather than produced in the coastal zone or the sea.

For the beneficiary pays contribution (BPC) we propose:

- US\$ 5 per US\$ 1,000,000 of sea-based income as a betterment charge for the improvement of the resource base of these activities, resulting from a reduced coastal and marine pollution
- US\$ 20 per km of coastline as a betterment charge for the likely appreciation of waterfront property values.

These parameter values applied to the figures of Tables 1 and 2 result in base-scenario financial revenues of US\$ 3.3 million per year for the Northeast Pacific convention and US\$6.6 million per year for the Cartagena Convention (Tables 3 and 4). These resources would afford US\$0.5 million for the secretariat of each convention and US\$2.8 million for implementing the Action Plan of the Northeast Pacific Convention and US\$6.1 million for implementing the Action Plan of the Cartagena Convention.<sup>1</sup> Were the funds raised by the base scenario to be considered either excessive or inadequate, they can be reduced or increased by adjusting downward or upward the parameters (a's and b's). As examples, we present a low scenario (tables 5 and 6) using a 50% downward parameter adjustment and a high scenario (tables 7 and 8) using a 100% upward adjustment. [In the low scenario we cut the fixed membership fee (FMF) to US\$50,000 per country; in the high scenario we retain it at US\$100,000.]

The sources of these payments by each country to the regional trust fund, is up to the member countries. They can come from the general government budget or from specific charges on the sources of coastal and marine pollution (polluter pays) or the likely beneficiaries (beneficiary pays). Our recommendation is to raise the funds from charges on polluters and

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<sup>1</sup> Tables 9 and 10 compare our proposed country contributions (based on the polluter and beneficiary pays principles) to the distribution of an equal total amount among country members based on the United Nations allocation formula. We believe our proposed shares are both more fair and efficient (incentive compatible) and hence more sustainable.

beneficiaries, as this would not only be incentive-compatible and fair, but it would also advance the objectives of the Regional Seas Programme and reduce future financial revenue needs. Indeed, individual countries could be assessed lower coefficients (unit charges) for demonstrated reduction of coastal and marine pollution and/or improved management of marine resources; in this way regional funds are being leveraged as additional incentives for improved coastal management in the member states. As a first step, member countries could be called upon to express their support for the full-cost pricing principle, i.e. pricing resources at levels that reflect the full social costs of use, depletion and environmental degradation and the use of economic instruments to achieve it. Even gradual implementation of this principle would advance the objectives of the convention, as well as mobilize the resources necessary for both national actions and country contributions to the regional trust fund.

While there will be significant variation among members based on differing national priorities and circumstances it would be useful to identify the range of potential domestic sources and mechanisms which can be used separately or in combination to mobilize resources for national actions and regional contributions. The following are potential financing sources internal to each party to the regional convention:

- a) Water pollution charges for industries and municipalities that discharge untreated waste water into public water bodies or the sea; for urban residents a sewage charge could be added to the monthly water bill where it does not already exist.
- b) Agrochemical product charges on pesticide and fertilizers added to their price to reflect water pollution damages resulting from their runoff into public water bodies.
- c) Watershed protection charge on downstream beneficiaries, such as water companies, municipalities, farmers, and users of hydroelectricity and river navigation; such charges are already in use in Costa Rica, Brazil, and Indonesia, among others.
- d) A coastal zone construction charge or development impact fee on building construction, road infrastructure, port facilities and other development that may have detrimental impacts on the coastal and marine environment; it can be collected as insurance against adverse environmental impacts of development activity before development permits are granted. Environmental performance bonds are alternative instruments for the same purpose.

- e) Waterfront or coastal property capital gains tax or betterment charges, calculated on any differential appreciation of waterfront property compared to the average, national appreciation of properties in general (within each state).
- f) A user charge for coastal and marine tourist establishments such as beach resorts and restaurants, diving operations, cruise ships, etc. that derive a significant part of their income from the use of coastal and marine resources and/or leave a significant environmental footprint on them (e.g. coastal pollution, damage to coral reefs, etc.)  
Private enterprises benefiting from public funded conservation should not free ride but return significant resources for the financing of these efforts.
- g) A recreational user charge for recreational fishermen, scuba divers, visitors to marine parks and users of major coastal and marine watersports activities, which benefit from a safer and cleaner marine environment; this instrument could be either as an alternative to (f) above, or as a supplement; its advantage is that it makes the individual user more environmentally aware; its disadvantage is that it is more difficult to collect than a user charge imposed on tourist establishments. Such tourist fees are already collected in the Galapagos Islands, Costa Rica, and Belize, among others; the Government of Seychelles is issuing US\$100 "Gold Cards" to foreign tourists to collect revenues for environmental conservation purposes.
- h) A percentage surcharge on the appreciation of the market price of fishing licenses or individual tradable quotas, where such exist; where they do not, the possibility of their introduction should be considered both as means of limiting entry and as mechanisms for mobilizing resources for management and regulatory enforcement. Another mechanism is the creation of a Permanent Fishery Trust Fund financed out of a percentage of each fishers' earnings from the fishery in exchange for shares, which could be freely tradable among the fishermen in the fishery. These shares would entitle the holder to certain fishing rights and annual dividends, paid out by the Fund, but they would also obligate the holder to certain management conditions. Part of the Fund's revenues would be used to fund internal management, regulatory enforcement and investments to enhance the long-term income potential of the fishery as well as contribute to the Regional Seas Programme's action plan.
- i) A mining impact fee assessed on all sea-based mining and oil exploration and drilling operations within each member state's territorial waters (exclusive economic zone), to reflect their potential impact on the marine environment and to provide an incentive to take appropriate actions to minimize it.



- j) A port environment user charge based on tonnage of shipments (imported or exported); this charge should be higher in the case of oil tankers and shipments of hazardous materials such as chemicals. Ports and port activity are major sources of coastal and marine pollution and beneficiaries of improved safety and reduced pollution in the marine environment.
- k) A national revolving fund financed from any of the above sources or a combination of them to provide assistance to non-point sources of coastal and marine pollution, such as small-scale farmers, fishermen, and cottage industries to switch to lower-impact practices (e.g. plant less erosive crops, practice soil conservation, employ less destructive fishing gear and use biodegradable or less toxic inputs). While this instrument would not raise funds towards the country's contribution to the regional action plan, it goes a long way to advance its objectives and reduce the regional fund needs.
- l) Tax deductions or property tax exemptions for coastal land of ecological significance that is put to benign land uses or managed for conservation purposes; alternatives for biologically-valuable coastal lands (such as mangroves and lands adjacent to coral reefs), included easements, conservation agreements, land exchanges, and transferable development rights that preserve private ownership rights while protecting public values.
- m) Coastal and maritime eco-enterprise funds, capitalized from private, public, and international sources, to support eco-friendly business initiatives within the coastal zone by making available venture capital to businesses and organizations that meet certain investment and environmental criteria and minimize the impact on the marine environment. Eco-enterprise funds can also support commercial activities by NGO's and coastal community organizations that are protective of the coastal and marine environment (e.g. ecotourism, establishment of marine parks, limited-access diving sites, etc.).

## 8.2 Regional Sources

To date, there has been little experimentation with regional financial mechanisms for funding the Regional Seas Programme, despite the obvious common environmental problems at the regional level. This is in part due to the lack of regional institutions with resource mobilization authority over sovereign nations and private economic activities that transcend national borders. In the absence of a supranational regional authority with taxing powers, it is necessary to identify proxies that can function as such, with the agreement of the national

jurisdictions involved. These proxies are regional-sea specific. For example, a notable feature shared by the Northeast Pacific and the Wider Caribbean, but no other regional sea, is the Panama Canal waterway that connects the two seas and constitutes a transit point for most of the commercial shipping supplying the two regional seas. Another notable feature of the Wider Caribbean (much less than the Northeast Pacific) is the large number of cruise ships operating in the area and using the regions ports on a regular cycle of visits. Both these features can be used to raise regional funds directly (i.e. without going through national collection mechanisms) provided that the strategically located member countries at the point of transit or port of call are prepared to serve as the collection institutions, on the Regional Sea Programs behalf. Of course, any such arrangement should provide for full compensation of member countries for the cost of its collection services and of any impact that such charges might have on the taxed activity and hence the member country's own revenues. Here we will consider the cases of (a) ships transiting the Panama Canal and (b) cruise ships calling on regional ports as potential sources of financial revenues for the support of the two Regional Seas Conventions.

(a) A transit surcharge on ships transiting through the Panama Canal. About 13,000 ocean-going transits occurred through the Panama Canal in 1998, carrying a cargo volume of 192 million tons, and yielding toll revenues of US\$ 545 million. Toll rates are US\$ 2.57 per ton for passenger ships, \$ 2.04 per ton for non-passenger ships, and \$ 1.43 per ton for war. hospital, and supply ships.

The current and projected tonnage transited through the Panama Canal exceeds 200 million long tons. A Regional Seas surcharge of one cent (US\$0.01) per ton imposed and collected by the Panama Canal Commission would generate an additional \$2 million per year, that can be divided equally between the two Regional Seas Programmes. One million dollars of a steady financial flow would help ensure the sustainability of both Regional Seas Programmes, at a certain level; alternatively, the resources so mobilized can be used to capitalize the Regional Trust Funds, while revenues from country and regional contributions as well as other sources can be used to run the two Regional Seas Programmes until the Trust Fund is large enough to generate sufficient income to finance these programmes. However, a number of questions may be raised:

(1) Why should the ships transiting the Panama Canal be charged the extra cent per ton?

- (2) Why should Panama collect this surcharge and turn it over to the Regional Seas Trust Funds?
- (3) Wouldn't this extra charge affect, at the margin, the tonnage shipped through the Canal?
- (4) How should Panama be compensated for the collection service for the parties to the two Regional Sea Conventions?

Ships transiting the Panama Canal are users, not only of the Canal but also of the two Regional Seas on each side of the Canal. They contribute to the degradation of the marine environment through the discharge of waste and the ever present risk of accident or spill. On the other hand, they benefit from a safer and cleaner marine environment. Therefore on both the polluter pays and beneficiary pays principles, ships crossing the two Regional Seas should contribute to marine protection efforts through a user charge. While not all ships operating in the Northeast Pacific and the Wider Caribbean pass through the Panama Canal, the majority do and the Canal is an easy point for collecting such a charge. (The fact that member countries would also pay a user charge for sea-based trade does not constitute a double charge since each targets a different beneficiary).

Panama should be prepared to collect the "regional seas protection surcharge" and turn it over to the regional trust funds because Panama, more than any other country in the region, benefits from the free and safe flow of international trade through the regional seas. About 10 percent of Panama's Gross Domestic Product is derived from sea-related activity along both sides of the Central America Isthmus. This is expected to increase as Panama further develops its tourist industry. However, more critically, Panama stands to lose more proportionately than any other member country from any disruption or restriction of shipping activities, as a result of their impact on the marine environment, a not unlikely possibility as international trade continues to expand. Panama has already recognized its strategic regional and global role for international trade and the regional sea environment by offering to host the secretariat of the Northeast Pacific Convention. Collection of US\$0.01 per ton from ships crossing the Canal for protection of the two regional seas is a gesture befitting the host country of one of the two Regional Sea Conventions. Any fears that this extra charge would affect the demand for the canal's services should be alleviated by three factors: (a) the proposed surcharge is only 0.4% of the current toll; (b) there is no evidence that previous increases of the toll in the range of 8 – 9% every couple of years affected the traffic through the Canal; and, (c) the US\$0.01 surcharge should be clearly presented to the payee not as a

toll but as the ship's contribution to the protection of the Regional Seas from environmental degradation. While it is clear that Panama's revenues would not be adversely affected by collecting such a charge, Panama should be compensated for its collection costs by waiving its fixed membership fee (FMP) to the two conventions.

(b) Regional Seas cruise ship user charge. An important and rapidly growing (at 5-6% per year) sea-based activity that has significant impacts on the marine environment in the region, is cruise-ship tourism. There are hundreds of cruise ships operating in the Wider Caribbean all year round; an estimated ten million tourists visit the Caribbean every year by cruise ship. Cruise ships are both sources of degradation of the marine environment and major beneficiaries of its clean up and protection, since clean seas are part of the product cruise ships sell to their customers. While a few cruise ships do pass through the Panama Canal and would be subject to the tonnage surcharge, the majority do not. It is proposed that a Regional Seas user charge of US\$ 1 per cruise ship passenger is imposed at every port of call of cruise ships. It is further proposed that the revenues so collected (about \$10 million in the case of the Wider Caribbean) are split 50 – 50 between the collecting member states and the Regional Seas Trust Fund. The local share should be used for protection and clean up of the port and coastal environment while the regional share should be used in part to implement the Action Plan, and in part to capitalize the Trust Fund. A similar arrangement should be done for the Northeast Pacific but the revenues would be significantly smaller because cruise ship activity there is much more limited than in the Caribbean.

(c) A third regional source of funds are regional institutions that share common goals and enter into partnerships with the Regional Seas Programmes. These include regional development banks, such as the Inter-American Development Bank, regional government institutions such as CARICOM and regional civil society associations. The Regional Action Plan by polling common projects among its members can formulate large proposals for funding from regional development banks and other multilateral donors, rather than numerous proposals for smaller amounts. Furthermore, a strong case can be made for the need and rationale for regional donors to be more active in financing regional public goods, such as the protection of the regional seas (see section 5).

One interesting regional instrument is the Eco-Enterprise Fund, established by the Nature Conservancy and the Multilateral Investment Fund of the Inter-American Development Bank.

This \$10 million fund offers venture capital and technical support to environmentally responsible business projects in cooperation with non-profit organizations in Latin America and the Caribbean. Possible areas for funding include alternative agriculture, sustainable forestry, and ecotourism, all areas relevant to the protection of the coastal and marine environment.

(d) A fourth regional source of funds includes maritime industry associations, shipping and maritime insurance companies with regional scope, regional tourism organizations and port associations. These institutions have a strong incentive to help improve maritime safety, control maritime pollution, and generally reduce the costs associated with deteriorating conditions in the coastal and marine environment. These institutions should be invited to make contributions to the Regional Trust Fund as well as to directly fund components of the Action Plan of special interest to them. A possible model for mobilizing resources from a diverse set of potential sources is the "POPs Club", an innovative financial mechanism established by UNEP to finance the negotiating process for a global treaty on persistent organic pollutants. It invites contributions from a wide range of public and private sources with shared interests; donors receive certificates and silver and gold pins in recognition of their contribution. In the first 18 months of its existence, the "POPs Club" attracted donation and pledges of about US\$ 2,600,000.

### 8.3 International Sources

Increased contributions by the parties to each regional sea convention on a sustainable basis and in proportion to their contribution to impacts and share of benefits, should encourage increased willingness by bilateral and multilateral partners for international development cooperation to provide additional funding to support the objectives of the regional action plan. In the past, UNEP has been a major donor to the Regional Seas Programmes in their early formative years with a view of phasing out its contributions once the programme becomes self-sustainable. In several cases, including the Cartagena Convention, UNEP had to continue and even increase its contribution over time as the contributions from other sources fell short of need and expectation.

With regard to of long-term sustainable financing from international sources, the Global Environment Facility is the most promising source, in terms of both scale of resources and

relevance to the mission of the Regional Seas Programmes. The protection of International Waters is the most relevant thematic focus of GEF, but the relevance of biodiversity conservation and climate change control cannot be overemphasized. The Central American Isthmus and the Caribbean Islands are ecologically and biologically among the most diverse ecosystems and at the same time among the most vulnerable ones to climate change and sea-level rise. Many of the policies and investments that are needed to protect the coastal and marine environment would also help conserve aquatic and terrestrial biodiversity and reduce threads to the global climate. Examples include alternative agriculture, sustainable forestry, ecotourism, establishment of terrestrial and marine parks, protection of mangroves and coral reefs. It should be possible to formulate part of the regional action plan into proposals for incremental funding by GEF since a joint regional and global public good is to be produced.

GEF could use a variety of innovative mechanisms to help finance the Regional Seas Programme and related national programmes, revolving funds, private-public sector partnerships, and even commercial ventures as long as substantial global benefits can be demonstrated, and the incremental cost criterion is met. Another related international source is the Environmental Projects Unit of the International Finance Corporation.

A second major source of international financing is to be found in the synergy and partnerships with other international agreements and organizations, such as: the Global Program for Action (GPA) for the protection of the Marine Environment from Land-Based Sources of Pollution; Agreements to Control Maritime Pollution (London Dumping Convention and MARPOL); Agreements to Protect Biodiversity (e.g. Jakarta Mandate, SPAW Protocol); Fisheries Agreements (e.g. FAO code for Responsible Fisheries; UN Agreement for straddling Fish Stocks, etc.); the International Convention and its Protocols on the Establishment of an International Fund for Compensation for Oil Pollution Damage; Convention on the Prevention of Maritime Pollution by Dumping Wastes and other Matter etc. Of Particular relevance is the International Maritime Organization (IMO), whose mission overlaps significantly with that of the Regional Seas Conventions, especially with regard to shipping impacts on the marine environment. Joint project proposals by the secretariats of two or more conventions or international institutions would have greater appeal to donors concerned about the proliferation of international bureaucracies and the duplication of efforts.

The Clean Development Mechanism (CDM), a new international source of funding of sustainable development activities with global climate benefits, constitutes yet another potential source of financing of national and regional actions for the protection of the coastal and marine environment. The Action Plan of each Regional Sea Convention should be screened for its potential contribution to greenhouse gas reductions or enhancement of carbon sinks and therefore for the scope it offers for CDM projects both among member states and between them and non-members, interested in financing such projects in exchange for carbon credits.

## 9. Conclusion

There is no scarcity of potential sources of funds for financing the Secretariats and Action Plans of the Regional Sea Conventions. This is particularly true of the Northeast Pacific and Wider Caribbean Regional Seas, where the financial burden can be shared by a large number of parties. Sustainable financing, however, requires that the country contributions to the regional programmes correspond to both their impacts on the coastal and marine environment and their expected benefit from the regional action plan. This, in turn, requires at least a rough assessment of these impacts and benefits and introduction of appropriate impact fees and betterment charges that can be realistically collected. We have estimated that at very modest unit charges, \$3.3 million and \$6.6 million can be contributed annually by members for the financing of the Northeast Pacific and Wider Caribbean Seas Programmes, respectively. At the regional level, the Panama Canal, that links the two regional seas, could mobilize for each of the two regional sea programmes an additional \$1 million that can be collected from transiting ships. The role of Panama, which has offered to host the Secretariat of the Northeast Pacific Convention, is in this regard pivotal and its unique role should be recognized by the other parties to the Convention. The large number of cruise ships plying the two seas, especially the Wider Caribbean, afford the region an additional source of funding, possibly of several million US dollars a year that can be collected at the port of call of cruise ships. Furthermore, regional development banks, the Global Environmental Facility, and partnerships with other international Conventions and institutions contribute additional sources of project financing for the Action Plan of the two Regional Sea Conventions. The Clean Development Mechanism, provided by the Kyoto Protocol, provides yet another source of potential financing of Action Plan projects with global climate benefits. Care was taken to propose financial mechanisms and sources that can be easily tapped (i.e. at low

administrative cost) and have the potential to be sustained over the long haul. It is hoped that both national governments and international organizations fully appreciate the urgent need to provide more regional and global public goods, if sustainability at a regional and global scale is to be assured.

## References

- Acheson, James. 1993. Capturing the commons: Legal and illegal strategies. In *The political economy of customs and culture: Informal solutions to the commons problem*, Terry L. Anderson and Randy T. Simmons, eds. Lanham, MD: Rowman and Littlefield Publishers, Inc., 69-83.
- Berkes, F. 1986. Marine inshore fishery management in Turkey. In Proceedings of the conference on common property resource management, National Research Council. Washington DC: National Academy Press, 63-83.
- Bowles, Francis P. and Margaret C. Bowles. 1989. Holding the line: Property rights in the lobster and herring fisheries of Matinicus Island, Maine. In *A sea of small boats*, John Cordell, ed. Cambridge, MA: Cultural Survival, inc., 228-57.
- Bunce, Leah L. and Kent R. Gustavson. 1998. Coral Reef Valuation: A Rapid socioeconomic assessment of fishing, watersports and hotel operations in the Montego Bay Marine Park, Jamaica, and an analysis of reef management implications. A component of Marine System Valuation: An Application to Coral Reef Systems in the Developing Tropics. World Bank Research Committee Project #RPO 681-05.
- Cerne, M., ed. 1985. *Putting People First: Sociological Variables in Rural Development*. Oxford: Oxford University Press.
- Chambers, R. 1994. The origins and practice of participatory rural appraisal. *World Development* 22 (&): 953-969.
- Cordell, John, ed. 1989. *A sea of small boats*. Cambridge, MA: Cultural Survival, Inc.
- Hardin, Garrett. 1968. The tragedy of the commons. *Science* 162: 1243-48.
- Herrington, William C. 1972. Operation of the Japanese management system. In *Alaska fisheries policy*, Arlon R. Tussing, Thomas A. Morehouse, and James D. Babb, Jr., eds. Fairbanks, AK: Institute of Social Economic and Government Research, 419-43.
- Higgs, Robert. 1982. Legally induced technical regress in the Washington salmon fishery. *Research in Economic History* 7: 55-86.
- Interorganizational Committee on Guidelines and Principles for Social Impact Assessment (ICGPSIA). 1994. Guidelines and Principles for Social Impact Assessment. Washington DC: US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.



- Jentoft, Svein. 1989. Fisheries co-management: Delegating responsibility to fishermen's organizations. *Marine policy* (April): 137-54.
- Johnson, Ronald N., and Gary D. Libecap. 1982. Contracting problems and regulation: The case of the fishery. *American Economic Review* 12 (December): 1005-22.
- Lamson, C. and A.J. Hanson, eds. 1984. *Atlantic fisheries and coastal communities: Fisheries decision-making case studies*. Halifax: Dalhousie Ocean Studies Programme, 133-164.
- Langdon, Steve. 1989. From communal property to common property of limited entry: Historical ironies in the management of southeast Alaska salmon. In *A sea of small boats*, John Cordell, ed. Cambridge, MA: Cultural Survival, inc.
- Leal, Donald R. 1996. Community-Run Fisheries: Avoiding the 'Tragedy of the Commons'. PERC Policy Series Issue Number PS-7. September. Bozeman, MT: Political Economy Research Center.
- McCay, Bonnie J. 1989. Sea tenure and the culture of the commoners. In *A sea of small boats*, John Cordell, ed. Cambridge, MA: Cultural Survival, inc., 203-27.
- Orbach, M.K. and J.C. Johnson. 1989. The transformation of fishing communities: A public policy perspective. In *Marine Resource Utilization: A Conference in Social Science Issues*. J.S. Thomas, L. Maril, and E.P. Durrenberger, eds. Mobile, Alabama: University of South Alabama Publication Services.
- Organization of America States (OAS). 1994. Economic Analysis of Tourism in Jamaica. Technical Report of the OAS National Program of Technical Cooperation with the Jamaica Tourist Board and the Ministry of Industry, Tourism and Commerce. Washington DC: Department of Regional Development and Environment, Executive Secretariat for Economic and Social Affairs, General Secretariat, Organization of American States.
- Ostrom, Elinor. 1990. *Governing the commons: The evolution of institutions for collective action*. Cambridge: Cambridge University Press.
- Pollnac, R.B. and J.W. McManus. 1995. ReefBase and society: Integrating human use indicators into a physical and biological global coral reef database. Project description distributed at Coastal Zone '95 conference, Tampa, Florida.
- Renard, Y. 1991. Institutional challenges for community-based management in the Caribbean. *Nature & Resources* 27 (4): 4-9.
- Rettig, R. Bruce. 1986. Overview. In *Fishery access control programs worldwide*, Nina Mollet, ed. Fairbanks, AK: Alaska Sea Grant College Program, University of Alaska, 5-32.

- Short, Kevin MacEwen. 1989. Self-management of fishing rights by Japanese Cooperative Associations: A case study from Hokkaido. In *A sea of small boats*, John Cordell, ed. Cambridge, MA: Cultural Survival, Inc.
- Townsend, Ralph E. 1995. Fisheries self-governance: Corporate or cooperative structures? *Marine Policy* 19: 39-45.
- White, A.T. 1989. Two community-based marine reserves: Lessons for coastal management. In *Coastal Area Management in Southeast Asia: Policies, Management strategies and Case Studies*. T.E. Chua and D. Pauly, eds. ICLARM Conference Proceedings 19. Manila, Philippines: International Center for Living Aquatic Resources Management.
- White, A.T., L.Z. Hale, Y. Renard and L. Cortesi. 1994. *Collaborative and Community-based Management of Coral Reefs: Lessons from Experience*. West Hartford, CT: Kumarian Press.

**Table #1. Some Economic, Geographic and Demographic Variables for the Coastal Areas of the Country Members of the East Central and North Pacific Sea Convention**

Member Country	Coastal population (1) within 100 km from coast - million - CPDp	Coastline -km- (2) CLINE	Coastal agriculture GDP within 100 km from coast - million \$ 1998 - CAGR	Coastal Industry GDP within 100 km from coast - million \$ 1998 - CIND	Sea-Based Income (3) million \$ 1998 - SBEA	Sea-Based Trade(4) million \$ 1998 - SBTR	Coastal GDP within 100 km from coast million \$ 1998 - (5)
Canada	4.00	7,365	2,244	27,003	7,419	113,551	38,640
Colombia	11.91	1,444	9,660	17,961	2,222	12,728	28,560
Costa Rica	2.80	903	1,100	1,790	704	8,219	3,719
El Salvador	6.10	307	1,602	2,564	289	4,375	4,291
Guatemala	6.39	280	2,390	1,866	284	5,018	4,650
Honduras	3.28	248	239	378	69	1,210	781
Mexico	14.17	6,065	5,851	19,528	7,786	44,365	33,275
Nicaragua	2.71	182	253	155	83	1,082	498
Panama	2.21	1,245	498	704	584	2,092	1,581
United States	42.00	11,435	26,497	202,625	43,271	512,458	300,372
Total	95.57	29,471	50,335	274,573	62,713	705,096	416,368

1) In the case of USA and Canada this includes coastal population for the west coast only. In the case of Costa Rica we estimate 80% of the coastal population in the west coast. 29% for Colombia, 100% for El Salvador, 80% for Guatemala, 80% for Honduras, 80% for Nicaragua, 85% for Panama

2) Includes coastline for the west coast only. In the case of USA it includes the pacific coast of Alaska.

3) Sea-based income includes income from fishery, aquaculture and mariculture and income from tourism. It is estimated that 45% of the sea-based income of the USA is generated in the west coast. It is also estimated that, for the case of Canada, 50% of this income is generated in the west coast.

4) In the case of USA, Canada and Mexico, we estimated that sea-based trade is 70%, 60% and 40% of total trade respectively. We also estimated that 45% of the sea-based trade is commercialized in the west coast.

5) Coastal GDP includes: Coastal Agriculture GDP, Coastal industry GDP, and Income for Tourism

Source: constructed by the author with the assistance of Francisco Montoya. Information on coastal population was obtained with the assistance of Andrew D. Mellinger. Data on coastline was obtained from World Resource Institute (WRI); data on coastal agriculture and industry, coastal GDP and sea-based trade was obtained from World Development Indicator (WDI 2000); data on fishery, aquaculture and mariculture was obtained from FAO; data on tourism was obtained from World Tourism Organization (WTO); data on percentages of trade was obtained from the US Trade Representative office (USTR)

**Table #2. Some Economic, Geographic and Demographic Variables for the Coastal Areas of the Country Members of the Cartagena Sea Convention**

Member Country or Territory	Coastal population (1) within 100 km from coast - million - CP-Op	Coastline - Km - (2) CLINE	Coastal agriculture GDP within 100 km from coast - million \$ 1998 - CAGR	Coastal industry GDP within 100 km from coast - million \$ 1998 - CIND	Sea-Based Income (3) - million \$ 1998 - SBEA	Sea-Based trade (4) - million \$ 1998 - SBTR	Coastal GDP within 100 km from coast - million \$ 1998 - (5)
Antigua & Barbuda	0.07	153	24	108	260	370	387
Aruba	0.03	136	...	...	716	310	617
Bahamas	0.29	290	0	0	1,458	4,080	1,408
Barbados	0.27	97	...	...	721	...	2,389
Belize	0.24	386	213	303	124	700	615
Br. Virgin Islands	0.01	131	...	...	...	...	...
Cayman Islands	0.03	112	...	...	452	...	...
Colombia	11.10	1,764	8,999	16,731	2,222	12,728	26,668
Cuba	11.10	3,735	...	...	...	...	...
Dominica	0.07	148	77	77	41	280	192
Dominican Republic	8.30	1,288	5,579	8,235	2,190	5,511	15,955
Grenada	0.01	121	62	107	65	370	228
Guadeloupe	0.01	146	...	...	...	...	...
Haiti	7.60	1,771	4,623	1,291	163	972	5,971
Jamaica	2.60	1,022	760	3,300	1,246	4,316	5,256
Martinique	0.39	290	...	...	...	...	...
Neth. Antilles	0.21	162	...	...	...	...	...
St. Kitts & Nevis	0.04	135	27	108	...	370	211
Saint Lucia	0.15	158	85	2	293	707	378
St. Vincent/Grenadin	0.11	84	59	116	76	243	250
Suriname	0.41	1,001	0	0	...	...	44
Trinidad & Tobago	1.30	362	337	4,050	225	5,620	4,587
Turks & Caicos Islan	0.01	150	...	...	205	...	...
United States	17.29	2,473	5,845	45,153	23,564	199,354	122,247
US Virgin Islands	0.12	154	...	...	...	...	...
Venezuela	16.03	2,800	4,944	35,730	1,854	32,927	41,908
Costa Rica	0.70	387	472	767	302	3,522	2,068
Guatemala	1.60	160	1,024	800	122	2,151	2,218
Honduras	0.82	574	558	882	161	2,823	1,604
Mexico	14.17	3,268	9,001	10,515	4,193	44,365	27,413
Nicaragua	0.68	182	253	155	83	1,082	498
Panama	0.39	1,245	498	704	584	2,092	1,581
France	19.37	...	9,443	107,568	33,906	57,570	146,942
United Kingdom	48.30	...	17,666	363,138	22,690	756,760	401,782
<b>Total</b>	<b>163.83</b>	<b>24,883</b>	<b>70,548</b>	<b>599,837</b>	<b>97,914</b>	<b>1,139,222</b>	<b>813,417</b>

... = non available (na)

1) In the case of Mexico and Central America this includes coastal population for the east coast only. In the case of USA the data are for the southern states.

2) In the case of Mexico and Central America this includes coastline for the east coast only. In the case of USA the coastline is for southern states

3) Sea-based income includes the income from fishery, aquaculture and mariculture and the income from tourism. It is estimated that 25% of the sea-based income of the USA is generated in the southern states.

4) In the case of USA and Mexico, we estimated that sea-based trade is a 70% and 40% of total trade respectively. We also estimated that 25% of the sea-based trade is commercialized in the east coast.

5) Coastal GDP includes: Coastal Agriculture GDP, Coastal industry GDP, and Income for Tourism

Source: constructed by the author with the assistance of Francisco Montoya. Same data sources as noted in table #1.

**Table #3. Regional Annual Revenues from Country Member Contributions for the East Central and North Pacific Regional Sea Convention Program**

(BASE SCENARIO)

Member Country	Revenue based on Coastal population (1) within 100 km from coast a1CPOP	Revenue based on Coastline (km) (2) b2CLINE	Revenue based on Coastal agriculture GDP (3) within 100 km from coast a2CAGR	Revenue based on Coastal Industry GDP (4) within 100 km from coast a3CIND	Revenue based on Sea-Based Income (5) a4SBEA	Revenue based on Sea-Based trade (6) a5SBTR	Sub-total based on impacts and benefits (7)	Fixed membership fee (8) FMF	Total Country Regional Contributions CRC
Canada	39,978	147,300	2,244	27,003	51,936	56,776	325,237	50,000	375,237
Colombia	119,141	28,872	9,660	17,961	15,554	6,364	197,552	50,000	445,103
Costa Rica	28,000	18,060	1,100	1,790	4,929	4,109	57,989	50,000	107,989
El Salvador	61,000	6,140	1,602	2,564	2,022	2,188	75,516	50,000	125,516
Guatemala	63,898	5,600	2,390	1,866	1,990	2,509	78,253	50,000	128,253
Honduras	32,775	4,920	239	378	484	605	39,401	50,000	89,401
Mexico	141,698	121,290	5,851	19,528	54,505	22,182	365,054	50,000	415,054
Nicaragua	27,084	3,640	253	155	584	541	32,257	50,000	82,257
Panama	22,100	24,900	498	704	4,089	1,046	53,337	50,000	103,337
United States	420,000	228,690	26,497	202,625	302,894	256,229	1,436,935	50,000	1,486,935
Total							2,661,530	500,000	3,359,082

1) One dollar (US\$1) per 100 coastal residents

2) Twenty dollars (US\$20) per km of coastline

3) One dollar (US\$1) per \$1,000,000 of coastal agriculture GDP

4) One dollar (US\$1) per \$1,000,000 of coastal industry GDP

5) Seven dollars (US\$7) per \$1,000,000 of sea-based income. (\$2 as pollution/depletion charge and \$5 as betterment charge)

6) One half dollar (US\$0.5) per \$1,000,000 of sea-based trade

7) subtotal of revenues. Includes the revenues from 1 to 6

8) Fixed fee per member country: "no less than \$50,000"

Source: constructed by the author with the assistance of Francisco Montoya. Estimations are based on data from table #1

Table #4. Regional Annual Revenues from Country Member Contributions for the  
Cartagena Regional Sea Convention Program

(BASE SCENARIO)

Member Country or Territory	Revenue based on Coastal population (1) within 100 km from coast a1CPOP	Revenue based on Coastline (Km) (2) b2CLINE	Revenue based on Coastal agriculture GDP (3) within 100 km from coast a2CAGR	Revenue based on Coastal Industry GDP (4) within 100 km from coast a3CIND	Revenue based on Sea-Based Income (5) a4SBEA	Revenue based on Sea-Based trade (6) a5SBTR	Sub-total based on Impacts and benefits (7)	Fixed membership fee (8) FMF	Total Country Regional Contributions CRC
Antigua & Barbuda	700	3,060	24	108	1,821	185	5,897	50,000	55,897
Aruba	300	2,720	...	...	5,011	155	8,186	50,000	58,186
Bahamas	2900	5,800	0	0	10,204	2,040	20,944	50,000	70,944
Barbados	2700	1,940	...	...	5,045	...	9,685	50,000	59,685
Belize	2400	7,720	213	303	865	350	11,851	50,000	61,851
Br. Virgin Islands	130	2,620	...	...	...	...	2,750	50,000	52,750
Cayman Islands	320	2,240	...	...	3,161	...	5,721	50,000	55,721
Colombia	110981	35,288	8,999	16,731	15,554	6,364	193,916	50,000	243,916
Cuba	111000	74,700	...	...	...	...	185,700	50,000	235,700
Dominica	700	2,960	77	77	290	140	4,244	50,000	54,244
Dominican Republic	83000	25,760	5,579	8,235	15,330	2,756	140,659	50,000	190,659
Grenada	100	2,420	62	107	453	185	3,327	50,000	53,327
Guadeloupe	130	2,920	...	...	...	...	3,050	50,000	53,050
Haiti	76000	35,420	4,623	1,291	1,139	486	118,958	50,000	168,958
Jamaica	26000	20,440	760	3,300	8,720	2,158	61,378	50,000	111,378
Martinique	3920	5,800	...	...	...	...	9,720	50,000	59,720
Neth. Antilles	2100	3,240	...	...	...	...	5,340	50,000	55,340
St. Kitts & Nevis	400	2,700	27	108	...	185	3,420	50,000	53,420
Saint Lucia	1500	3,160	85	2	2,052	354	7,152	50,000	57,152
St. Vincent/Grenadin	1100	1,680	59	116	530	122	3,607	50,000	53,607
Suriname	4100	20,020	0	0	...	...	24,120	50,000	74,120
Trinidad & Tobago	13000	7,240	337	4,050	1,578	2,810	29,015	50,000	79,015
Turks & Caicos Islan	140	3,000	...	...	1,436	...	4,576	50,000	54,576
United States	172876	49,468	5,845	45,153	164,948	99,677	537,967	50,000	587,967
US Virgin Islands	1200.0	3,080	...	...	...	...	4,280	50,000	54,280
Venezuela	160325	56,000	4,944	35,730	12,979	16,464	286,442	50,000	336,442
Costa Rica	7000	7,740	472	767	2,113	1,761	19,852	50,000	69,852
Guatemala	15975	3,200	1,024	800	853	1,075	22,927	50,000	72,927
Honduras	8194	11,480	558	882	1,129	1,412	23,654	50,000	73,654
Mexico	141698	65,310	9,001	10,515	29,349	22,182	278,055	50,000	328,055
Nicaragua	6771	3,840	253	155	584	541	11,944	50,000	61,944
Panama	3900	24,900	498	704	4,089	1,046	35,137	50,000	85,137
France (9)	...	...	...	...	...	...	...	300,000	300,000
United Kingdom (9)	...	...	...	...	...	...	...	300,000	300,000
Total							2,083,473	2,200,000	4,283,473

... = non available (na)

1) One dollar (US\$1) per 100 coastal residents

6) One half dollar (US\$0.5) per \$1,000,000 of sea-based trade

2) Twenty dollars (US\$20) per km of coastline

7) Subtotal of revenues. Includes the revenues from 1 to 6

3) One dollar (US\$1) per \$1,000,000 of coastal agriculture GDP

8) fixed fee per member country: "no less than \$50,000"

4) One dollar (US\$1) per \$1,000,000 of coastal industry GDP

9) In the case of France and United Kingdom we are taking into account the fixed fee per country only

5) Seven dollars (US\$7) per \$1,000,000 of sea-based income. (\$2 as pollution/depletion charge and \$5 as betterment charge)

Source: constructed by the author with the assistance of Francisco Montoya. Estimations are based on data from table #2

**Table #5. Regional Annual Revenues from Country Member Contributions for the East Central and North Pacific Regional Sea Convention Program**

**(LOW SCENARIO)**

Member Country	Revenue based on Coastal population (1) within 100 km from coast a1CPOP	Revenue based on Coastline (Km) (2) b2CLINE	Revenue based on Coastal agriculture GDP(3) within 100 km from coast a2CAGR	Revenue based on Coastal Industry GDP(4) within 100 km from coast a3CIND	Revenue based on Sea-Based Income (5) a4SBEA	Revenue based on Sea-Based trade(6) a5SBTR	Sub-total based on impacts and benefits (7)	Fixed membership fee (8) FMF	Total Country Regional Contributions CRC
Canada	19,989	73,650	1,122	13,502	25,968	28,388	162,618	50,000	212,618
Colombia	59,570	14,436	4,830	8,980	7,777	3,182	98,776	50,000	247,552
Costa Rica	14,000	9,030	550	895	2,465	2,055	28,994	50,000	78,994
El Salvador	30,500	3,070	801	1,282	1,011	1,094	37,758	50,000	87,758
Guatemala	31,949	2,800	1,195	933	995	1,255	39,127	50,000	89,127
Honduras	16,388	2,460	120	189	242	302	19,701	50,000	69,701
Mexico	70,849	60,645	2,925	9,764	27,252	11,091	182,527	50,000	232,527
Nicaragua	13,542	1,820	126	77	292	270	16,128	50,000	66,128
Panama	11,050	12,450	249	352	2,045	523	26,669	50,000	76,669
United States	210,000	114,345	13,249	101,312	151,447	128,114	718,468	50,000	768,468
<b>Total</b>							<b>1,330,765</b>	<b>500,000</b>	<b>1,929,541</b>

- 1) One half dollar (US\$0.5) per 100 coastal residents
- 2) Ten dollars (US\$10) per km of coastline
- 3) One half dollar (US\$0.5) per \$1,000,000 of coastal agriculture GDP
- 4) One half dollar (US\$0.5) per \$1,000,000 of coastal industry GDP
- 5) Three and one half dollars (US\$3.5) per \$1,000,000 of sea-based income. (\$1 as pollution/depletion charge and \$2.5 as betterment charge)
- 6) Twenty five cents (US\$0.25) per \$1,000,000 of sea-based trade
- 7) subtotal of revenues. Includes the revenues from 1 to 6
- 8) Fixed fee per member country: "no less than \$50,000"

Source: constructed by the author with the assistance of Francisco Montoya. Estimations are based on data from table #1

Table #6. Regional Annual Revenues from Country Member Contributions for the Cartagena Regional Sea Convention Program

(LOW SCENARIO)

Member Country or Territory	Revenue based on Coastal Population (1) a1CPop	Revenue based on Coastline (Km) (2) a2CLINE	Revenue based on Coastal agriculture GDP(3) a3CAGR	Revenue based on Coastal Industry GDP(4) a3CIND	Revenue based on Sea-Based Income (5) a4SBEA	Revenue based on Sea-Based trade(6) a5SBTR	Sub-total based on Impacts and benefits (7)	Fixed membership fee (8) FMF	Total Country Regional Contributions CRC
Antigua & Barbuda	350	1,530	12	54	910	93	2,949	50,000	52,949
Aruba	150	1,360	...	...	2,508	78	4,093	50,000	54,093
Bahamas	1450	2,900	0	0	5,102	1,020	10,472	50,000	60,472
Barbados	1350	970	...	...	2,522	...	4,842	50,000	54,842
Belize	1200	3,860	107	151	432	175	5,925	50,000	55,925
Br. Virgin Islands	65	1,310	...	...	...	...	1,375	50,000	51,375
Cayman Islands	160	1,120	...	...	1,581	...	2,861	50,000	52,861
Colombia	55490	17,644	4,499	8,365	7,777	3,182	96,958	50,000	146,958
Cuba	55500	37,350	...	...	...	...	92,850	50,000	142,850
Dominica	350	1,480	39	38	145	70	2,122	50,000	52,122
Dominican Republic	41500	12,880	2,789	4,117	7,665	1,378	70,330	50,000	120,330
Grenada	50	1,210	31	54	226	93	1,663	50,000	51,663
Guadeloupe	65	1,460	...	...	...	...	1,525	50,000	51,525
Haiti	38000	17,710	2,311	645	569	243	59,479	50,000	109,479
Jamaica	13000	10,220	380	1,650	4,360	1,079	30,689	50,000	80,689
Martinique	1960	2,900	...	...	...	...	4,860	50,000	54,860
Neth. Antilles	1050	1,620	...	...	...	...	2,670	50,000	52,670
St. Kitts & Nevis	200	1,350	14	54	...	93	1,710	50,000	51,710
Saint Lucia	750	1,580	43	1	1,026	177	3,576	50,000	53,576
St. Vincent/Grenadin	550	840	30	58	265	61	1,803	50,000	51,803
Suriname	2050	10,010	0	0	...	...	12,060	50,000	62,060
Trinidad & Tobago	6500	3,620	168	2,025	789	1,405	14,507	50,000	64,507
Turks & Caicos Islan	70	1,500	...	...	718	...	2,288	50,000	52,288
United States	86438	24,734	2,922	22,576	82,474	49,839	268,984	50,000	318,984
US Virgin Islands	600.0	1,540	...	...	...	...	2,140	50,000	52,140
Venezuela	80162	28,000	2,472	17,865	6,490	8,232	143,221	50,000	193,221
Costa Rica	3500	3,870	236	384	1,056	881	9,926	50,000	59,926
Guatemala	7987	1,600	512	400	426	538	11,463	50,000	61,463
Honduras	4097	5,740	279	441	565	706	11,827	50,000	61,827
Mexico	70849	32,655	4,501	5,257	14,674	11,091	139,028	50,000	189,028
Nicaragua	3386	1,820	126	77	292	270	5,972	50,000	55,972
Panama	1950	12,450	249	352	2,045	523	17,569	50,000	67,569
France (9)	...	...	...	...	...	...	...	200,000	200,000
United Kingdom (9)	...	...	...	...	...	...	...	200,000	200,000
Total							1,041,736	2,000,000	3,041,736

... = non available (na)

1) One half dollar (US\$0.5) per 100 coastal residents

2) Ten dollars (US\$10) per km of coastline

3) One half dollar (US\$0.5) per \$1,000,000 of coastal agriculture GDP

4) One half dollar (US\$0.5) per \$1,000,000 of coastal industry GDP

5) Three and one half dollars (US\$3.5) per \$1,000,000 of sea-based income

(\$1 as pollution/depletion charge and \$2.5 as betterment charge)

6) Twenty five cents (US\$0.25) per \$1,000,000 of sea-based trade

7) Subtotal of revenues. Includes the revenues from 1 to 6

8) fixed fee per member country: no less than \$50,000

9) In the case of France and United Kingdom we are taking into account the fixed fee per member country only

Source: constructed by the author with the assistance of Francisco Montoya. Estimations are based on data from table #2



Table #7. Regional Annual Revenues from Country Member Contributions for the East Central and North Pacific Regional Sea Convention Program

(HIGH SCENARIO)

Member Country	Revenue based on Coastal population (1) within 100 km from coast a1CPOP	Revenue based on Coastline (km) (2) b2CLINE	Revenue based on Coastal agriculture GDP (3) within 100 km from coast a2CAGR	Revenue based on Coastal Industry GDP (4) within 100 km from coast a3CIND	Revenue based on Sea-Based Income (5) a4SBEA	Revenue based on Sea-Based trade (6) a5SBTR	Sub-total based on Impacts and benefits (7)	Fixed membership fee (8) FMF	Total Country Regional Contributions CRC
Canada	79,956	294,600	4,488	54,007	103,873	113,551	650,474	100,000	750,474
Colombia	238,281	57,744	19,321	35,922	31,108	12,728	395,103	100,000	890,207
Costa Rica	56,000	36,120	2,201	3,580	9,859	8,219	115,978	100,000	215,978
El Salvador	122,000	12,280	3,205	5,128	4,044	4,375	151,032	100,000	251,032
Guatemala	127,797	11,200	4,780	3,731	3,980	5,018	156,506	100,000	256,506
Honduras	65,551	9,840	478	756	968	1,210	78,803	100,000	178,803
Mexico	283,397	242,580	11,701	39,055	109,009	44,365	730,107	100,000	830,107
Nicaragua	54,168	7,280	506	310	1,168	1,082	64,513	100,000	164,513
Panama	44,200	49,800	997	1,408	8,178	2,092	106,675	100,000	206,675
United States	840,000	457,380	52,994	405,249	605,789	512,458	2,873,870	100,000	2,973,870
Total							5,323,061	1,000,000	6,718,164

1) Two dollars (US\$2) per 100 coastal residents

2) Forty dollars (US\$40) per km of coastline

3) Two dollars (US\$2) per \$1,000,000 of coastal agriculture GDP

4) Two dollars (US\$2) per \$1,000,000 of coastal industry GDP

5) Fourteen dollars (US\$14) per \$1,000,000 of sea-based income. (\$4 as pollution/depletion charge and \$10 as betterment charge)

6) One dollar (US\$1) per \$1,000,000 of sea-based trade

7) subtotal of revenues. Includes the revenues from 1 to 6

8) Fixed fee per member country: \$100,000

Source: constructed by the author with the assistance of Francisco Montoya. Estimations are based on data from table #1

Table #8. Regional Revenues from Country Member Contributions for the Cartagena Regional Sea Convention Program

(HIGH SCENARIO)

Member Country or Territory	Revenue based on Coastal population within 100 km from coast a1CPOP	Revenue based on Coastline (Km) (2)	Revenue based on Coastal agriculture GDP (3)	Revenue based on Coastal Industry GDP within 100 km from coast a3CIND	Revenue based on Sea-Based Income (5)	Revenue based on Sea-Based Trade (6)	Sub-total based on Impacts and benefits (7)	Fixed membership fee (8)	Total Country Regional Contributions CRC
Antigua & Barbuda	1400	6,120	47	216	3,642	370	11,795	100,000	111,795
Aruba	800	5,440	...	...	10,023	310	16,373	100,000	116,373
Bahamas	5800	11,600	0	0	20,408	4,080	41,888	100,000	141,888
Barbados	5400	3,880	...	...	10,089	...	19,369	100,000	119,369
Belize	4800	15,440	427	605	1,729	700	23,701	100,000	123,701
Br. Virgin Islands	260	5,240	...	...	...	...	5,500	100,000	105,500
Cayman Islands	640	4,480	...	...	6,322	...	11,442	100,000	111,442
Colombia	221961	70,576	17,997	33,462	31,108	12,728	387,832	100,000	487,832
Cuba	222000	149,400	...	...	...	...	371,400	100,000	471,400
Dominica	1400	5,920	155	153	580	280	8,488	100,000	108,488
Dominican Republic	166000	51,520	11,157	16,470	30,661	5,511	281,319	100,000	381,319
Grenada	200	4,840	124	215	906	370	6,654	100,000	106,654
Guadeloupe	260	5,840	...	...	...	...	6,100	100,000	106,100
Haiti	152000	70,840	9,245	2,581	2,277	972	237,915	100,000	337,915
Jamaica	52000	40,880	1,519	6,600	17,440	4,316	122,755	100,000	222,755
Martinique	7840	11,600	...	...	...	...	19,440	100,000	119,440
Neth. Antilles	4200	6,480	...	...	...	...	10,680	100,000	110,680
St. Kitts & Nevis	800	5,400	54	215	...	370	6,839	100,000	106,839
Saint Lucia	3000	6,320	170	3	4,103	707	14,304	100,000	114,304
St. Vincent/Grenadin	2200	3,360	119	233	1,059	243	7,214	100,000	107,214
Suriname	8200	40,040	0	0	...	...	48,240	100,000	148,240
Trinidad & Tobago	26000	14,480	673	8,099	3,157	5,620	58,029	100,000	158,029
Turks & Caicos Islan	280	6,000	...	...	2,873	...	9,153	100,000	109,153
United States	345752	98,937	11,689	90,306	329,897	199,354	1,075,934	100,000	1,175,934
US Virgin Islands	2400.0	6,160	...	...	...	...	8,560	100,000	108,560
Venezuela	320650	112,000	9,889	71,460	25,958	32,927	572,884	100,000	672,884
Costa Rica	14000	15,480	943	1,534	4,225	3,522	39,705	100,000	139,705
Guatemala	31949	6,400	2,049	1,599	1,706	2,151	45,853	100,000	145,853
Honduras	16388	22,960	1,115	1,764	2,258	2,823	47,308	100,000	147,308
Mexico	283397	130,620	18,002	21,030	58,697	44,365	556,111	100,000	656,111
Nicaragua	13542	7,280	506	310	1,168	1,082	23,887	100,000	123,887
Panama	7800	49,800	997	1,408	8,178	2,092	70,275	100,000	170,275
France (9)	...	...	...	...	...	...	...	500,000	500,000
United Kingdom (9)	...	...	...	...	...	...	...	500,000	500,000
Total							4,166,946	4,200,000	8,366,946

... = non available (na)

- 1) Two dollars (US\$2) per 100 coastal residents
- 2) Forty dollars (US\$40) per km of coastline
- 3) Two dollars (US\$2) per \$1,000,000 of coastal agriculture GDP
- 4) Two dollars (US\$2) per \$1,000,000 of coastal industry GDP
- 5) Fourteen dollars (US\$14) per \$1,000,000 of sea-based income. (\$4 as pollution/depletion charge and \$10 as betterment charge)
- 6) One dollar (US\$1) per \$1,000,000 of sea-based trade
- 7) Subtotal of revenues. Includes the revenues from 1 to 6
- 8) fixed fee per member country: \$100,000
- 9) In the case of France and United Kingdom we are taking into account the fixed fee per member country only

Source: constructed by the author with the assistance of Francisco Montoya. Estimations are based on data from table #2