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EVALUATION OF IOCARIBE

This evaluation was prepared by the Secretary of the Commission, as requested by Resolution EC-XIV.6, in close collaboration with, and on the basis of a study made by, the Chairman and Vice-Chairman of IOCARIBE.

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## 1. INTRODUCTION

This evaluation considers the IOC Association for the Caribbean and Adjacent Regions (IOCARIBE) from the viewpoint of its origin, its goals and purposes, and its growth and development as the first regional association of the Intergovernmental Oceanographic Commission. It is an evaluation of IOCARIBE requested by the IOC Executive Council at its Fourteenth Session (Resolution EC-XIV.6).

This evaluation also attempts to evaluate the six operational years of IOCARIBE's experimental phase not only in terms of its strengths and achievements and those factors which have retarded or limited the desired development and the accomplishment of its stated goals but also in view of the high degree of complexity of the region, a complexity characterized by large and contrasting differences in political, economic and social conditions, and widely varying interests and national involvement in ocean affairs.

## 2. HISTORICAL DEVELOPMENT OF INTERGOVERNMENTAL CO-OPERATIVE MARINE SCIENCE IN THE CARIBBEAN AND ADJACENT REGIONS

The IOC Association for the Caribbean and Adjacent Regions (IOCARIBE) formally came into being when the Ninth Session of the IOC Assembly adopted Resolution IX.13 in November 1975, thus establishing for a six-year experimental period the first regional association of the Commission. IOCARIBE did not, however, become operational until the following year when the First Session of the Association was convened in Caracas in July 1976 and a supporting secretariat was established in Trinidad and Tobago shortly thereafter. Although not reflected in the Summary Report of the Ninth Session of the Assembly nor in Resolution IX.13 (and its Annex), IOCARIBE owes its present existence to a prior regional programme of IOC the Co-operative Investigation of the Caribbean and Adjacent Regions (CICAR). Since IOCARIBE has derived much of its present structure as well as its underlying purposes and justification from CICAR, it is desirable to review briefly certain aspects of CICAR, particularly noting its development which is relevant to the present evaluation of IOCARIBE.

### 2.1 CICAR: from 1968 to 1975

Having recognized that regional marine science development could best be advanced through co-operation, various nations interested in marine scientific research in the Caribbean - Gulf of Mexico region established CICAR in Curaçao in 1968, as a regional co-operative investigation co-ordinated by IOC. Membership in CICAR included many coastal states of the region as well as several other Member States of IOC having direct interest in the oceanography of the region. It is important to note that CICAR was organized and initially structured in 1968 as an international co-operative marine scientific investigation in the Caribbean area.

Conceptually, CICAR was patterned after the International Indian Ocean Expedition, a co-operative, multi-national, ocean research programme co-ordinated by IOC. To a large degree, the initial orientation of CICAR investigations was derived from the First CICAR Symposium convened immediately prior to the First Session of the International Co-ordination Group for CICAR in 1968. The Symposium reviewed the status of marine science development in the Caribbean and adjacent regions, and thereby the background for establishing

guidelines for further planning of CICAR's future programme of co-operative oceanographic investigations. As early as 1971, however, it was evident that the planned oceanographic undertakings, which were similar in scope to those of the International Indian Ocean Expedition, were neither feasible nor justifiable in the CICAR area. Specifically, many countries of the region were unable to participate meaningfully in the large-scale ocean research programmes originally recommended by the International Co-ordination Group for CICAR, because of inadequate financial resources and supporting facilities but also, and even more critically, a shortage of scientific manpower and infrastructure. As a consequence of such limitations, the CICAR research programme soon became primarily the aggregate of various national oceanographic or marine-oriented investigations conducted more or less independently by Member States in the CICAR framework. The principal exception to this particular evolutionary trend was the initiation in 1971 of the CICAR Survey Months, a co-ordinated, two-year multi-national activity to occupy standard oceanographic sections for quasi-synoptic physical observations in the Caribbean basin.

Stated most simply, CICAR, during its seven years of operational existence, was forced by circumstances within the region to abandon its original purpose as a co-operative expedition and to re-orient its aims to take into account the needs and desires of the countries in the region - particularly the development and enhancement of national capabilities of the coastal Member States of CICAR to undertake the agreed programmes in the marine sciences. The appropriateness and eventual justification of the re-orientation of CICAR is adequately evidenced by the Second CICAR Symposium convened in Caracas immediately prior to the Eighth Session of the ICG for CICAR in 1976; the five-day symposium provided an opportunity for reporting the scientific results achieved during seven years of CICAR.

## 2.2 The Transition from CICAR to IOCARIBE

Although the field phase of CICAR was to be officially terminated at the end of 1975, the benefits gained by the countries of the region from the close collaboration that had been developed under an evolving CICAR structure had already been recognized. The desire for the formation of a successor mechanism to ensure the continuation of international co-operation and mutual assistance in the Caribbean region had been growing for several years. This desire was formally expressed by the International Co-ordination Group for CICAR at its Seventh Session in April 1975, in Mexico, D.F.

During this important meeting, much of the discussion focused on a critical working document entitled "CICAR: Past, Present and Future" (doc. IOC/INF-238), prepared by Dr. Albert Koers, a consultant to IOC. Equally prominent during this meeting was the interest and attention directed to Agenda Item 11, "Future Co-operation in the CICAR Area". Among the recommendations adopted by the ICG for CICAR at its Seventh Session, three pertained directly to the desired formation of an organization to succeed CICAR and outlined its objectives and its organizational structure.

By Recommendation CICAR-VII.1 (Consultant's Report) the International Co-ordination Group accepted the report, "CICAR: Past, Present and Future" and, in noting that many of the conclusions of the report were relevant not only to the establishment of a successor mechanism to CICAR, but also the functioning of such a mechanism, recommended that the future international organization for marine science in the greater Caribbean region take into account the recommendations contained in this report (doc. IOC/INF-238).

Another significant measure adopted was Recommendation CICAR-VII.10 (General Objectives and Guidelines for Future Co-operation in the CICAR Area). Reflecting the conceptual change which CICAR has undergone, particularly since the Fourth Session of the ICG for CICAR (Port of Spain, March 1971), this Recommendation established the justification for a successor body to CICAR by relating the general regional marine science objectives which had been agreed to by the Fourth, Fifth and Sixth sessions of CICAR to the desired socio-economic development and general well-being of the countries in the region. These general objectives, which are given below, defined the operational philosophy of the successor mechanism which was later to become IOCARIBE:

1. To increase scientific and technological development in the marine sciences in the region,
2. To widen knowledge of and to facilitate optimum use of the natural resources of the region,
3. To pool human and material resources of the region for the solution of common marine problems (of the region),
4. To identify and define the regional marine problems or those of common interest to two or more countries, establishing and co-ordinating measures for their solution.

In addition, general guidelines were recommended for future co-operation, for scientific programmes desired in the region, and on the basic need to develop the necessary human resources through training, education and mutual assistance in the marine sciences (TEMA).

The International Co-ordination Group also adopted Recommendation CICAR-VII.11 (Structure of the Body which will succeed CICAR). This specifically recommended that "the IOC at the Ninth Session of its Assembly, establish within the IOC a new subsidiary body for marine science co-operation in the Caribbean and adjacent regions". In addition, the Recommendation suggested a general organizational structure of the "new subsidiary body" and called for the formation of a full-time regional secretariat to provide services and assist where required in the development of programme activities in the region.

Lastly, taking into account the CICAR history of expressed concern for development of human resources, it was not, therefore, a coincidence that the "First IOC ad hoc Regional Meeting for TEMA" was convened immediately prior to the Seventh Session of the ICG for CICAR, also in Mexico, D.F., and was oriented toward the needs of the Caribbean region. As a direct result of the concurrent scheduling of the two meetings, the TEMA concept was strongly emphasized, not only in Recommendation CICAR-VII.9, (Training, Education and Mutual Assistance) but also in various parts of the Summary Report and in other Recommendations of the Seventh Session.

### 2.3 Summary

Three important factors emerge from the preceding review of those historical developments and activities during seven years of CICAR which led to the establishment and structure of IOCARIBE as the first regional association of IOC.

Although IOCARIBE immediately succeeded CICAR in time and place, the two organizations are different. When the Secretary of IOC addressed the First Session of IOCARIBE in Caracas in 1976, he stressed the idea, "that IOCARIBE is not a continuation of CICAR under a different name, it is a different type of body altogether". The Secretary further underscored the fact that IOCARIBE had been established in the region to promote and stimulate the long recognized benefits of international co-operation and mutual assistance in marine science development.

The second important factor contributing to the present conceptual basis of IOCARIBE derives from a consideration of the guidelines and objectives suggested for a "successor mechanism" during the Seventh Session of the ICG for CICAR in April 1975. It became quite evident that the countries in the region, while open to co-operation with other Member States, desired to pursue programmes which were relevant to overall regional requirements and priorities for marine science development. The general guidelines for future co-operation given in Recommendation CICAR-VII.10 emphasized studies of marine resources, coastal management and marine pollution.

The third and probably most critical factor pertains to human resources. As has been indicated above, one of the basic reasons for the progressive change in CICAR from the expedition concept to that of international co-operation and mutual assistance was the recognition as early as the Fourth Session of the ICG for CICAR in Port of Spain in 1971 that, without adequately prepared scientific manpower and functional marine science infrastructures, participation by many Member States in regional marine science programmes would be seriously restricted. Consequently, one of the fundamental objectives of the evolving CICAR was the development of local capabilities and facilities in the field of marine science and the preparation of marine scientists and technicians in the developing countries through training, education and mutual assistance in the marine sciences (TEMA). It was simply the recognition that appropriate marine science infrastructures had to be strengthened or, in some cases created, in many developing CICAR Member States.

IOCARIBE was conceived, organized, and has grown from the belief that regional marine science programmes of benefit to more than one country can best be undertaken through continuing co-operation and mutual assistance. IOCARIBE, consequently, is a regional association in the truest sense. And to a certain degree it has produced the benefits desired by the membership. An evaluation of IOCARIBE's successes, as well as its shortcomings, however, is now required and timely, as called for by Resolution EC-XIV.6.

### 3. IOCARIBE: ITS STRUCTURE AND PROGRAMME DEVELOPMENT (DESCRIPTION AND OBSERVATIONS)

Having completed approximately six years of activities in the experimental phase of IOCARIBE, it is now necessary to assess the various activities that have been recommended, planned and developed by the Association, not only in terms of strengths and accomplishments but, probably more importantly, in terms of those factors that have impeded or detracted from the development and growth that was desired and anticipated by the Member States and by the Commission.

The fundamental purposes of assessing the strengths and weaknesses of IOCARIBE after six years of operations is to provide the basis for future developments, specifically with a view to taking measures that, on the one hand, will amplify and enhance the positive aspects of the Association and, on the other hand, correct those situations that have hampered the desired development, and to identifying mechanisms for improvement.

To facilitate this assessment, several different aspects of IOCARIBE will be examined in the following sections. Specifically, this assessment will include the organization and structure of IOCARIBE, its programme development and implementation, and Member States' participation. As a corollary to this assessment, a re-examination of the Association's original objectives and guidelines, as determined in 1975, is also included.

### 3.1 Organization and Structure

IOCARIBE was formally established by Resolution IX-13 and, in its annex, provided the Terms of Reference for the Association (see Annex I). It is this 1975 Resolution, consequently, that has provided the guidelines for IOCARIBE's organization and structure, as well as the development of the first regional association of the Commission.

#### 3.1.1 Resolution IX-13

The outstanding aspect of this Resolution is that the IOC Assembly at its Ninth Session responded positively to the Recommendation of the Seventh Session of the International Co-ordination Group for CICAR to establish a successor body which would continue to support and benefit the broad development of marine sciences in the Caribbean region. The net effect of Resolution IX-13, consequently, is positive: IOCARIBE was formed, and it has grown and developed.

In detail, and most certainly in the retrospect of six years of IOCARIBE development and experience, there are certain results or effects of Resolution IX-13 that had not been anticipated but which have subsequently hindered the development of IOCARIBE as a regional subsidiary body of the Commission. Several of these effects are further discussed in following sections.

a. The experimental 6-year pilot structure of IOCARIBE, has definitely had a negative psychological effect, resulting, in all too many Member States, in a "wait and see" attitude. This has resulted in deferred or at least minimal national commitments by many Member States to participate actively in IOCARIBE programmes or become involved in the initial efforts to attain the desired goals of the Association.

b. Conditions of membership in IOCARIBE were defined in the Terms of Reference annexed to Resolution IX-13 to include "all Member States of the Commission in the region and other interested Member States". This condition assumed that all IOC Member States in the region were indeed interested in participating in regional activities, an assumption that has not been borne out in practice, and which quite possibly may have given a misleading sense of IOCARIBE strength, and solidarity of purpose.

c. Other than mentioning the need to maintain suitable representation at Association sessions, the fundamental responsibilities of IOCARIBE Member States to the Association appear never to have been adequately considered by the Ninth Session of the IOC Assembly (cf: Section 7.2 of the Summary Report), and they were left essentially undefined in the Terms of Reference.

Lacking any clear guidance, national responsibilities to the Association and Member State participation in IOCARIBE activities subsequently have remained undefined and thereby unpredictable for planning and development purposes.

d. Neither the budgetary requirements nor the sources of funding for the Association's various programmes and functions were adequately considered, nor was it clearly stated and understood that a major proportion of the funding of the Association's activities must come from voluntary contributions of Member States.

e. The recommended establishment of a full-time secretariat to provide the necessary supporting services for IOCARIBE activities did not address the related financial and budgetary requirements and sources for salaries and general office support. In addition, it was assumed, incorrectly as it turned out, that advantages of co-location of the secretariat with the elected IOCARIBE Chairman out-weighed the numerous disadvantages of periodic international transfers of office and staff.

To one degree or another, the above-mentioned factors related to the organization and structure of IOCARIBE have detracted from, or restricted, the desired and anticipated growth and development of the Association. With the exception of the first factor, the experimental-period concept, the other points raised here should be taken into account when considering the formation of any permanent regional subsidiary body of IOC.

### 3.1.2 Representation and Liaison

The annex to Resolution IX-13, containing the Terms of Reference for IOCARIBE, as well as Recommendation IOCARIBE-I.8, requests Member States of the Association to appoint National Associates as a means of maintaining effective channels of communication between the regional supporting secretariat and the Member States during the two-year intersessional periods. In addition, IOC Resolutions have requested Member States to nominate National Training Contacts for TEMA and to form National Oceanographic Committees as mechanisms to improve liaison and communication (See doc. IOC/INF-419). IOCARIBE Member States' compliance with these various resolutions and recommendations requesting identification of national contacts has been only partial.

An up-to-date listing of official contacts in IOCARIBE indicates the following: a) Six of the 21 Member States have not nominated National Associates for IOCARIBE nor have they provided "Other National Addresses" to which correspondence should be directed; b) Six of the 21 Member States have not identified National Training Contacts for TEMA; c) Twelve of the 21 Member States have not established National Oceanographic Committees or equivalent marine science co-ordinating bodies.

Although excellent lines of communication and interaction exist with several Member States, it is readily apparent that liaison and communication between IOCARIBE and Member States that lack marine science co-ordinating bodies is extremely difficult. In some cases, contact does not exist at all. It should be pointed out that this situation exists despite continuing efforts on the parts of the Secretary of IOC and the Assistant Secretary for IOCARIBE to remedy this shortcoming. This lack of communication has been, and continues to be, one of the most serious problems confronting IOCARIBE development.

Also, some Member States operate through different internal mechanisms or nominate different persons to IOCARIBE and IOC delegations. All too frequently, these two groups do not maintain contact and interchange information regarding their respective roles, so that affairs have suffered accordingly. In this regard, it should be noted that such international liaison problems are not restricted to IOC; it also occurs with other international marine organizations. As a result, national policy or positions of Member States regarding IOC and IOCARIBE are sometimes inconsistent. Undoubtedly, the establishment of international co-ordination mechanisms, such as National Oceanographic Committees (recommended in Resolution X-19 at the Tenth Session of the Assembly or more recently under the Comprehensive Plan for a Major Assistance Programme to Enhance the Marine Science Capabilities of Developing Countries (Res. EC-XV.5)), would improve communication and capabilities to respond not only to national infrastructure needs but also the ability to interact meaningfully with regional and global programmes of IOC in the marine sciences and ocean services.

Undoubtedly, one of the most positive indications of IOCARIBE's success comes from the Association's Member States. The Third Session of IOCARIBE, convened in Cancún, México, in December 1980, having evaluated the long history of collaboration in the marine sciences among Member States, expressed the desire to continue the benefits derived through regional co-operation, and recommended to the governing bodies of the Commission that IOCARIBE be constituted as a regional Sub-Commission of IOC. The Fourteenth Session of the Executive Council, upon reviewing this recommendation, instructed the Secretary to prepare an evaluation of IOCARIBE (this document) and a conceptual document on Sub-Commissions, for consideration by the Twelfth Session of the Assembly. The Executive Council, at its Fifteenth Session (Paris, 1-6 March 1982), after an extensive debate on the Sub-Commission concept, *"concluded that circumstances may arise where the regional activities of the Commission may need a status and continuity not provided for by any of the existing arrangements available to the Commission and that it would be useful to agree upon the concept of regional Sub-Commissions and to establish such a new category of subsidiary bodies so that appropriate action can be taken by the Assembly if the need to create a particular Sub-Commission is expressed by directly concerned Member States."*

*"The Council instructed the Secretary to transmit Document IOC/EC-XV/8 Annex 3, together with the summary of the debates in the Council, to all the Member States, and, in the light of the comments made by the Council as well as any other comments he might receive from Member States, to redraft it in a more concise and general form for consideration at its next session with a view to presenting it to the Assembly for approval."*

*"The Council took the position that certain basic conditions and circumstances should be taken into account when a decision to establish a Sub-Commission is being taken; the most important are:*

- (i) *the countries of the region are already actively engaged in co-operative investigations or have demonstrated their interest in doing so;*
- (ii) *an existing regional subsidiary body of the Commission formally requests the Assembly to recognize it as belonging in this new category of subsidiary body;*
- (iii) *the budget and secretariat services required for the effective functioning of a Sub-Commission can be made available."*

### 3.1.3 Regional secretariat support

Responding to Recommendation CICAR-VII.11, which recommended the creation of a full-time secretariat in the region to facilitate co-ordination of activities and programme development, Resolution IX-13 invited "*the Director-General of Unesco, to take the necessary steps to establish a Regional Secretariat which shall, during the intersessional period until the first session of the Association be co-located with the International, Co-ordinator for CICAR and thereafter with the Chairman of the Association*".

Although this paragraph of Resolution IX-13 recommended the establishment of a full-time regional secretariat for IOCARIBE, it is, in retrospect, inadequate in two aspects. First, it did not address the related problems concerning budget and staff. Second, the resolution required the regional secretariat to be co-located in the home country of the elected IOCARIBE Chairman.

The fact that there was little consideration of support under the regular budget of the Commission for the activities of the IOCARIBE Secretariat has had negative consequences. Funding was tacitly left to the generosity and initiative of Member States during the experimental period of IOCARIBE. It is obvious that if such funding is not forthcoming, the Secretariat cannot function properly. It should be noted that this particular point applies not only to the establishment and support of the IOCARIBE secretariat office in the Chairman's home country, but also refers to the sometimes ephemeral sources of salary support for the IOC Assistant Secretaries for IOCARIBE.

The co-location requirement in Resolution IX-13 has had the advantage of allowing personal contact between the Chairman of IOCARIBE and the IOC Assistant Secretary for IOCARIBE. Such contact, however, could be as adequately maintained through correspondence, telephone calls and occasional travel, as in the case of the Chairman of IOC and the Secretary of the Commission. In view of the experience gained in the transfer of the IOCARIBE office from Trinidad and Tobago to Costa Rica in 1979, the co-location requirement needs to be reconsidered in favour of a permanently located office in an IOCARIBE Member or Unesco office in the region.

Regarding the full-time professional staff assigned to the supporting secretariat for IOCARIBE, the original planning took into account the idea that the diversity of work and services required, being similar in scope to those of the IOC Secretariat, would require a minimum of two full-time staff members. From April 1977 to August 1978, IOCARIBE was served by two IOC Assistant Secretaries, made available by Member States to Unesco/IOC for that purpose (through contributions to the IOC Trust Fund; through secondment of an Associate Expert). During the remaining four and a half years, and despite attempts to obtain additional personnel, the supporting secretariat for the Association has been staffed by one IOC Assistant Secretary (under IOC Trust Fund). As a result, the implementation of the programme of the Association has been hampered. Too often, routine work and incidental affairs must be assigned a low priority.

In addition, when traveling on official mission or taking vacation or home leave, the services normally provided by the IOCARIIBE secretariat are substantially reduced, a situation which would be altered by the assignment of Associate Experts to the office.

A final observation pertains to the relationships and interaction between the supporting secretariat for IOCARIIBE based in Costa Rica and the IOC Secretariat in Paris. Some difficulties in communication due to distance have progressively been overcome and the situation is now improving. To effect better communication and interaction between the supporting secretariat for IOCARIIBE and the IOC Secretariat, the IOC Assistant Secretary for IOCARIIBE has regularly visited Headquarters in Paris, at least twice a year and for two to three weeks at a time. In addition, IOC staff members visit the IOCARIIBE office for discussions during their missions in the Caribbean region. Such contacts have greatly improved the necessary interaction, and the administrative and technical backstopping of IOCARIIBE. As a result, there is improved support, on the one hand, for IOCARIIBE activities from headquarters and, on the other hand, increased involvement by IOCARIIBE in IOC global programmes and activities.

### 3.2 Relationships with Other Organizations

#### 3.2.1 In the United Nations System

Following the basic philosophy of ICSPRO, as well as mandates contained in various resolutions and recommendations of IOC and IOCARIIBE, the supporting Secretariat for IOCARIIBE has developed effective forms of co-operation at the regional level with a number of international organizations having interest in the many facets of marine affairs in the area. Among the United Nations family, IOCARIIBE has worked closely and profitably with the following: Unesco's Division of Marine Sciences and the Unesco Regional Office for Science and Technology for Latin America and the Caribbean (ROSTLAC, in Montevideo); the U.N. Ocean Economics and Technology Branch; the Food and Agricultural Organization of the United Nations, and the FAO Western Central Atlantic Fisheries Commission (WECAFC), through the FAO/UNDP WECAF Project, formerly based in Panama; the U.N. University; IMO; and the U.N. Environment Programme (Regional Seas Programme, and Caribbean Environment Project now based in Jamaica).

#### 3.2.2 Others

Excellent working relations exist with the Organization of American States, particularly its Multinational Marine Science Programme.

Among the Non-Governmental Organizations active in the IOCARIIBE region, co-operation and the interchange of information and ideas have proven effective and valuable; they are: the Caribbean Conservative Association (based in Barbados), the Caribbean Conservation Corporation, the Island Resources Foundation, the IUCN (Caribbean environmental mapping programme), the Association of Island Marine Laboratories, the Gulf and Caribbean Fisheries Institute and a number of local conservation societies and regional scientific groups.

The degree of interaction between IOCARIIBE and the organizations mentioned above has been highly variable - in some cases taking the form of direct involvement in multi-agency workshops or training exercises, in other cases taking the form of keeping each other informed of activities and plans.

Whatever the level of IOCARIBE's involvement, it has almost always produced positive results, and invariably the strengthening of IOCARIBE's image as a regional marine science body.

### 3.3 Programme Development

The First (July 1976), Second (August 1978), and Third (December 1980) Sessions of IOCARIBE adopted a total of 39 Recommendations. They may be grouped as: a) regional and global scientific programmes; b) services in support of the marine sciences; c) training, education and mutual assistance (TEMA); d) organization and structure of the Association; and e) relationships with other organizations. The first three categories of adopted recommendations (scientific programmes, services and TEMA) together comprise the major components of the IOCARIBE programme of work and, in detail, reflect the essential goals of the Association as set out in the Summary Report of the Seventh Session of the ICG for CICAR "to pursue programmes which are relevant to specific requirements and priorities for marine science development among Member States". In addition, Resolution IX-13 requires IOCARIBE to promote and oversee relevant activities and programmes of the Commission in the region. The development and implementation of the three-fold IOCARIBE programme of activities are briefly described and assessed below.

#### 3.3.1 Scientific Programmes

The various IOCARIBE recommendations relating directly to the marine sciences have been structured and developed along similar lines. The major purposes of an initial marine science recommendation is to identify a desired research project of regional scale and of immediate importance to Member States. Typically, the recommendation does not go into details or the specifics of the desired research but rather relegates further definition of the research to a meeting of experts, organized under flexible terms of reference provided in the recommendation. This can be called the first phase of scientific programme development.

The second phase consists of the recommended workshop, composed of experts from the region and other interested Member States; the workshop defines and makes recommendations on the desired research activity. The workshop examines the research problem not only from the viewpoint of scientific merit but also the programme's applicability to the expressed needs of the region. In addition, the workshop attempts to identify the various human and material resources required for the eventual implementation of the defined programme.

The third phase of scientific programme development begins with the formation of a steering committee for the programme or scientific project. The initial purpose of the steering committee is to draw up a scientific action plan, a timetable and to designate principal participating investigators, most of whom ideally would be members of the Steering Committee itself. Ultimately, the scientific co-ordinator and his committee, with the assistance of the supporting Secretariat for IOCARIBE must seek adequate national commitments to participate in the agreed research. These embrace all facets of research, from the field and laboratory activities, through data collection and reduction, to the final report preparation and publication of results.

Of the several regional scientific programmes that have been recommended during the three Sessions of IOCARIBE, two programmes are being implemented: marine petroleum pollution monitoring and research (CARIPOL), which is the first regional contribution to IOC's global programme of Marine Pollution Monitoring - Petroleum (MARPOLMON-P); and scientific programmes in support of fisheries projects, a precursor of IOC's proposed global programme on Ocean Science in relation to Living Resources (OSLR). Both programmes may be considered as being well advanced, and as representing a contribution to the achievement of the regional goals of the Association.

In the case of IOCARIBE's Marine Pollution Programme, CARIPOL, an Action Plan was adopted through Recommendation IOCARIBE-II.2 and a Scientific Co-ordinator and a Steering Committee consisting of active marine pollution chemists from the region were nominated. Under the direction of the Co-ordinator and of the Steering Committee, implementation was initiated through a training course given in English and Spanish in Costa Rica (32 trainees from the region prepared to conduct the monitoring and research activities), and through the acquisition of analytical instruments assigned by the Steering Committee to selected Member States. Six spectrofluorimeters have been obtained through IOC and the generous purchases by the United Kingdom and France. CARIPOL data from participating countries are routinely entered in machine-readable format in the IOCARIBE Regional Data Centre (located in the U.S. National Oceanographic Data Centre) and in the World Data Centre (Oceanography) A.

The IOCARIBE oceanographic research programme in support of fisheries projects embraces three sub-programmes: oceanographic and environmental dynamics in the Lesser Antilles; biology and distribution of spiny lobsters; and a region-wide Symposium on Sea Turtles. Two Steering Committees, one for Antillean oceanography and one for the Sea Turtle Symposium have been formed to develop and implement the general plans recommended by the IOCARIBE Interdisciplinary Workshop on Scientific Programmes in Support of Fisheries Projects (IOC Workshop Report No. 12), convened in Fort-de-France, Martinique, 28 November - 2 December 1977. For convenience, the spiny lobster project is under the supervision of the Antillean Oceanography Programme Steering Committee.

The Co-ordinator of the Antillean Oceanography Programme and the Steering Committee of senior marine scientists prepared a "first phase action plan" which was subsequently adopted by IOCARIBE at its Third Session, and was recommended for implementation. However, with the exception of some studies of genetic identification of spiny lobster populations (using electrophoresis), the identification of requisite training facilities and support, and the location of a source of modern tide gauges, the Antillean Oceanography Programme has not advanced significantly in the last year.

The above-mentioned Workshop recommended, inter alia, that a region-wide investigation of sea turtles be initiated to provide the necessary data upon which sound management practices could be based for the rational use of this valuable living resource. The outgrowth has been the development, in co-operation with the FAO/WECAF Project and with the funding support of the U.S.A., of the Western Atlantic Turtle Symposium (WATS) which will be convened in Costa Rica in 1983. At the present time

thirty governments from the IOCARIBE region have agreed to send experts to participate in WATS. Each country is preparing a National Report based on approximately one year of pre-Symposium research. To this end, National Report Formats and a Manual of Sea Turtle Research and Conservation Techniques have been published in English and Spanish. The Symposium activities are under the direction of a Steering Committee composed of sea turtle biologists and resource managers from the region, and the service of a technical team of experts is available to participating countries should they require assistance in the preparation of their National Reports. Symposium attendance is now expected to be approximately 600.

A third scientific programme recommended by IOCARIBE is referred to as "Environmental Geology of the Coastal Area". This recommendation was considered by the IOCARIBE Workshop on environmental Geology of the Caribbean Coastal Area held in Port of Spain, Trinidad and Tobago, 16-18 January 1978 (IOC Workshop Report No. 13). Owing to the nature of environmental geology research, and particularly the map scale requirements, relatively small "pilot areas" were selected for initial research efforts and for the development of appropriate techniques and methods.

Although necessary from a practical viewpoint, the "pilot area" approach has not succeeded nor has it gained regional support. Most simply, IOCARIBE Member States not within the geographic boundaries of the "pilot areas" have expressed little interest in participation or in providing assistance to the programme. Pilot area studies apparently do not lend themselves to regional interest. The Gulf of Paria, a pilot area recommended by the above-mentioned Trinidad Workshop may, however, soon be implemented, since the two countries directly concerned, Venezuela and Trinidad and Tobago, are now defining national research plans for the Gulf and, it is hoped, will join in a co-operative and co-ordinated research programme. The possibility for France, to provide support to this study (under bilateral arrangements with Venezuela), is under active consideration.

### 3.3.2 Ocean services

Recognizing that marine science cannot be conducted efficiently without the support of certain essential services, the three Sessions of IOCARIBE have recommended the establishment of ocean services to support the needs of, and generally to assist, the expanding marine science community in the region.

The major service development to date has been in the area of oceanographic data management. The U.S. National Oceanographic Data Centre in Washington D.C. has acted as the IOCARIBE Regional Data Centre, and has provided the personnel and funding to co-ordinate and support regional data management. Data from the CARIPOL marine petroleum pollution monitoring and research programme are routinely entered in the data management system.

In addition, it has been recognized in several IOCARIBE recommendations that, within most developing countries in the region, the majority of working marine scientists encounter great difficulty in obtaining documentation and information necessary for their research. A four-man ASFIS team visited the region in June 1978 to define and evaluate the documentation - information situation. The team recommended, among other measures, that a network of co-operating bibliographic institutions be established with a

central co-ordinating and service facility. This matter is being further studied by a working group of documentation specialists from the region. Funding, from extra-budgetary sources, for this network and for its services, however, remains a problem to be resolved and which is under study.

The supporting Secretariat for IOCARIBE has also acted to disseminate non-periodic information to Member States pertaining to up-coming activities such as technical meetings, education and fellowship opportunities, cruise participation and shipboard training, national programme plans, etc. The implementation of recommendations concerning supporting services has remained at a relatively low level or has been terminated, as in the case of the Mexican Sorting Centre (CPOM), developed with the support of Unesco; this Centre was closed as a regional service, because of insufficient use by scientists of the region.

### 3.3.3 Training, education and mutual assistance in the marine sciences

Although all three Sessions of IOCARIBE strongly supported and endorsed the vital TEMA concept, it is interesting to note that an important component of the TEMA goals accomplished in the region during the last six years has been achieved through relatively informal mechanisms. Specifically, many opportunities and arrangements for training, education and mutual assistance have frequently been made through bilateral and, very often, personal contacts between scientists who have come to know each other through CICAR and IOCARIBE activities rather than through the more formally structured channels of TEMA. This observation is particularly obvious at the "grass roots" level of implementing the basic purpose of the IOC Voluntary Assistance Programme (VAP) where a letter or telephone call quickly and simply accomplishes the desired results.

In addition, the supporting Secretariat for IOCARIBE often receives information, frequently with very short lead-time, pertaining to a wide variety of training and education opportunities. It has been the practice to circulate this information to potential beneficiaries in the region, either formally by means of Circular Letters, or informally through telephone calls or letters. To date, this has been a successful and an efficient system to provide ad hoc TEMA opportunities to the IOCARIBE marine science community.

This is not to imply that more structured and formalized implementation of TEMA programmes is not accomplished in the region. Shipboard training opportunities are routinely announced and four participants received travel support from TEMA funds, and, certainly, the Workshop on Coastal Area Management in the Caribbean Region, held in Mexico City, 24 September - 5 October 1979 (IOC Workshop Report No. 26), involving 33 participants and 10 lecturers, and the recently completed series of CARIPOL petroleum training and calibration exercises which prepared 32 participants, have followed the TEMA approach to scientific and technical manpower development. The point is that IOCARIBE Member States feel free to satisfy their TEMA needs by the most practical and efficient methods available, whether they be formally or informally arranged. Expediency and positive outcome, however, seem always to be guiding principles.

#### 4. MEMBER STATE PARTICIPATION

##### 4.1 General Remarks

IOCARIBE's three-fold regional programme and global programmes (as they are applicable), ocean science, ocean services and support, and TEMA, comprise a broad spectrum of activities which has been identified and recommended by the Member States of the Association, and is oriented to achieve its short- and long-term goals. Consequently, it is the extent of support to, and level of participation in the IOCARIBE programme, by the Member States, that will determine the degree to which the desired goals are attained. Although a certain amount of assistance may be sought from various international and intergovernmental institutions or agencies, or from national donor agencies, implementation of the IOCARIBE programme in the long term must depend on individual national commitments of Member States to participate actively in appropriate IOCARIBE activities.

Since programme success and participation of the Member States are inextricably linked, any evaluation of IOCARIBE or an assessment of its programme development must include an examination of Member State involvement in the Association. The following sections briefly review: 1) the IOCARIBE membership and Member State interaction with, and response to, the supporting Secretariat; 2) non-monetary commitments to provide manpower, facilities, and services; and 3) the financial support that has been provided to the IOCARIBE programme of work.

##### 4.2 IOCARIBE Membership

The Member States of IOC that were to participate in the preceding Co-operative Investigation of the Caribbean and Adjacent Regions (CICAR) were never formally identified. CICAR rather loosely comprised those Member States that desired to take part in these Co-operative Investigations. However, when IOCARIBE was established as a successor to CICAR, Resolution IX-13 defined IOCARIBE membership as comprising all Member States of the Commission in the region and other interested Member States. Consequently, IOCARIBE initially comprised 17 Member States in July 1976, 15 from within the region and 2 from outside the region. In the ensuing six years, 4 countries within the region joined IOCARIBE. Information pertaining to IOCARIBE Member States and other governments within the region is given in Annex II.

Contact and co-ordination between IOCARIBE Member States and the Association is to be maintained through a system of national focal points, specifically National Associates, National Training Contacts and National Oceanographic Committees. As was mentioned previously, the system remains incomplete. In many cases, Member States have not nominated national contacts. In other cases, the named contacts demonstrate varying degrees of responsiveness. As a result, routine and effective interaction between national focal points and the supporting Secretariat for IOCARIBE has been dependably established with only a few Member States; there is only fair to poor communication and interaction with the other Member States.

On the positive side, however, it is precisely this type of support which has advanced several IOCARIBE programmes. To cite a few examples, the U.S.A. and Canada (not an IOCARIBE Member State) have provided the services and have supported the responsibilities and functions of the scientific

Steering Committee Chairmen for marine pollution monitoring and for ocean research in support of fisheries projects. In addition, training and education activities, as well as other forms of mutual assistance, such as the distribution of surplus equipment, have been arranged. Shipboard training is routinely offered by the U.S.S.R., and various academic fellowship opportunities have been provided by the U.K., Mexico and others. Offers to train chemists from the region in marine pollution sampling and analysis procedures on an ad hoc basis have been extended by highly qualified laboratories in Costa Rica, Jamaica, Mexico, Trinidad and Tobago, and the U.S.A. Laboratories, research vessels, meeting facilities and logistic support, for training exercises, have been generously provided by many countries. Research participation of marine scientists throughout the region, who are working within IOCARIBE programmes, such as CARIPOL (marine petroleum pollution monitoring) are being supported by their respective institutions and/or their governments.

The list of the important non-monetary support to IOCARIBE programmes undoubtedly could fill many pages. However, it would seem obvious, without going into further details, that IOCARIBE has been rather well supported in this essential form of mutual assistance not simply to the Association, but ultimately to the benefit of the countries of the region. In summary, the development of such necessary though intangible support has been one of the outstanding successes of IOCARIBE in its relatively short existence.

In conclusion, it should be noted that the offices of the Resident Representatives of the United Nations Development Programme in Trinidad and Tobago and in Costa Rica have generously provided logistical support (communications, etc.) and certain administrative services to the supporting Secretariat for the Association.

#### 4.3 Financial Support

As was pointed out briefly in the section assessing IOCARIBE's organization and structure, a proper analysis was never made of the financial and other requirements of a regional subsidiary body of the Commission such as IOCARIBE nor was there a full realization by Member States of the need for extra-budgetary financial support to the various programmes and goals of the Association. To a certain degree this is understandable, in view of the facts that: (a) IOCARIBE was the first venture of the Commission into the relatively unknown area of regional associations; and (b) an IOC regional subsidiary body would most likely have a structure analogous to the parent body, IOC. Certainly, there was not sufficient consideration given to the financial and budgetary aspects and other requirements of the Association. Some Member States, however, recognized that, beside the support provided to IOCARIBE through the budget of IOC, extra support and funding must be received from the Member States themselves in due time.

The financial support provided by Member States during six and a half years of operations, from July 1976, projected through February 1983, is given in the annotated financial summary in Annex II; funding is identified by donor country, and is assigned to one of four categories of support briefly described below.

#### 4.3.1 Contributions to the IOC Trust Fund earmarked for IOCARIBE

This category includes Member States contributions to the IOC Trust Fund that have been specifically earmarked by the donor country for IOCARIBE. The majority of the funds was allocated to support the Unesco posts for the two full-time IOC Assistant Secretaries for IOCARIBE; this support covers salary, travel funds, and administrative costs. Additional funds have been contributed to the Trust Fund to support specific IOCARIBE programmes. The total of the contributions to the IOC Trust Fund in support of IOCARIBE, so far, is \$584,000.

#### 4.3.2 Secretariat support by host countries

The supporting Secretariat for IOCARIBE is required to be located in the home country of the biennially elected Chairman. Since sources of finance for the supporting Secretariat for IOCARIBE were not identified by Resolution IX-13, it has fallen to the home countries of the Chairman elected so far to provide the physical facilities, salaries of local personnel, photocopying services, etc. Very generous support has been provided by the Governments of Trinidad and Tobago and of Costa Rica. Total host country support to the supporting Secretariat for IOCARIBE, so far, is \$240,000.

#### 4.3.3 Meeting support by host countries

Local costs of IOCARIBE's biennial sessions and its various workshops, training exercises and other meetings have, to a major degree, been borne by the country in which the meeting was convened. Such necessary host country support for IOCARIBE has been invariably adequate and, along with attendant local services provided (e.g., secretariat assistance, copying, transportation etc.), has been a major factor leading to the successful development of the Association. Host country support to IOCARIBE meetings, so far, is \$130,000.

#### 4.3.4 Technical programme support

This category includes those direct monetary contributions by Member States to, or purchase of instruments for, specific technical programmes being developed by IOCARIBE. Total support for technical and scientific programmes, so far, is \$108,000.

#### 4.3.5 IOC budgetary support

Funds from the IOC budget have been allocated to the IOCARIBE programme of work, for biennial meetings, workshops and training exercises, meetings of working groups and steering committees and for the operations of supporting Secretariat. Total contribution from the IOC regular budget, so far, is \$80,000.

#### 4.3.6 Summary remarks

A brief examination of the financial compilation in Annex III indicates that IOCARIBE has been supported financially by more than a million dollars in six and a half years. It should also be noted that financial support for IOCARIBE has come from 9 Member States, which is less than half of the 21-nation membership. It is also interesting to note in Annex III that funds required for maintaining the supporting Secretariat for IOCARIBE (IOC Assistant

Secretary posts, maintenance funds, and host country support) amount to approximately 75% of the total funding provided to IOCARIBE, with the remaining 25% being used for various aspects of IOCARIBE programme development.

#### 4.4 Non-monetary Support

Although direct funding is critical to the immediate, as well as to the on-going, development requirements of the Association, it is the collective commitments of Member States to provide scientific and technical manpower, as well as the necessary field and laboratory facilities and research materials, that are fundamental to the eventual implementation of programmes and to the ultimate success of IOCARIBE. The degree to which Member States have committed so-called non-monetary support (i.e., support that is not a direct monetary contribution to the four categories given in the following section) has been rather variable and generally has not been adequate for the desired programme development.

### 5. SUMMARY AND CONCLUSIONS

After more than six years of operations, IOCARIBE has completed its pilot phase originally called for by IOC Resolution IX-13. As the first regional association of IOC, established on an experimental basis, it is now necessary to assess IOCARIBE in terms not only of how well it has achieved its goals, but also in terms of the factors that have held back its desired development. The purpose of this document is to provide the basis for considering at this time two fundamental questions: "How well has IOCARIBE succeeded?" and, "How can IOCARIBE be strengthened and improved as a regional body?".

With regard to the first question, IOCARIBE has developed into a functional Association that is providing direct and measurable benefits to the Caribbean region. One view of IOCARIBE achievements may be taken in the context of programme development and Member State participation, which have been described in the preceding sections of this document: a regional infrastructure has been established, scientific programmes are being implemented, people are being trained, and ocean services, on regional and global scales, are being developed. To a significant degree, the initial goals defined for IOCARIBE (see section 2.2, page 2) are being met. This must be considered, however, as a short-term view of marine science development in the IOCARIBE region. A longer-term analysis of regional marine science development is revealing and impressive.

Taking into consideration the fact that international marine science co-operation in the region had its beginnings in the establishment of CICAR in 1968, and continued under IOCARIBE in 1975, it is instructive to examine several facets of marine science build-up in the developing countries in the region from 1968 to the present: (a) academic curricula; (b) research institutions; (c) research fleet; and (d) the number of trained marine scientists.

Although the number of educational institutions that offered academic marine science curricula in 1968 is not precisely known, it is estimated that when CICAR was initiated not more than four universities in

the region offered marine-science study options. The curricula that existed at this time stressed marine biology-zoology and fisheries biology. Academic preparation in the other marine science disciplines was essentially non-existent. Today, the picture has vastly improved. At least 25 educational institutions in 12 countries in the IOCARIBE region offer formal degree programmes in marine science. Although marine biology still dominates the academic programmes, it is significant that the other disciplines, physical oceanography, marine chemistry and geological oceanography, are now available to students.

Another comparison of interest is the impressive growth in the number of research institutions during the last 15 years. In 1968, there were 6 to 8 marine research laboratories in the area, mainly operated by institutions from industrialized countries, with major emphasis on tropical marine biology. A few fishery laboratories existed, but they had little research interest beyond the collection of fishery statistics. Now, the UNEP/IOC Directory of Caribbean Marine Research Centres (1980) lists 125 research facilities in the IOCARIBE region, exclusive of the continental portion of the U.S.A.

The build-up of sea-going marine facilities (mainly research vessels) within developing Member States is equally impressive. In 1968, there were only small craft and launches, which were used mainly for near-shore and estuarine reconnaissance. Dedicated oceanographic vessels did not exist within the region. Today there are 8 major vessels in operation, and 2 more are soon to be delivered, which are operated by developing Member States. In addition, there is a growing number of especially designed nearshore survey draft, in the 12 to 15 metre range, and which are the major support facility for coastal marine research.

Finally, there is the growth of trained scientific manpower. Although a complete analysis of the 1970 and 1977 editions of the FAO International Directory of Marine Scientists was not made, the following sampling of the available statistics is instructive: (1) Colombia: 1970, 2 marine scientists; 1977, 47 marine scientists; Mexico: 1970, 95 marine scientists, 1977, 284 marine scientists. Similar increases in human resources, although not quantified here, characterize a number of other developing countries in the region.

The above paragraphs have treated the development and expansion of marine science structures in a quantitative and tangible manner. The development since the beginning of CICAR in 1968 is impressive and gratifying. Perhaps the greatest accomplishment of IOCARIBE, and its predecessor, CICAR, is much more intangible and impossible to assess quantitatively. Most simply, it is the existence of regional marine science bodies, such as CICAR and now IOCARIBE, which have provided the mechanism for facilitating regular contacts and an international forum for Member States for continuing dialogue and the interchange of experience and ideas. It is such contacts and mechanisms that, to a great degree, have stimulated the relatively recent growth of marine science in developing countries such as Colombia, Costa Rica, Cuba, Jamaica, Mexico, Trinidad and Tobago, and Venezuela, among others. It has been these countries, working co-operatively with the developed Member States of the Association, that have contributed to the achievements of IOCARIBE.

Regarding the question "How can IOCARIIBE be strengthened and improved as a regional body?", it is evident that a fundamental problem is still to be overcome: that of insufficient national commitments to develop marine science infrastructures and to become involved in regional programmes. The following sections consider this problem in terms of motivations, existing socio-economic conditions, and national historical development of countries in the region.

The record of IOCARIIBE's attainments is enviable, especially in view of the fact that most of this record derives from a relatively short history of activities which, for the first two to three years, were given over almost entirely to developing necessary organizational and national infrastructures rather than to scientific programmes and ocean services. The scientific research that has resulted from recommended marine science programmes, however, has been initiated only in the last two to three years. It must also be noted that IOCARIIBE's co-operative achievements have come from a large complex region typified by contrasting and highly diverse social, cultural and economic conditions within the Member States. Further, many developing countries in the region have only just begun to build their national marine science infrastructure. Despite these attainments, however, IOCARIIBE's record could and should be better. The question follows, "Why is the record not better than it is?" or, "What has held IOCARIIBE back?"

In addition to the fact that science in general is underdeveloped in many countries in the region, it would seem that the major barrier in the Caribbean area to marine science development and advancement, whether one refers to regional or to national programmes, has been the relatively low priority hitherto given to marine science and marine affairs by many IOCARIIBE Member States of the region. Such low national priorities would seem to indicate that there is relatively little general interest on the part of many developing countries to become involved in marine affairs, and as a consequence, national involvement in co-operative, regional or global marine science programmes is correspondingly low or, in too many cases, is missing completely. The burden of responsibility for IOCARIIBE's development and its accomplishments has been borne by far too few Member States.

In analysing the problem of the presently small number of Member States involved in, and committed to, IOCARIIBE, four factors must be taken into consideration: lack of popular awareness of the role of marine sciences as a factor in development and the consequently low priority given to ocean affairs; internal economic problems; national indecisiveness regarding opportunities for extra-national funding for development purposes; and the question of benefits to Member States.

The first factor, lack of popular awareness and interest in raising the level of priority given to marine affairs, stems primarily from the long-established land-oriented history of most developing Member States in the IOCARIIBE region. With almost no exceptions, these countries have developed their economic and cultural traditions - and present attitudes - within the general framework of agriculture, forestry and mining. Other than small-scale and artisanal fishing, the sea and its resources have had limited cultural impact on the populations of the region and, as a consequence, authorities are sometimes not motivated to make major commitments to marine science infrastructure development, whether national or regional. In other words, a coastal state is not automatically a state with a maritime economy and an active policy in ocean affairs; and without

national maritime traditions, public opinion will not support those who propose to invest national resources in the sea. However, the negotiations in the context of the UN Conference on the Law of the Sea (UNCLOS) the expected signature this year of the Convention on the Law of the Sea, and the implications to coastal countries, are having a decided effect on this particular cultural or traditional landward orientation to development. The governments of many developing countries are beginning to look to the resources of the exclusive economic zones and their continental shelf as a path to socio-economic development.

Among the developing Member States of IOCARIBE, it seems that a few countries have taken steps to turn around the country's traditional land orientation and cause the public to look to the sea as a potentially important source of socio-economic benefit. These countries have embarked on a long-term programme to create a public awareness of the broader aspects of marine affairs - the rationale being that only with public support can the government make significant investment in the development of infrastructure in the marine sciences and in marine affairs.

The second factor, internal economic problems, is a more obvious obstacle to increased support for marine affairs at the national and international levels. As has been stated previously, the IOCARIBE region is characterized by a wide range of social and economic conditions. The great disparity in economic status among IOCARIBE Member States, using the annual Gross National Product per caput, as a basis of comparison, ranges from \$11,360 to \$270 with many less than \$1,000 (1981 World Bank Atlas). Given the reduced national economy and limited resources of many Member States, it can be readily appreciated that national requirements to improve public health, nutrition, public education, transportation, etc. often take priority over the need to develop marine-oriented infrastructures. Without sufficiently high priority at the national level, commitments to participation in regional marine programmes suffer accordingly.

The third factor, national indecisiveness in taking advantage of external funding sources, relates, in part, to the experimental nature of IOCARIBE. Even where public support and economic status are not limiting factors in national commitments to participate effectively in IOCARIBE activities, not infrequently there is an undecided - or a "wait and see" - attitude on the part of some Member States. This may partly reflect a national unwillingness to become involved in experiments such as the first six-year pilot phase of IOCARIBE.

An additional cause for the indecisiveness of some Member States to enter into a regional undertaking, such as IOCARIBE, may derive from a long-standing isolation in many countries. In many countries in the IOCARIBE region, there is a weak history of national involvement in international marine research or participation in multi-lateral activities. It is believed, however, that such weak national involvement is rapidly disappearing and that its negative effects on regional programme development diminish in the Caribbean region.

Finally, it must be appreciated that the stability of internal institutions and systems plays an important role in the rate at which marine science infrastructure is developed within a country and, consequently, in the degree to which the country involves itself in intergovernmental oceanographic programmes, such as in IOCARIBE. Without an appropriate level

of stability and continuity, the resulting environment usually hampers the normal development of science in general, and marine science in particular.

The fourth factor refers to the actual or potential benefits to be derived from national participation in IOCARIBE's regional marine science programmes. Do IOCARIBE's stated goals provide sufficient incentive to attract the interest and resource investment of the majority of its Member States? This is simply a question of cost-benefit analysis, but there seems to be no general answer; there seem to be only specific answers to be addressed to existing conditions and needs of each Member State. In this regard, it is quite conceivable that the three-fold IOCARIBE programme of activities, described in Section 3, page 4, is of interest to less than the entire membership. Should this indeed be the case, then the goals of IOCARIBE and its resulting programme should be reassessed, or even restructured, to take into account the needs and aspirations of the entire Association membership.

Having identified insufficient national commitments as one of the major hindrances to the development of IOCARIBE, and having considered several factors that may explain the insufficiency, it is mandatory to consider steps that will lead to improved participation and involvement of Member States in the Association. One of the major directions for the future efforts of the Association should be in the area of training, education and mutual assistance, specifically aimed at enhancing the ability of Member States to develop their marine scientific infrastructures and capabilities to deal with a broad spectrum of marine affairs. Selected elements of global programmes of the Commission could be identified and supported in such a form that their products would be more readily accepted as responding to local requirements. IOCARIBE's recommended regional ocean science programmes could be revised and tailored more specifically to meet national needs, whether they be directed toward the basic research desired by the scientific communities of many developed Member States, or problem-oriented research often needed by developing Member States. Ocean service structures for data management and documentation and information exchange must be improved. Co-operation with other organizations in the region must also be improved. And above all, the growing community of practising marine scientists in the region should be brought into closer contact, nationally and regionally, with IOCARIBE and its programme of work.

It would appear a fair assessment to say that the experimental phase of the Commission's first regional subsidiary body has been a success insofar as the accomplishments and the attainment of goals have more than outweighed the shortcomings and the inherent problems of regional programme development. IOCARIBE was established, it developed, and has begun to provide benefits, not only to Member States, but to other countries in the region and to the Commission as a whole. Its success in the future and its continuation as a regional body of IOC, however, will depend on overcoming those situations that have hindered IOCARIBE's growth.

Resolution IX-13

IOC ASSOCIATION FOR THE CARIBBEAN AND ADJACENT REGIONS

The Intergovernmental Oceanographic Commission,

Noting that the International Co-ordination Group for the Co-operative Investigations of the Caribbean and Adjacent Regions (CICAR) held its seventh session in Mexico City from 14 to 17 April 1975,

Approves the Summary Report of the above session (document IOC/CICAR-VII/3);

Expresses its appreciation to the Government of Mexico for its courtesy in hosting the above session;

Recalling that by its Recommendation 6.2 (as approved by resolution VIII-8) the ICG for CICAR called for continuation of CICAR in its present form at least to the end of 1975,

Noting that by Recommendation 7.11, the ICG for CICAR decided to "terminate the field work of CICAR on 31 December 1975", and recommended inter alia "that the IOC at the ninth session of the Assembly establish within the IOC, a new subsidiary body for marine science co-operation in the Caribbean and adjacent regions",

Decides to disband the International Co-ordination Group for the Co-operative Investigations of the Caribbean and Adjacent Regions (CICAR) and to establish on an experimental basis for a period of six years, an IOC Association for the Caribbean and adjacent regions for the purpose of continuing and developing regional co-operation in the marine sciences built up over a period of seven years under the CICAR;

Decides further that the Association shall be structured as shown in the Annex to this resolution;

Decides also to review the activities and terms of reference of the Association at the tenth session of the Assembly;

Instructs the Secretary to arrange for the first session of the IOC Association for the Caribbean and adjacent regions to be convened at an early date and preferably in conjunction with the CICAR-II Symposium, now scheduled to be held in Caracas, Venezuela, 12-16 July 1978;

Invites the Member States of CICAR, together with all officers forming part of the organizational arrangements and services of CICAR, to continue to carry out their present activities under the programme until the first session of the Association, after which time the Association shall be considered to be fully operational;

Invites the Director-General of Unesco, to take the necessary steps to establish a Regional Secretariat which shall, during the inter-sessional period until the first session of the Association be co-located with the International Co-ordinator for CICAR and thereafter with the Chairman of the Association;

Expresses its gratitude to all those officers who have supported or taken part in the CICAR programme since its inception in 1968 and in particular to the Government of the Netherlands for providing an Operations Co-ordinator for CICAR;

Having noted the report, "CICAR: Past, present and future - an evaluation study of a Regional IOC Programme" (document IOC/INF-238), as well as Recommendations 7.1, 7.10 and 7.11 of the ICG for CICAR,

Decides to form an ad hoc Group of Experts which, taking into account the achievements of the Co-operative Investigations of the Caribbean and Adjacent Regions (CICAR), the deliberations of its International Co-ordination Group and any input received from Member States in the region, shall:

- (i) identify those marine scientific problems in the region which require international collaboration for their solution;
- (ii) specify existing needs in the field of training, education and mutual assistance;

and report to the Association at its first session;

Instructs the Secretary to convene a meeting of the above ad hoc Group of Experts at an early date, so as to ensure that its report will be given full distribution to interested Member States in due time before the first session of the Association.

#### Annex to resolution IX-13

#### Terms of reference for IOC Association for the Caribbean and adjacent regions

The IOC Association for the Caribbean and adjacent regions will:

- (i) be responsible, under the overall supervision of the Commission, for overseeing all the Commission's activities in its region;
- (ii) develop a regional programme of activities in the form of scientific projects which are worth while from the viewpoint of international collaboration in the region, to determine the basic objectives of joint investigations and to agree on the character and pathways for using the results;
- (iii) work closely with the Working Committees and International Co-ordination Groups of the Commission in the development of the regional programme of activities;
- (iv) co-ordinate scientific projects in the region, subject to overall financial implications approved by the Commission;
- (v) report biennially and make recommendations to the Assembly of the Commission on the work accomplished and future action required, and to prepare, with the assistance of the Secretary, a draft two-year programme of work and budget for submission to each Assembly;
- (vi) develop regional projects, in conjunction with Unesco (or other ICSPRO agencies) on behalf of the Commission, for submission to the United Nations Development Programme (UNDP);
- (vii) develop working relationships with other bodies involved in marine scientific research in the region, particularly the regional Commissions and Councils of FAO, and the United Nations Environment Programme (UNEP).

#### Membership

Membership shall consist of all Member States of the Commission in the region and other interested Member States.

#### Chairman

The Association shall elect its own Chairman from a Member State of the region, taking into account the need for rotation.

Other participants

Non-Member States, United Nations organizations or other bodies may be invited in accordance with Article 8 of the Statutes.

Responsibilities of Member States

In addition to the above principles and guidelines, Member States are expected to facilitate the Commission's work by:

- (a) maintaining a continuity in representation at Association sessions;
- (b) arranging for representatives to Association meetings to be selected from individuals with direct experience of active projects in the region.

IOCARIBE MEMBERSHIP

Conditions of Membership: (IOC Resolution IX-13, Annex I)

"Membership shall consist of all Member States of the Commission in the region and other interested Member States."

As of 22 June 1982, the Member States of IOCARIBE are:

From the Region

Bahamas  
Colombia  
Costa Rica  
Cuba  
Dominican Republic  
France (Guadeloupe, French Guyana, Martinique)  
Guatemala  
Guyana  
Haiti  
Jamaica  
Mexico  
Netherlands (Aruba, Bonaire, Curaçao)  
Nicaragua  
Panama  
Suriname  
Trinidad and Tobago  
United Kingdom (Anguilla, British Virgin Islands, Montserrat,  
St. Kitts-Nevis, Turks and Caicos Islands)  
United States (Puerto Rico, U.S. Virgin Islands)  
Venezuela

Outside the Region

Brazil  
U.S.S.R.

The following independent nations in the region are not IOC/IOCARIBE Member States, but participate occasionally in IOCARIBE:

Antigua  
Barbados  
Belize  
Dominica  
Grenada  
Honduras  
St. Lucia  
St. Vincent

IOCARIBE FINANCIAL SUPPORT  
(July 1976 - February 1983)

The following is a summary of financial support provided to IOCARIBE during six and a half years of operations. Support is reported in US dollars, by Donor Country, and by Support Category. Prepared from information available as of 23 June 1982.

Support Category

I. Contributions to IOC Trust Fund and earmarked for IOCARIBE

<u>Country</u>	<u>Designated Support</u>	<u>Amount</u>
Mexico	TEMA, Programmes	\$ 23,000
Netherlands	Asst. Secretary Post	\$ 100,000
Panama	Unrestricted	\$ 3,000
United Kingdom	Secretariat Operations	\$ 3,000
United States	Asst. Secretary Post	\$ 405,000
Venezuela	General, Programmes	\$ 50,000
	<u>Total:</u>	\$ 584,000

II. Secretariat Support by Host Country

<u>Country</u>	<u>Duration of Support</u>	<u>Amount</u>
Costa Rica	Apr. 1979 - Dec. 1982	\$ 150,000
Trinidad and Tobago	July 1976 - Apr. 1979	\$ 90,000
	<u>Total:</u>	\$ 240,000

III. Meeting Support by Host Country

<u>Country</u>	<u>Meeting/Date</u>	<u>Amount</u>
Costa Rica	IOCARIBE-II/July 1978	\$ 10,000
France	Workshop/Dec. 1977	\$ 5,000
Mexico	Workshop/Oct. 1979 )	
	IOCARIBE-III/Dec. 1980 )	\$ 25,000
	Steering Comm./Oct. 1982 )	
Trinidad and Tobago	Workshop/Dec. 1976 )	
	Workshop/Jan. 1978 )	\$ 9,000
United States	Workshop Travel/Dec. 1977)	
	Steering Comm./Dec. 1980 )	\$ 6,000
Venezuela	CICAR Sympos.II/July 1976)	
	IOCARIBE-I/July 1976 )	\$ 75,000
	<u>Total:</u>	\$ 130,000

IV. Facilities

Offer of vessels by Mexico and Colombia.

V. Technical Programme Support

<u>Country</u>	<u>Programme Supported</u>	<u>Amount</u>
France	CARIPOL (Spectrofluorimeter)	\$ 16,000
United Kingdom	CARIPOL (Spectrofluorimeter)	\$ 12,000
United States	WATS (Marine Turtle Symposium)	\$ 80,000
<u>Total:</u>		\$ 108,000

Summary of Member State Support, by Category

<u>COUNTRY</u> <u>CAT.</u>	<u>COSTA</u> <u>RICA</u>	<u>FRANCE</u>	<u>MEXICO</u>	<u>NETHER-</u> <u>LANDS</u>	<u>PANAMA</u>	<u>TRINIDAD</u> <u>&amp; TOBAGO</u>	<u>UNITED</u> <u>KINGDOM</u>	<u>UNITED</u> <u>STATES</u>	<u>VENEZUELA</u>
I Trust Fd.			23,000	100,000	3,000		3,000	405,000	50,000
II Secreta- riat	150,000					90,000			
III Meetings	10,000	5,000	25,000			9,000		6,000	75,000
IV Technical		16,000					12,000	80,000	
<b>TOTAL</b>	160,000	21,000	48,000	100,000	3,000	99,000	15,000	491,000	125,000

Total Contributions from Member States: \$ 1,062,000

IOC Regular Budget (various) \$ 80,000

TOTAL SUPPORT TO IOCARIBE: \$ 1,142,000