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STRUCTURE AND WORKPLAN OF THE IOC WITH SPECIAL
REFERENCE TO THE INFORMATION AND DATA SERVICES

Submitted by FAO

GENERAL

The IOC, like most of the United Nations Organizations and Specialized Agencies, provides services to Member Governments, such as they may require in the performance of their functions, or in order that they may increase their capacity to perform those functions.

The latter service is rendered through:

- Institution-building projects;
- Training programmes;
- Advice;
- Contributions to improve the theory and method of ocean research, and research administration.

The former service is rendered through:

- Collection, compilation, analysis and dissemination of information;
- Provision of forums for exchange of information and for reaching consensus;
- Industry Development projects;
- Advice and assistance in the execution of research and administration (mainly through Unesco)

IOC effects these services through:

- Its publications;
- Its missions to countries and contacts of other kinds;
- The meetings, workshops, etc. it organizes and services;
- Its training courses and the fellowships it offers;
- Its representation of Ocean Sciences in international forums;
- Its field projects (mainly through Unesco)
- Its studies.

The Commission, within its staff and financial resources, designs its programmes to meet the above functions in response to the directives of its Assembly, the decisions of its Council and the wishes of aid agencies and its Member Governments.

INFORMATION FUNCTION

The basic and central task of the Commission in discharging its principal functions rests on its ability to collect as well as to coordinate the flow of information to Member Governments, namely:

1. To promote the evolution of national systems of research and research administration through which information is obtained;
2. Coordinate the compilation, transmission, collection and storage of information concerning Ocean Sciences and related scientific disciplines;

3. The Commission itself appropriately analyzes and interprets information gathered under 2. so as to be able to advise and assist governments in the performance of their functions with respect to fisheries.

Within its limited resources, the Commission has discharged all the three functions listed above, mainly through close interaction with national institutions in the case of Ocean data and with other UN Organizations in the case of Ocean information. It still lacks, however, a Country Information data base to access such data required in providing advice and assistance in the execution of Ocean research and administration mainly in developing countries; namely

- geographic, economic and social background information;
- technical information concerning marine environments and resources;
- information on related developmental activities and aid programmes;
- government policies concerning Ocean Sciences and its priority within the national plans.

IOC INFORMATION AND DATA SERVICES

1 International Oceanographic Data Exchange (IODE)

The system of the international oceanographic data exchange has been established to facilitate marine research. It has been recognized that an efficient system of oceanographic data and information exchange is essential for the success of any international research and monitoring programme.

Since its inception in 1960, the IOC has continued to foster the arrangements for data exchange through the establishment of technical guidelines for data exchange arrangements, data formats and, most significantly, through effective international co-ordination of national efforts in oceanographic management. To co-ordinate international activities in this field, and develop internationally agreed procedures for data acquisition, reporting, collection, exchange and processing, special mechanisms have been set up by IOC jointly, and in co-operation with other organizations.

All the activities mentioned above are under the responsibility of the IOC Working Committee on IODE. Twenty years of constructive guidance by the Committee has shown its ability to cope with the ever-increasing demands and responsibilities placed on it as a result of the constantly growing quantities of data, complexity, diversity and standardisation requirements brought to its attention for advice and consideration.

There are four Groups of Experts and ten Task Teams which operate successfully in the framework of the IOC Working Committee. Several of these subsidiary and advisory groups are involved in information exchange and referral.

2. Aquatic Sciences and Fisheries Information System (ASFIS)

The growing interest in Ocean research and in utilizing the marine living and non-living resources for the economic and social development of nations, developing and developed countries alike, has given rise to a tremendous need for information in this field. At the same time, it has stimulated scientific and technological research throughout the world. As the volume of the resulting information grows, so do the problems of the potential users - scientists, technologists, administrators, legislators - whose responsibility is not only to keep abreast of developments in the field but also to sift through larger and larger quantities of data in search of complete, reliable and systematic information on specific items of study.

To meet the growing needs of the world community of Ocean workers ASFIS was conceived as an integrated system of information exchange, coordinated by international bodies, through a rational approach to user needs.

The Aquatic Sciences and Fisheries Information System (ASFIS) is an international information system for the science, technology and management of marine and freshwater environments. A coordinating centre in FAO's Fisheries Department is responsible for collecting, organizing and processing information from these national centres and for making the information available to the user community.

The system was originally developed by the Food and Agriculture Organization of the United Nations (FAO), and was later joined by IOC and the Ocean Economics and Technology Branch (OETB) of the UN, in collaboration with national centres in an increasing number of countries. Today, ASFIS centres in Canada, France, the Federal Republic of Germany, Mexico, Portugal, the USSR, the UK and USA participate in the ASFIS work. Several other countries are seeking a mechanism for cooperation. ASFIS has organized a regional workshop in December 1979 in Colombia to furnish user guidance and provide training in information management to countries of Central and South America. Other regional seminars are contemplated as and when extrabudgetary funds can be secured. A global network of ASFIS centres and referral offices will eventually provide local points of contact through which users of the System will have easy access to the global information base.

The modular system consists of:

- Aquatic Sciences and Fisheries Abstracts (ASFA)
a monthly abstracting and indexing service
- Marine Science Contents Tables
a monthly current-awareness service
- Freshwater and Aquaculture Contents Tables
a monthly current-awareness service
- World List of Aquatic Sciences and Fisheries Serial Titles
- International Directory of Marine Scientists

(a) Aquatic Sciences and Fisheries Abstracts (ASFA)

ASFA (Aquatic Sciences and Fisheries Abstracts) is a bibliographic database that covers the world's literature on the science, technology and management of marine and freshwater environments. The product of the Aquatic Sciences and Fisheries Information System (ASFIS), an international cooperative effort involving three United Nations agencies and nine national government information centres, ASFA covers approximately 5,000 journals and other serials, as well as books, reports and conference proceedings. Over 24,000 abstracts are added to the database each year. The ASFA database is produced monthly by Cambridge Scientific Abstracts (CSA) for the Food and Agriculture Organization of the United Nations (FAO): it is equivalent in content to the monthly journal "Aquatic Sciences and Fisheries Abstracts", also published by CSA.

ASFA seeks to provide comprehensive coverage of published information on:

- Marine and freshwater environments: ecology, conservation, pollution, and biological, chemical, geological, physical oceanography and limnology
- Marine and freshwater resources: aquaculture and fisheries; energy and minerals
- Ocean engineering
- Ocean law, policy, economics and social sciences
- Ocean commerce and trade

Computer searching of ASFA provides the user with great flexibility and selectivity. ASFA can be searched by author name, author address, corporate source, data of publication, document type, geographic terms, journal titles, language of publication, report numbers, subject category codes, subject descriptors, taxonomic terms, and words that appear in the title and abstract. Search capabilities and search tactics will depend on the host information retrieval system being used, as will the format of the ASFA record.

(b) Marine Science Contents Tables

A monthly current awareness journal which reproduces the contents pages of about 100 core journals in marine sciences and fisheries distributed free of charge to about 3,000 institutions and marine scientists.

(c) International Register of Experts and Institutions

A computerized register storing information on the activities of national and international institutions in marine sciences and the scientists engaged in such research.

(d) World List of Aquatic Sciences and Fisheries Serial Titles

A computerized register which stores information on serial titles and contains papers dealing with the science and technology of marine environments. Designed to provide assistance to Librarians and Documentalists of institutions engaged in marine sciences.

To help users take full advantage of ASFIS products, various guides and reference material have been produced and are available upon request. Most of the ASFIS products are available in printed form but increasingly it is being provided on magnetic tape suitable for computerized searching, in a batch or on-line.

3. Marine Environmental Data Information Referral System (MEDI)

The Marine Environmental Data Information Referral System (MEDI) has been developed in response to the resolution approved by the ninth session of the IOC Assembly in resolution IX-30. The objective of the fully operational referral system is to provide the marine community with referrals concerning the availability, location and characteristics of marine environmental data to meet the community's specific needs and to cater to Marine Science sectoral needs within the general framework of UNEP's international environmental referral system—INFOterra.

The development and implementation of the MEDI Referral System has been achieved with the support and participation of UNEP, WMO, FAO, ICES, IHO, IAEA, IOC and their associated network of data and information centers.

The MEDI Referral System is an automated, systematic method for recording and retrieving information (non-bibliographic) about marine environmental data files that exist in international centers and in national centers associated with an international network. MEDI is designed as an internationally accepted means of cataloguing such data as may be required by agencies, scientists and administrators. It makes possible the systematic identification of what data are available worldwide on a specific topic.

MEDI services and products include a manually searchable MEDI Referral Catalogue, equivalent in content to the MEDI database, with an index showing details of marine data holdings of all participating centers; on-line computer searches of the MEDI database upon request; and, specialized indexes for broad subject areas and data types.

4. Country Profiles in Marine Science

IOC has now taken steps to prepare a marine science country profile with the active involvement of authorities and local institutions in each country and in co-operation with the Division of Marine Sciences of Unesco. Each country profile will be a compilation of information on the situation in the field of marine sciences, the general scientific, administrative, industrial, institutional framework within which marine scientific activities are conducted and the social and other circumstances concerning the prosecution of marine science and the application of their results. At a subsequent stage, further information will be collected and analyzed at the request of, and in close association with the countries concerned in order to assist them in the assessment of the situation with respect to on-going activities, and of requirements to achieve stated national goals in marine science development.

IOC'S ROLE IN INFORMATION AND DATA DISSEMINATION

Hitherto, IOC played a catalytic role in building information and data systems designed to meet user requirements. Such a rôle, although serving its purpose in the past now falls short in providing the Member Governments with the most needed advice in building the national institutional infrastructure to handle and make optimum use of the available information and data. Furthermore, utilizing the existing information systems of other UN Agencies, i.e. FAO ASFIS System, the Commission is not in a position to control the quality of the data entered in the system concerning subjects which may not lie within the mandates of Agencies operating the system.

IOC's future information programme needs, therefore, to be designed for more operational activities in this sector to safeguard the interests of its Member Governments. It intends to do this by establishing a common data entry format and procedures so as to facilitate data exchange within the UN system and the institutions of Member Governments. Once the capabilities in the Secretariat are upgraded the Commission will progressively take on its share of responsibilities in providing input to the ongoing systems and operating ASFIS Expert, Institutions and Research Vessel modules as its own information source in assessing the national capabilities of Member Governments in discharging their marine science responsibilities which have significantly increased with the UNCLOS and the resulting EEZ concepts.

Progressively the Commission also intends to draw up a programme towards establishing a "Country Profile in Marine Sciences" activity, where the geographic, socio-economic and marine science policies of the Member Governments will be collected, analyzed and stored. Such a reference tool will increase the efficiency of the Secretariat in identifying the requirements of Member Governments for advisory assistance and enable the Commission to formulate technical assistance or VAP programmes in close collaboration with the scientists and marine science administrators of the Member Governments.

In very many developing countries the marine information and data functions fall under the mandates of single Ministries and very often one institutional structure. With the development of information technology and the availability of such technology to the institutions of developing countries, the distinction between the information and data is disappearing rapidly. The time is now opportune to consider unifying these activities under the ongoing programmes of the IODE and constitute a joint Working Committee and re-organize a single advisory body to provide the necessary guidance to the Commission. This may, further, require shifting of resources from the Commission's data activities to information ones to achieve the desirable balance in this sector.

In the developing countries there is a definite need for upgrading the services provided by libraries and information centres where they exist and in their absence establishment of such facilities. IOC envisages mobilizing financial assistance through Trust Fund and Voluntary Assistance Programmes to extend assistance towards the establishment of specialized documentation and data centres and related documentation, library and data services. The programme envisages the training of local staff in modern information collection and processing techniques and arrangement for providing such institutions with relevant literature through promoting exchange agreements as well as financial assistance in procuring hard-copy documents.

TCDC AND IOC INFORMATION PROGRAMME

For many years as their output of advanced scientific/technological information reached "flood" proportions many developed countries have benefited considerably by harnessing this vast collective resource through mutual agreement for information exchange. To further benefit from advances in information processing technology, the conditions under which these exchange agreements have operated have become more stringent through the adoption of common standards and formats.

At the present time, as nations - both developed and developing - increasingly turn to the exploitation of marine resources and ocean research for their economic and social development, developing countries have enormous potential for mutual benefit under TCDC through the establishment of cooperative systems for the collection, organization and dissemination of information relevant to the science, technology and management of those resources. But while this necessitates the harnessing of information on local conditions, it also involves the transfer of information on techniques and technology developed elsewhere. And therein lies the problem:

- (i) over 90 percent of the "information base" results from the programmes of industrialized nations, where much of it is reported in "unpublished" (in the sense of commercially available) documents, and
- (ii) most developing countries lack the infrastructure and means for systematically identifying information relevant to their specific interests.

IOC under the leadership of FAO has sought to overcome this problem through the development of ASFIS and through the direct assistance of some Member States build up data repositories and services. These services are open to voluntary participation. However the interests of most developing countries can best be served through group participation on regional, linguistic or similar bases along the lines proposed by TCDC. This involves the establishment of regional centres and building up of their capabilities to discharge regional functions and the necessary infrastructure to promote the free flow of information throughout the region.

A promising start has been made in Mexico and Portugal where the ASFIS centres are feeding to ASFIS a steady flow of information on Latin American and Portuguese publications and receiving in return the entire database on which, when the requisite infrastructure and capability has been established, they can base services through cooperative agreements with countries in the regions. Similarly, studies are being conducted in South East Asia to establish a regional centre to capture information pertaining to that area.

If adequate funds can be found the participation of developing countries in ASFIS and data systems could be accelerated to a level more commensurate with the importance they attach to the development of their marine sciences.

CONCLUSIONS

That

1. IOC defines its information and data policy and unifies these activities for future years in view of the definite interaction required between these two information services.
2. IOC disbands the present ASFIS Panel of Experts and establishes instead an Advisory Body to provide the necessary assistance to the Secretariat for development of future overseas programmes in the information and data sector as well as giving guidance in the implementation of programmes to better meet user requirements particularly in developing countries.
3. IOC develops a Country Profile and Marine Sciences Register in which the relevant information can be captured and stored to provide the necessary background information for extension of assistance to Member Governments.
4. IOC takes on a more active role in participating in existing UN Information Systems, i.e. ASFIS, in order to safeguard that the needs of marine scientists are properly met through the services offered by the Systems.

5. IOC, under the guidance of the proposed Advisory Body, develops institution building and training programmes to build up national capabilities in order to accelerate the better use of available information and data by national institutions. Such training and institution building programmes to be circulated to funding agencies and VAP funding countries for possible financing.
6. IOC identifies possibilities in regions where TCDC activities can be accelerated through the establishment of cooperative systems of information and data collection and incorporates such development programmes in regional projects or trust fund donated country programmes.