

Annex 1

The Eco-village Project Introduction and Summary

1. *IOI Guidelines*

“Ocean Governance” beginning at the local community level; integration of poor coastal communities into “integrated coastal management;” poverty alleviation; integration of women into development; introducing sustainable ocean development in elementary school curricula

2. *The Eco-village project*

Now in its second year, the Eco-village project was initiated thanks to a grant of Ca\$50,000, by a Swiss donor who chooses to remain anonymous. The funding was then extended by the GTZ in Germany to the extent of DM200,000 over a two year period, ending in September 1999. The purpose of the project is

- ◆ to raise living standards in the poorest coastal villages through the enhancement of local traditional skills and technologies through the introduction of socially, economically, and environmentally sustainable technologies, especially in the areas of information and communication, biotechnology, energy efficiency and new materials;.
- ◆ to prepare the community for active participation in “integrated coastal management.”

3. *Work achieved*

The work achieved to date is described in the illustrated brochure (Annex 1 a)

4. *Future work*

(a) Expansion to school children

A first effort at consciousness raising among school children was made in preparation for Pacem in Maribus XXVI (Halifax, Canada, December 1998) An ocean drawing/painting competition was organised among the school children of the 20 IOI eco-villages in Tamil Nadu, and the best pictures were exhibited during the Pacem in Maribus Conference. They will also be published as a book

The next step would be a pilot experiment with an innovative, extremely cost-effective teaching tool. For effective communication, school books must be available in local languages/dialects, which makes the production of suitable texts quite costly. The IOI is producing a “no-language” edition of a book -- that is, a book of pictures only, with white spaces for the text, to be distributed to all our Operational Centres. The original English text will be translated by our Centres and will be given only to the teachers who then will have to direct the children to make their own books in their own language. This is to enhance their writing skills, their calligraphy, their awareness of the importance of the marine environment and its living creatures, as well as their pride in making their own books. The first book available is Elisabeth Mann Borgese’s

children's book *Chairworm and Supershark* (Annex 2). The book was already tested among 10,000 school children in Jamaica. UNESCO has approved publication of the book in all UN languages. A German publisher is presently producing a German edition (10,000 copies), and an animated film is also being produced in Germany. With all this in place, the production of a *no-language edition* in Germany will be extremely cheap (About one dollar per copy). If the experiment is successful, other books will be selected, or written, subsequently.

Funding sought US\$15,000 (fifteen thousand US Dollars)

(b) *Continuation beyond 1999 and geographic expansion: to other villages, in India and other countries*

A project for community and individual human development needs at least five years to make a real difference. If left to itself too soon it is likely to shrink and die. Funds need to be secured for the continuation of the project in the 20 IOI Eco-villages in Tamil Nadu. The minimum would be US\$300,000 total for three years, to keep project development at the level of the first two years. Extension of this successful pilot project to other villages in India and other countries hosting IOI Operational Centres could be open-ended.

Funding sought: \$1 million

Annex 2

The Job Creating Potential of Integrated Coastal Management

Introduction and Summary

1. *IOI Guidelines*

“People-oriented” integrated coastal management; sustainable development not to be identified with “down-sizing,” generating unemployment. Integrated coastal management that does not contribute to the solution of the most crucial economic problems of our time -- poverty in the developing world; unemployment in the industrialized world -- is not sustainable.

2. *Work to be done*

A General project outline is attached as Annex 2 a.

(a) Co-management

Co-management means both *horizontal integration* (i.e., the participation of all stake-holders in planning, regulating, and managing uses of ocean and coastal spaces and resources) and *vertical integrating* (i.e., providing a forum for joint decision-making between local [municipal] and State [federal] authorities. Innovative forms of co-management, often blending with old traditional forms, are making their appearance in all parts of the world. Community-based co-management appears to provide the most appropriate mechanisms to cope with the problem of integrating cyclically or structurally unemployed into community service. Community-based co-management may indicate the direction of the evolution of democracy in the 21st century. For other cultures, it may be more suitable than the Westminster model of democracy. Linking local communities directly with intergovernmental institutions (regional seas, see next project) will contribute to the democratization of international organization. It may be the best available counterweight against the destructive impact of commercially driven “globalization.” A comparative, analytical policy study on community-based co-management in coastal zones, and distillation of guidelines for best practice, will be a cooperative undertaking involving all IOI Operational Centres

(b) Integrating traditional knowledge and modern science

Community-based co-management appears to provide the most appropriate mechanism for the integration of traditional knowledge and skills and modern science and science-based technology. Traditional users (e.g., fishers, local) can cooperate with scientists (State) in monitoring the marine environment, data collecting and analysing and fisheries research, thus narrowing the credibility gap between scientists and traditional users and enhancing compliance with regulation. This project should produce a series of case studies, for the distillation of guidelines for best practice. All IOI Operational Centres will be involved.

Funding required for (a) and (b): 400,000 for one year.

© *Risk assessment and management; disaster prevention and mitigation*

Given the many uncertainties we are facing in sustainable ocean and coastal management, and which, as we now know, will always be with us, two responses are necessary: the “precautionary principle,” and the integration of risk assessment and management, disaster prevention and mitigation as an integral part of “integrated coastal management.” The latter is generally omitted in the literature, and this is as serious lacuna. The proposal in Annex.2 b should fill this lacuna.

Funding required: \$1 million

Source: Swiss Re, which has already approved the proposal but is seeking a cosponsor.

Annex 3

The Revitalization of the Regional Seas Programme

Introduction and Summary

1. IOI Guidelines

improve understanding of interrelatedness of security and sustainability and its institutional implications. Define linkages between the UN Agenda for Peace and current events in ocean affairs. Examine the importance of regional cooperation and development in this context Find practical approaches to the integration of sustainable development and regional security.

2. The Revitalization of the Regional Seas Programme

(a) Work already done

Two major developments have triggered the process of the “revitalization” of the Regional Seas Programme which had been in danger of stagnating in the sectoral approach of the ‘Seventies and thus of losing relevance. In the ‘nineties, however, it became clear that regional cooperation and organisation are of fundamental importance for the implementation not only of the Law of the Sea but of all UNCED Conventions, Agreements and Programmes as well as the Agenda for Peace. Regional cooperation and organisation is a crucially important component of the emerging global system of ocean governance. The two major developments referred to are (i) UNEP’s assuming the responsibility for the regional implementation of the Global Programme of Action to prevent pollution from land-based activities; which broadens the mandate of the Regional Seas Programme and creates a new platform for integrated planning; and (ii) the revision of the Barcelona Convention, the establishment of the Mediterranean Commission on Sustainable Development, and the adoption of the Med. Agenda 21. IOI has been actively involved in the Mediterranean development. Recently it has signed a new MOU with UNEP, and produced for UNEP, five new brochures on the present status and potential development of the Regional Seas Programme in general and, in particular, in the Mediterranean, the Caribbean, the Indian Ocean, and the South Pacific. The text of these brochures is attached in Annex 3 a . They are presently being printed in Costa Rica. They should provide a basis for discussion for a series of leadership seminars involving the contracting parties of Regional Seas Conventions and Action Programmes.

(b) Work to be done

Eight leadership seminars are planned for 1999-2000. In each case the comprehensive institutional framework generated by UNEP, for the implementation of the Global Programme of Action will be utilized. While perspectives and priorities will vary from region to region, each one of the seminars will focus on three major issues:

(i) Regional Commissions on Sustainable Development

The Med.CSD introduces three major innovations:

- ◆ participation of coastal communities

- ◆ participation of the nongovernmental sector (users and NGOs)
(Both groups on an equal footing with the representatives of States Parties)
- ◆ broadening of Ministerial participation: no longer restricted to the Ministers for the Environment, but opened to any Ministry/Department involved one way or the other with regional seas affairs.

Can this model be adapted to other regional seas. If the answer were to be positive, two further innovations could be built on these regional CSDs:

(ii) Technology Development and Transfer

As is universally recognized, the development and transfer of environmentally and socially sustainable technologies is essential for the implementation of the whole UNCLOS/UNCED process. At present, each Convention has its own provisions for technology development and transfer. This is wasteful, considering that the technologies are largely the same. Under the umbrella of the regional CSDs, a system of technology cooperation could now be established, *servicing the needs of UNCLOS as well as all UNCED Conventions, Agreements and Programmes*. In the Mediterranean, this could be achieved by expanding EUROMAR to the developing countries of the southern and eastern shores, under the responsibility of the Ministers of Science and Technology composing, from time to time, the ministerial segment of the Med.CSD. The system might take somewhat different forms in other regional seas but should, in each case, create synergisms between private and public investment at the regional level.

(iii) Integrating Sustainability and Regional Security

The Ministerial Segment of regional CSDs could be further broadened by including, from time to time, the Secretaries of the Navies or Ministers of Defence of Contracting Parties. These Ministers, too, are involved in ocean affairs, and there is no reason for excluding them. In situations of conflict, they could act as a “virtual regional security councils.” In the absence of conflict, they could direct the peaceful cooperation of navies (joint surveillance and enforcement; humanitarian purposes such as search & rescue, disaster relief, etc.) They also could promote the denuclearization of regional seas, with its disarmament and environmental implications, as well as peaceful settlement of disputes at the regional level, in accordance with UNCLOS. *These proposals, which need much further elaboration and discussion, constitute the first attempt anywhere to draw the institutional implications of the integration of sustainable development and regional human security.*

Funding required: \$ 1 million for the preparation and implementation of eight leadership seminars.

**Likely source: The Turner United Nations Fund, on joint UNP./IOI application.
SIDA (Leadership seminar in Indian Ocean, Caribbean, 1999).
EU (Leadership Seminar in the Mediterranean, 1999)**

Annex 4

Institutional Development at the Global Level Introduction and Summary

1 IOI Guidelines

A number of ocean issues, such as global warming and sea level rise or ozone depletion, or as shipping or tourism, transcend the limits of regional seas and are global in nature. A forum is needed, at the United Nations level, where all States and non-state actors can consider the closely interrelated problems of ocean space as a whole and in their interaction. This also includes the interaction of UNCLOS with the ocean-related parts of the UNCED conventions with different memberships. This can only be achieved at the level of the United Nations General Assembly. Ways must be found to give the GA sufficient time to cope with this vast array of problems.

2. The General Assembly

(a) Work done

The need for action at the level of the UN General Assembly has been elucidated in *The Oceanic Circle*. The pertinent pages are attached in Annex 4 a. The proposal has been distributed among all Delegations to the UN as well as the "competent international organisations." It was not possible to get the proposal adopted during the Year of the Ocean, because ocean affairs are to be covered by the CDS in 1999, and the proposal will have to be channelled through the CSD, and from there to the GA. This procedure is now being followed.

(b) Work to be done

What is now needed is a **Consultant for three month** in New York to follow preparations for the 1999 session of the CSD and advise the IOI on the most effective course of action.

Funds required: Fee for Consultant, \$1,500 per week for 12 weeks. \$18,000. If consultant is not a resident of New York a *per diem* of \$200 would have to be added for 84 days. **Total per diems: \$ 16,800.**

3. The International Sea-bed Authority

In accordance with the LoS Convention, the International Sea-bed Authority was established in Jamaica on November 14, 1994. It finds itself in a conceptual and financial crisis --due to inherent weaknesses which will have to be corrected in due time, but, above all, because manganese nodule mining, on which the Authority had concentrated its attention, is not going to happen during the foreseeable future. The Authority's potential mandate, however, is much broader than the management of the non-existing nodule industry. This broader potential now has to be developed, if the Authority is to play a useful role in the network of global ocean institutions.

(a) Work done

In 1998 the IOI organised a seminar for the Sea-bed Authority Delegations in Jamaica to discuss with them the availability of other sea-bed resources which are also part of the Common Heritage of Mankind. (See Annex 4 b) The seminar was cosponsored by the Government of Jamaica. The seminar also dealt with the Authority's responsibility for the conservation of the flora and fauna of the "Area," including its genetic resources (micro organisms) This responsibility is shared with the Biodiversity Convention Regime, which, thus far has not dealt with biodiversity in international waters (including the sea-bed) -- a serious lacuna which must be filled.

(b) Work to be done

A leadership seminar, including also a representative of the Biodiversity Convention Secretariat, is planned for August 1999 to further discuss these questions. Most likely, the seminar will again be cosponsored by the Government of Jamaica.

The IOI has prepared a proposal which might form the backbone of the Authority's activities during the coming years. The proposal, which has been fully discussed with the Authority, with the Biodiversity Convention Secretariat, and with the GEF, is attached as Annex 4 b. This project, again, attempts to *integrate development and environment concerns. It also attempts to fill at least part of the lacuna regarding biodiversity in international waters.*

Funding required: Leadership Seminar, August 1999, \$13,500.

Annex 5

5. The IOI Training Programme

Introduction and Summary

1. IOI Guidelines

Integrate IOI policy research with training and advocacy; train civil servants, especially from developing countries, responsible for managing EEZs and representing their countries in regional and global organisations; develop a new type of civil servant, at home both in the natural and social sciences to be able to cope with interdisciplinary and trans-sectoral needs of ocean and coastal management and integration of environment and development concerns; train local NGOs; train inhabitants of coastal villages; test and adopt most advanced teaching methodologies and technologies.

2. The IOI Training Programme

(a) Work done

The IOI Training programme is one of the oldest and most successful training programmes in the world today. Its evolution is described in Annex 5 a.

(b) Work to be done

Course syllabi are continuously being updated and kept action-oriented. More scholarships are continuously being sought, especially for participants from the least developed countries and for women. IOI is seeking scholarships in three forms:

(i) The grantgiving institution can cover one whole programme at a time. The total cost of a programme of ten weeks comprising 25 participants in Canada is about CA\$150,000. This covers over-seas air fares, all living expenses of participants and lecturers; tuition fees, field trips, teaching materials, pocket allowance and medical insurance for participants. Shorter programmes, in less expensive countries, cost, variably, less.

(ii) The grantgiving institution can fund individual scholarships. One full scholarship for a ten-week programme in Canada costs CA\$10,000

(iii) The grantgiving institutions could *endow a scholarship in perpetuity*. The investment would be of \$100,000; and the scholarship would bear the name of the grantor. The investment would go into and be administered by our Endowment fund in Switzerland.

Funds required: Open-ended



Dalhousie University

International Ocean
Institute



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TECHNOLOGY COOPERATION

by

Elisabeth Mann Borgese

In 1987 this writer published a proposal for the establishment of a Mediterranean Centre for Research and Development in Marine Industrial Technology (MEDITECH).¹ The proposal was endorsed by the Government of Malta and supported by UNEP and UNIDO. The International Ocean Institute was requested to conduct a Feasibility Study, which was completed in 1988.² Subsequently, an expert meeting was organised by UNIDO (Vienna, 1988). Several Mediterranean States offered to host the Centre, and as no agreement was reached on the eventual venue of the Centre's Headquarters or Secretariat, no further action ensued.

The proposal has been overtaken by a number of intergovernmental agreements on various forms of technology cooperation in the Mediterranean and in other regions. Most important, it has been overtaken by the United Nations Conference on Environment and Development (Rio, 1992), and the Conventions, Conferences and Action Plans that followed in its wake. All of these strongly reinforced the motives and principles underlying the proposal by stressing the absolute necessity of "technology transfer" to poor countries, if they are to do

¹Malta: Foundation for International Studies, 1987.

²Krishan Saigal, Chief Investigator, *Mediterranean Centre for Research and Development in Marine Industrial Technology: Feasibility Study*, Malta: IOI, 1988.

their part in the implementation of the new international instruments and attain “sustainable development.”

The purpose of this paper is to reexamine the underlying considerations and principles of the IOI proposal of 1987 in the light of subsequent developments and to make some concrete proposals for the future by using the new instruments of international environmental law together with the Law of the Sea Convention in such a way that they reinforce each other, and thus make a contribution to the new order for the next century.

I. THE IOI PROPOSAL: UNDERLYING CONSIDERATIONS AND PRINCIPLES

The first consideration motivating the proposal was the fundamental importance of science and technology for economic development.

Far from being a luxury, to be indulged in only after the “basic needs” - health, housing, food, education, employment -- have been fulfilled, it was recognised that, in our time, it simply is impossible to fulfill the basic needs without science and technology. This may be possible for an individual philosophical hermit, or for a small colony of such within a country, but a country, in the competitive and exploitative international environment of today, cannot survive without science and technology. It becomes a basket case. It will be marginalized. It will join the company of “failed States.”

The “technology gap” between North and South is indeed the worst of all development gaps, and so long as this is not bridged, any hopes for economic development or the eradication of poverty or the conservation of the environment

remain illusory. About 85 percent of economic growth, during the past two decades, have been generated, not by increased inputs of resources or capital, but by technological innovation, derived from research and development capacity.³ The need for “development of human resources” and “capacity building” is today far more widely recognized than it was a decade ago, but the issue of “technology transfer” tends to be restricted to pollution abating and nonpolluting technologies within the limited context of “global warming,” and “biodiversity” while the issue of technology for economic development tends to be neglected. This, obviously is based on an illusion. In reality, the two, science and technology *for development* and science and technology *for conserving biodiversity and combatting climate change* are inseparable. It is therefore important to re-emphasize the importance of technology, especially, high technology, for economic growth in the context of equitable, socially and environmentally sustainable development and the eradication of poverty..

The second consideration was the fundamental change that had taken place in the nature of technology, technology development, and therefore, logically, technology transfer during the current phase of the industrial revolution.

Previous phases of the industrial revolution were based on heavy industries, essentially on steel, coal and oil. They were resource intensive, fuelled by a colonial/post-colonial extraction economy, where the colonies provided apparently unlimited amounts of raw materials and served as expanding markets

³See Borgese, “The New International Technological Order Emerging from the United Nations Convention on the Law of the Sea,” Lectures delivered at the College de France, Paris, 1989. 1989.

for the export of manufactured goods from the industrialised countries. Industries were labour-intensive, requiring large numbers of cheap and unskilled workers, whether at home or in the colonies. They were capital-intensive and hardware oriented. A piece of technology, such as a steel mill, could literally be “transferred,” in a one-time operation, on a turn-key contract.

Contemporary technology is different in kind. Through miniaturization, robotization, individualisation, “just in time” production, and recycling, contemporary high technology is far less resource intensive as well as far less labour intensive. There has been a remarkable shift from “production” to “service,” not in the sense of a separate “tertiary” sector of the economy but in the sense that. “Service,” in the form of research and development, training and retraining, advertising, marketing, maintenance and repair, rebuilding and upgrading, has penetrated the industrial as well as the agricultural sector, constituting today the largest portion of the cost of any enterprise, and up to 80 of the GNP of the most advanced industrialised countries.⁴ It has been observed that, in this situation, a “transfer” of technology is not a one-time self-enclosed act, but a kind of joint venture. Technology today cannot be “bought,” it must be “learned.” The most effective way of achieving this goal is through joint ventures in research and development. This is now generally recognized and recommended by the Conventions emanating from the UNCED process. To this I shall return in the final section of his paper.

It should be noted that, more than mandating the establishment of joint

⁴ See Orio Giarini, *Limits to Certainty*, Geneva, 1993.

ventures for the “transfer” or, rather, joint development, of technologies, the UNCED-generated Conventions impose precise obligations on the industrialised countries to pay for such transfers. The billions of dollars available through the Global Environment Facility (GEF), together with other multilateral or bilateral funding sources, could largely be used for this purpose. To finance the participation of poor countries in joint ventures on research and development through multinational funding agencies or ODA would be advantageous to industrialised States in two ways: They would be fulfilling their obligations arising from the above cited Conventions while, at the same time, they would reduce by up to 50 percent the cost of their investment in R&D, by sharing it; they would spread the high risk inherent in R&D in high technology, and they would generate new markets.. For the developing countries, on the other hand, the possibility of sending their best scientists and engineers to such joint ventures would serve as an invaluable stimulus to step up scientific and technological education at home.. For science and technology to take root in a country, the first initiative must be indigenous. There can be no co-development without indigenous development.

However, Joint ventures for research and development in high technologies between rich and poor countries do not happen by themselves. They need an institutional framework which systematically encourages their establishment.

The third consideration was that such a framework is provided, at the global, legal and institutional level, by the Law of the Sea Convention. At the practical and empirical level, an encouraging precedent is set by R&D systems developed among the industrialised countries, especially in Europe (EUREKA,

etc.), but already followed up in other parts of the world, especially Latin America (Project Bolivar).

Technology cooperation under the Law of the Sea Convention

Almost 100 of its 320 Articles of the comprehensive and voluminous text of the Law of the Sea Convention touch, one way or another, on science and technology cooperation.

In general terms, the Convention postulates that States and competent international organizations shall promote and facilitate the development and conduct of marine scientific research (Art. 239) More specifically, science and technology cooperation is mandated at three levels: national, regional, and global. Article 275 calls for the establishment of national marine scientific and technological research centres and the strengthening of existing national centres, in order to stimulate and advance the conduct of marine scientific research by developing coastal States and to provide advanced training facilities. Articles 276 and 277 mandate the establishment of regional centres “in order to stimulate and advance the conduct of marine scientific research by developing States and foster the transfer of marine technology.” Art. 276 postulates that “All States of a region shall co-operate with the regional centres therein to ensure the more effective achievement of their objectives.” Article 278, finally, exhorts the global competent international organisation to cooperate in facilitating technology transfer.

Technologies connected with deep sea-bed exploration, production, and processing are dealt with more specifically in part XI and Annex III of the

Convention. While some of this is already obsolete, there is no doubt that the International Sea-bed Authority, re-conceptualised and adjusted to the changed scientific, economic and political situation, could function as a most effective vehicle for high technology cooperation and “transfer.”

Joint Research and Development in the EUREKA system

EUREKA is a very simple model, flexible, decentralised, and cost-effective. Over a period of barely three initial years, it generated 5 billion dollars of investments in R&D in high technologies. The formation of an R&D consortium of industrial giants such as Philips, Siemens and SGS-Thomson generated an investment of over twenty billion French Francs, divided among the three industries and the Governments of the Netherlands, West Germany, France and Italy, within the EUREKA framework.

The institutional framework consists, basically of four elements:

- . A national co-ordinator, in each participating country, whose task is to solicit projects in determined priority fields of high-tech R&D, with participants in at least 2 countries;.
- . the meeting of national coordinators, with the task of making a first selection among such projects;
- . the meeting of Ministers of Science and Technology of the participating countries, which makes the final project selection;
- . a small co-ordinating centre to service the two levels of meetings.

Projects selected as EUREKA projects are financed partly by the industries (private sector) who made the proposal, partly by the Governments, and partly by the European Union, where the European Union is a partner. The main point is that the system generates a synergism between private and public sector financing at the regional level which was to make Europe competitive at the global level.

Recently EUREKA has expanded its reach overseas. There is, e.g., a EUREKA project with the Brazilian State oil company, Petrobraz.

The IOI study recommended the synergetic utilisation of a number of elements: the EUREKA system; the Law of the Sea Convention calling for the establishment of a Regional Centre in the Mediterranean under Articles 276 and 277; and the Barcelona Convention system, including the Mediterranean Action Plan. This should have facilitated technology cooperation between the developed and the developing countries bordering the Mediterranean. Today the validity of this model would be strongly reinforced by the UNCED generated Conventions.

II. SOME PROPOSALS

It is evident that considerable efforts have been made to promote technology cooperation between North and South, in accordance with the Conventions and Resolutions of the United Nations. The leaders in this effort are undoubtedly the Mediterranean States. Around the Mediterranean in fact quite a network of technology institutions have been developed. Examples are the UNIDO

established International Centre for Science and High Technology (ICS) in Trieste, the UNDP-sponsored Centre for Education and Research in Cairo (CEDARE) which was established to enhance European-Arab cooperation in sustainable development and has a technology cooperation component. A mechanism was established in Greece to facilitate technology cooperation in the private sector. And recently a centre for the advancement of environmentally sustainable technology was established in, and financed by, Spain.. Last, not least, the functions of the newly established Mediterranean Commission for Sustainable Development include:

To identify technologies and knowledge of an innovative nature for sustainable development in the Mediterranean region and to provide advice on the various means for their most effective use, in order to facilitate exchanges among the Contracting Parties and to enhance capacities for national development

All these initiatives testify to the awareness of the need of technology cooperation between the countries bordering the Mediterranean.

At the same time, a couple of myths fell by the wayside. During this last decade.

One of these myths was that it would take developing nations several generations to "catch up" with the North in science and technology. They would have to "recapitulate" the phases of technology development passed through by the North, starting with simple or "appropriate" technologies, and working their way up through the decades -- or centuries. This myth was effectively destroyed by the Newly Industrialized Countries (NICS) of Asia as well as, e.g., Brazil and

Mexico. Actually, the first to destroy it was Adriano Olivetti of Italy. Having built, right after World War II, one of his most modern factories in the South of Italy, which at that time, was a totally undeveloped and largely illiterate country, he said he could show, and indeed he showed, that his illiterate workers could acquire, within the span of five years, the skills of the best trained workers of the “north” and match their productivity.

The second myth that fell was that we needed binding international law mandating technology transfer, especially with regard to technologies related to the exploration and exploitation of the common heritage of mankind; or else developing countries could not share in the benefits. I personally very much favour such binding provisions, but it so happens that three of the “Pioneer Investors” in deep sea-bed mining are developing countries (India, China, Korea) which acquired their technologies without any reference to the “mandatory transfer” provisions promulgated by Part XI of the Law of the Sea Convention and abolished by the “Implementation Agreement” of July, 1994.

However, none of the technology cooperation mechanisms or institutions created during these past ten years really take advantage of the new situation or of the interactions and synergisms that could be built on it. There is much talk about “privatisation,” far less about creating new forms of cooperation between private and public sector at the international level. And yet we all know that “horizontal integration” as advocated since the days of the Brundtland Report, requires the participation of the private sector, among others. There is much talk about mobilizing new sources of financing, but none about where they are. Yet we know where they are.

The considerations and principles underlying the IOI proposal of ten years ago are as valid today as they were then, but the chances of implementing them are considerably greater today, and the need is even more pressing. Here, then, is what we propose

A.. National Level

1. Governments, especially of developing countries, should be encouraged to follow the suggestions made by the Third World Academy of Science and earmark a percentage of their educational budgets for the promotion of science and technology at home: 4 percent for fundamental sciences; 4 percent for applied science; 10 percent for research and development, to start with.

2. Donor countries and international funding agencies should be encouraged to match with grants the funds thus earmarked, large or small as these may be. Such matching grants would serve as a powerful incentive.

3. The ways in which sciences and technology will be promoted in developing countries will vary from country to country as they must be harmonized with indigenous cultures. In general terms, however, it is clear that earmarked and matching funds should be applied to education from the elementary to university levels and to R&D undertakings funded jointly by the private and the public sector. This, again, will generate a multiplier effect on available funding..

B. Regional Level

1. At the regional level, the goal should be a synergetic and integrated development of

the Law of the Sea Convention (Part IX, Enclosed and Semi-enclosed Seas; Parts XIII, XIV, on regional cooperation; in marine science and technology, in particular, Articles 276, 277 Regional Centres for the promotion of marine sciences and technologies);

the regional Seas Programmes (upgrading from a sectoral to an integrated, comprehensive approach, from "Environment" to "sustainable development");

Agenda 21, Chapters 17, Seas and Oceans, Chapter 34, Technology);

Biodiversity Convention (Article 4);

Climate Convention (Article 5);

as well as the recommendations of the Nordwijk Integrated Coastal Zone Management conference (1994), the Global Plan of Action on land based sources of pollution (Washington, 1995) and the implementation agreement of straddling stocks -- all with regard to technology cooperation within a broad, culturally, socially and environmentally sustainable context.

- The Small Island Developing States (SIDS) Plan of Action.

2. It is suggested that a *pilot project* be initiated in the Mediterranean within the framework of the Regional Seas Programme under the revised Barcelona Convention. The project could be adapted, with the necessary changes, to other regions and regional seas at a later stage.

If this proposal should be considered as a cost-effective implementation of an important aspect of the mandate of the Med. Commission for Sustainable Development,

3. A *network* or *system* should be built consisting of
 - (a) all contracting parties of the Barcelona Convention
 - (b) all regional scientific and technological centres and institutions as well as international scientific and technological institutions operating in the region;

4. The network should consist of four components:
 - (a) national co-ordinators and representatives of regional and international scientific/technological institutions;
 - (b) the meetings of the national coordinators and regional and international institutions;
 - (c) the meeting of Ministers of Science and Technology;
 - (d) the Co-ordinating Centre.

5. Each contracting party should designate a national co-ordinator.
 - (a) In the European member states, the EUROMAR coordinator might be designated for this purpose;⁵
 - (b) In the other member states, a special coordinator would have to be

⁵ Upon the publication of the IOI study, the Italian EUROMAR co-ordinator took the initiative of calling a meeting to discuss the possibility of opening EUROMAR to the participation of developing countries. The proposal, at that time was defeated. The French delegation, in particular, insisted that EUREKA and EUROMAR had to remain European, as its principal purpose was to make European industry globally competitive. Today the situation is somewhat different. The European Union's emphasis on technical assistance to the countries on the southern and eastern shores of the Mediterranean offers a far better chance of cooperation.

designated and located in the most suitable national scientific/technological institution.

6. The task of the national coordinators would be to solicit projects both from the public and private sector. To be eligible, projects must

(a) fall into one of the categories of technologies agreed upon by the contracting parties;⁶

← (b) have partners in at least two countries, including at least one developing country..

7. National coordinators and representatives of regional and international institutions should meet twice a year to make a first selection among the proposed projects.

⁶The IOI Feasibility Study of 1988 identified a number of priority areas for R&D projects in the Mediterranean region. These included *seawater desalination technologies*, especially if they were to be coupled with *solar energy technologies*; *aquaculture or mariculture technologies*, coupled with *genetic engineering technologies*; and *garbage recycling technologies coupled with energy production and with aquaculture*. These are just random exemplifying illustrating the linkages between integrated coastal management under Agenda 21, ~~examples illustrating the interactions between~~ the Barcelona Convention regime and the Law of the Sea, on the one hand, and the Climate and Biodiversity Convention regimes on the other, and the benefits that could accrue from the synergism between these regimes. The technologies identified by the Mediterranean Commission for Sustainable Development should have first priority..

8. The Ministers of Science and Technology (or equivalent) of the contracting parties should meet once a year to make the final project selection. These meetings should be held within the context of the Mediterranean Commission for Sustainable Development. They should constitute one of the “High Level Segments” of the Commission, thus ensuring the proper linkage between joint technology development and the goals of sustainability and conservation aspired to by the various UNCED Conventions, programmes and action plans.

9. The projects selected would be financed half by the industries that initiated the proposal, half by governments and regional funding agencies. This would create the desired synergism between private and public investments at the regional level. The participation of developing countries should be (largely, but not necessarily wholly) financed through international funding. By contributing to this financing, the industrialised contracting parties would fulfil their technology cooperation obligations under the Biodiversity and Climate Conventions while supporting their own industries.

10. The Coordinating Centre should consist of a core module and other modules which might be added or closed in accordance with needs and funding availabilities.

- (a) the core module should service the meetings of the national coordinators and representatives of regional and international institutions. In cooperation with the Athens Coordinating Centre

for the Mediterranean Action Plan, it should service the special high-level segments of the Mediterranean Commission for Sustainable Development making the final project selection.

- (b) As soon as possible, there should be an additional model for the organisation of *training programmes*. Training programmes should cover the sciences and technologies involved in the network's projects, and trainees should be directly involved in the projects as much as possible. Training programmes should also be of an interdisciplinary nature, cover management and project planning and give an introduction to regional cooperation and development and the emerging forms of ocean governance as these provide the broader framework within which technology cooperation is to evolve. The *training module* should cooperate with existing training programmes and institutions.
- (c) There should be a *legal module* which should assist in the drawing up of joint venture agreements, the sharing of intellectual property, etc. and other legal questions arising from the projects.
- (d) There should be a *module for data handling and information and cooperation with technology cooperation systems as they maybe established in other regional seas programmes*.

C. Global level

1. The global institution most suitable for the conduct of joint technology development under the joint aegis of the Law of the Sea and the

Biodiversity/Climate Convention regimes is the International Sea-bed Authority which has been established in Jamaica. The proposal is for a *joint undertaking in exploration, technology testing and upgrading, coupled with long-term (5 years) environmental impact assessment including research on the biodiversity of the deep sea-bed area, its flora and fauna as well as its genetic resources (microbes). The undertaking should also have a training component. It should be carried out in the central area reserved for the future Enterprise..*

2. The proposal is based on the following elements, already in place:

(a) The Law of the Sea Convention

Article 145 of the Law of the Sea Convention establishes that “Necessary measures shall be taken with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities.”

Subparagraph (b) establishes that such measures must include “the protection and conservation of the natural resources [biodiversity] of the Area and the prevention of damage to the flora and fauna of the marine environment.”⁷

⁷Experts in some industrialised countries have taken the position that the Sea-bed Authority has no competence to deal with living resources or genetic resources on or under the deep sea-bed. It would seem, however, that the Authority’s responsibilities with regard to the conservation of the flora and fauna in the “Area” are clearly stated in Article 145 of the Convention. It should be added that, in dealing with “bioprospecting” and the subsequent commercial utilization of deep-sea microbes, the distinction between “living” and “nonliving” resources is somewhat meaningless. The microbe methanococcus, whose entire genome has

Jean Pierre Levy!!

- (b) *The plan for joint exploration of the central area reserved for the Enterprise, adopted by the Preparatory Commission for the International Sea-bed Authority and for the International Tribunal. for the Law of the Sea in 1989 (Document LOS/PCN/BUR/R.5, 16 August 1989). This plan provides, inter alia. for the collection of “Oceanographic (physical, chemical and biological) data of a general as well as of a site specific nature using standard techniques;” and “Biological data from samples and photographs.”(para.38). While the plan provided for the participation only of the three Pioneer Investors who had, at that time, been awarded mine sites in the Clarion-Clipperton fracture zone (France, Japan, and the Russian Federation), the joint undertaking should now be opened to the participation of other Members of the Authority or their companies.*
- (c) *The plan for long-term environmental assessment submitted by the Delegation of the Federal Republic of*

recently been chemically sequenced, belongs to the “kingdom” of the Archaea. The Archaea are *not* the ancestors of flora and fauna, but have genetic qualities unknown on earth. However, they do have the capacity of synthesizing methane out of carbon dioxide and hydrogen and thus may be a potential source of renewable and nonpolluting energy. Thus this whole field of research and R&D, while extremely relevant for the purposes of the Climate Convention, comes clearly under the mandate of the Authority.

*Germany to the Prep.Com in 1992 and 1993.*⁸ The German Delegation contributed three documents giving a state-of-the-art description of the environmental impact of available mining technologies. They came to the conclusion that “An extended pre-industrial pilot mining operation is necessary to test effects of technically and environmentally large-scale and long-term operations. Pre-industrial pilot mining should be at a scale of one-fifth to one-third of an ultimate commercial operation (2.2 million tons (mt) of wet nodules per year). Pilot mining should also last for more than one year in order to study all possible seasonal effects. Such pilot operation could be organized as an international venture.” (BGR, p. 38)”. And: “Equally significant are international cooperation and communication between the various interest groups representing research, economics, technology, and administration that participate in deep-sea mining...An international TUSCH Group would contribute through harmonizing the differing positions on environmental protection found in various nations.”

⁸*Potential Environmental Effects of Deep Seabed Mining* by Hjalmar Thiel, Eric J. Foell, Gerd Schriever. Hamburg: University of Hamburg, 1992; *The Environmental Impact of Deep Sea Mining*, including a Summary Report, Hannover: Bundesanstalt fuer Geowissenschaften und Rohstoffe (BGR), 1992; *TUSCH, Research for the precautionary environmental protection of the deep sea*, Hamburg, TUSCH RESEARCH GROUP, 1993.

(TUSCH, p. 20) And, finally: "Since the United Nations is expected at some point to function in a regulatory capacity, controlling the exploitation of natural resources in that part of the ocean that has become widely accepted as the 'common heritage of mankind,' it would also be the logical choice as organizer and sponsor of a coordinated, worldwide ocean mining risk assessment and impact evaluation program." (Hamburg University, p. 161). (2) and (3) should form the essence of the proposed undertaking.

- (d) *The mandate of the Biodiversity and Climate Conventions.*
- Article 5 of the Biodiversity Convention provides that "Each contracting Party shall, as far as possible and as appropriate, cooperate with other Contracting Parties, directly or, where appropriate, *through competent international organizations, in respect of areas beyond national jurisdiction and on other matters of mutual interest, for the conservation and sustainable use of biological diversity.* Clearly, "the competent international organisation," in this case, is the International Sea-bed Authority; clearly, also, the "area beyond national jurisdiction" is the international sea-bed area. Article 6, para.4 of the same Convention provides that "Each contracting Party shall take

legislative, administrative or policy measures, as appropriate, with the aim that the private sector facilitates access to, joint development and transfer of, technology referred to in paragraph 1 above for the benefit of both governmental institutions and the private sector of developing countries...” Here the reference to “joint development and transfer of technology” should be emphasized. This is reinforced by Art, 17, para.5, “ The contracting Parties shall, subject to mutual agreement, promote the establishment of joint research programmes and *joint ventures for the development of technologies relevant to the objectives of this Convention*. Art, 22, para.2 of the Biodiversity Convention, finally, builds the bridge between that Convention and the Convention on the Law of the Sea. “ Contracting Parties shall implement this Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea. The Climate Convention, on the other hand, clearly specifies the *financial responsibilities* of the industrialised countries with regard to technology cooperation. Article 4, paragraph 5 provides that the developed country Parties shall “promote, facilitate *and finance*, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention.” The relevance of sea-bed research and R&D to the purposes of the Climate

Convention is as evident as its relevance to those of the Biodiversity Convention. One should remember that the interaction between deep the sea-bed, and its volcanic activities, with the water column and the atmosphere are determinants of the global carbon cycle.

Thus the building blocks are all in place for the adoption of an action plan that would constitute the backbone of the activities of the International Sea-bed Authority, making it useful and relevant. At the same time, the implementation of the proposal would enhance technology cooperation and the transfer of information, science and a variety of high technologies to developing countries, assisting them to fulfil their responsibilities under the Biodiversity and Climate Conventions.

The present proposal, based on a combination of the Pioneer Investors' exploration programme with the German proposal for a long-term environmental impact assessment, and leading us into the next century, should be conceived as the first of a series of cooperative projects under the aegis of the International Sea-bed Authority. This would require political will and an "evolutionary approach" to the initial functions of the Authority, keeping pace with the march of science and technology. One could indeed envisage the Authority evolving into a sort of global EUREKA system, with the national Delegations bringing their proposals, the Technical and Legal Commission (or perhaps a Scientific and Technological Commission should be established by the Council in due time) making a first selection, and the Council making the final selection, selected

programmes to be financed half by the industries, half by Governments and international funding agencies covering the costs of the participation of developing countries. This would make the Authority financially sound. It would give a matchless boost to deep-sea exploration and R&D in the next century which may well be the Century of the Ocean.

ANNEX

EXCERPTS FROM THE CHIEF RECOMMENDATIONS OF PACEM IN
MARIBUS XVI, HALIFAX, 1988

On the Internationalisation of OTEC Research

Action should be taken to create an international testing facility where industry and research teams could be supplied with deep cold water from the depths for research and development work relating to Ocean thermal Energy Conversion applications

On the Importance of Information Technology

The formulation of national policies and plans on information technologies designed to facilitate technology transfer through the development of appropriate information technologies relevant at the national or regional level should be a government priority in every country. Donor agencies and competent international organizations should assist this process as appropriate.

On the Need for New Economic/Ecological Indicators

We will need to develop and use, new indicators of value added: calculations that include, for example, the value deducted from societal benefits by the production process itself.

On the National Basis of International Cooperation

Technology “transfer” -- more appropriately described as “joint technology development” -- must have a strong national basis to make international cooperation meaningful and effective.

On the Building of National Infrastructure

At the national level, developing countries should be encouraged to:

1. Set up a policy-making and implementing agency;
2. Build up, under the auspices of such an agency, a strong industrial information system;
3. Set up engineering design and consultancy organisations; and

4. Establish R&D laboratories to provide specialised advanced training, do applied research, assist the policy-making agency and industrial enterprises in identifying, selecting, and negotiating with foreign technology suppliers.

On Financing Indigenous Technology Development

Every developing country should earmark a certain percentage of its educational budget for the advancement of science and technology, including marine technology. The Third World Academy of Science recommends that 4 percent of the educational budget should thus be earmarked for fundamental science; another 4 percent for applied research; and 10 percent to research and development.

On Regional Centres for R&D

Developing countries should initiate steps for the timely implementation of Articles 276 and 277 of the United Nations Convention on the Law of the Sea calling for the establishment of regional centres for the advancement of marine sciences and technology.

On Global Cooperation

all countries should promote:

1. The adoption of an international code of behaviour for technology transfers;
2. The creation of an International Fund for Technology Development;

3. The establishment of an International Register of Technological Data; and
4. The identification of mechanisms providing mediation services between patent holders and users.

On the Enhancement of Mutual Interests

In creating new forms of industrial/scientific cooperation between industrialised and developing countries, the interests of both parties must be taken into due consideration. To be successful, a joint enterprise must benefit all parties involved.

On the Mediterranean Centre for R&D in Marine Industrial Technology

The governments of Mediterranean countries and the UN specialised agencies should respond promptly and positively to the Secretary-General's inquiry with regard to the next steps toward the establishment of the Mediterranean Centre for Research and Development in Marine Industrial Technology.

On Regional Centres in Other Oceanic Regions

Experts in other oceanic regions should be encouraged to examine the Mediterranean Feasibility Study to see how it could be adapted to their regional circumstances, with a view toward implementing Articles 276 and 277 of the United Nations Convention on the Law of the Sea, strengthening the institutional infrastructure of the Regional Seas Programmes and enhancing South-South cooperation in technology development.

On the Broader Context of Technology Training

Training in technology needs to be supplemented by the creation of an awareness of the social, political, and cultural implications which the increased use of technology may generate.

On Special Clauses to be Included in Technology Transfer Agreements

All new technology supplied to the Third World must carry a “joint research and development” clause, ensuring that the next generation of the technology is jointly developed, as well as an “update clause” to make new versions of the original technology available to the less developed countries.

On Special Clauses to be Included in Technology Transfer Agreements

Training of personnel in the use, repair, and further development of high-tech marine industrial equipment should be a part of the development and transfer of marine technology, and provisions to this effect should be included in the relevant agreements or contracts.

Conclusion

Human resources development should be at the core of the development of marine science and technology and of the programs of cooperation between the developed and the developing countries.



INTERNATIONAL
OCEAN INSTITUTE
CANADA

DALHOUSIE
University



*Proposal
for the establishment of the
IOI Virtual University
(First Draft)*

INTRODUCTION

This proposal is based on a decision taken by the Thirty-Eighth Meeting of the Governing Board, in Suva, Fiji, on November 6, 1999. The Board established a small working group to prepare a formal proposal for the next meeting of the Executive Committee in Malta, June 2000.

Undertaking the task of establishing such a "Virtual University" or, for the IOI to act as a "Virtual University" is extremely ambitious, challenging and innovative. The "Virtual University" should accept students globally and award an *interdisciplinary, internationally recognized master's degree*. The institutional arrangement is without precedent. The closest, perhaps, is the M.Sc. Degree awarded by the World Maritime University; with whom the IOI has a long-standing working relationship which should include also cooperation on the "Virtual University" project. The World Maritime University, however, is not a "virtual university". It is a University built of bricks and mortar, where students reside for periods of 1-2 years. The degree awarded, furthermore, is not broadly interdisciplinary but designed for experts in the shipping industry and the management of ports and harbours. Other precedents are given by the UK's Open University or the Commonwealth of Learning in Vancouver, BC. And there is of course a growing network of distant-learning arrangements. There is an African Virtual University as well as some virtual universities in the US. None of them, however, is structured to award a globally recognized, interdisciplinary Master's degree in ocean affairs for students anywhere in the world.

The new institutional academic arrangement proposed by the IOI should respond to a number of challenges and new opportunities:

1. The interdisciplinary character of contemporary knowledge, which transcends the departmental divisions of traditional universities. Traditional universities, in many parts of the world, are struggling to overcome the structural impediments to interdisciplinary learning. The IOI Virtual University could be a pilot experiment toward new approaches to this problem.

2. “Globalization” and the communications revolution, facilitating global communication among universities and between universities and students, but still largely inaccessible to students in poor countries;
3. Financial constraints on students, especially in developing countries, which in most cases prevent them from extended sojourns in foreign countries to obtain a well recognized degree; and where they succeed, the brain drain, detracting from rather than adding to the transfer of knowledge to developing countries;
4. Financial restraints on Academia, globally, entailing more and more “downsizing” and “privatization” of universities, which may endanger academic freedom as well as public higher education as a pillar of genuine democracy.

The need for a restructuring of higher education is felt globally. As in international law and organization, or in economic thinking, it is likely that the peculiar nature of the ocean environment and its resources may be most suitable for a pilot project for an innovative approach to the sharing of knowledge as a Common Heritage of Mankind. It also would appear that the evolving structure of the IOI, itself an innovative system reflecting in its activities an evolving world order reaching from the local community to the nation, the region, and the United Nations, and its accumulated experience and track record in training in ocean affairs, is uniquely suited for this pilot project in education.

PURPOSE

The purpose of the IOI Virtual University is

- ▶ to contribute to the sharing of knowledge as a Common Heritage of Mankind, with special consideration for the needs of developing countries
- ▶ to contribute to the enhancement of interdisciplinary learning
- ▶ to contribute to the merging of the information revolution and the coming century of the ocean;
- ▶ to develop innovative approaches towards solving some of the major problems besetting higher education at the end of this century;

through the consolidation, optimization, and full utilization of its unique structure and accumulated global experience in education, capacity building and training.

INSTITUTIONAL STRUCTURE

The structure of the IOI Virtual University will be extremely simple. It will be a “soft” structure and extremely flexible.

1. There will be a *Rector* to be appointed by the IOI Governing Board. He should be an expert in the philosophy of education as well as knowledgeable in ocean affairs. The first, or Acting Rector might be the Executive Director of the IOI, with his high credentials in both fields.
2. There will be a *Virtual Faculty*, consisting of (a) the directors, lecturers and discussion leaders of IOI training courses all over the world; (b) faculty members of the IOI host institutions who choose to participate;
3. There will be a number of *Sponsoring Organizations*, which, hopefully might include the United Nations University, UNESCO, WMU, the Peace University, etc.
4. There will be a Board of Trustees, consisting of the heads of the Sponsoring Organizations or their representatives and members of the Governing Board of the IOI.

STRUCTURE OF THE MASTER’S DEGREE IN OCEAN AFFAIRS

The Master’s Degree Programme of the IOI Virtual University will have three components.

1. A number of courses will have to be completed, each one with an established number of credits. These courses can be taken at any one of the IOI Operational Centres and Affiliates and/or in their host institutions. They also can be taken through distant-learning arrangements which will be offered through the IOI web site.
2. There will be an internship of one academic quarter (three months) which can be completed in any of the IOI Operational Centres or Affiliates.
3. There is a thesis requirement. Students can select their supervisor and thesis committee

from the roster of the Virtual Faculty. The best of the theses will be published as IOI Occasional Papers or in the *Ocean Yearbook*.

OTHER FUNCTIONS

1. Teaching tends to become sterile if it is not linked to research. The IOI Virtual University will benefit from the research activities of the IOI and its host institutions.
2. IOI's Youth Programme will be linked to the activities of the Virtual University. It could be linked to the internship part of the Master's Degree programme or be the subject of a thesis.
3. The Woman and the Sea Programme will be linked to the Virtual University through the provision of scholarships to women from poor countries.
4. A Ph.D Programme could be developed at a second stage.
5. The network of cooperating organisations can be flexibly broadened to include institutions outside the IOI system, such as, e.g. Ocean Universities in Uruguay, China, or France; the World Maritime University, etc.

ESTABLISHMENT

The Working Group established by the Board will have the following tasks:

1. To arrange for the drafting of a Charter for the IOI Virtual University.
2. To compile a list of all IOI training programmes as well as ocean related courses offered by the host institutions;
3. To select two "core courses" to be taken by all student
4. To determine the number of academic credits to be attributed to each course;

5. To determine the total number of credits required for the degree;
6. To compile a roster of members of the Virtual Faculty;
7. To coordinate the preparation of courses for distant-learning arrangements
8. To prepare a budget for the first 5 years of the Virtual University

FINANCIAL ARRANGEMENTS

This work of the Working group should be completed in time to be presented to the meeting of Directors and the Executive Committee in Malta in June 2000. US\$ 6,000 should be budgeted by Headquarters for communications and other expenses incurred during this period.

As to the running costs of the Virtual University, once it has been established, Students will have to pay the normal fees for taking courses at host institutions; IOI will continue to raise funds for scholarships for IOI training programmes. The possibilities of raising such funds should be greatly improved by the prestige of this new approach to capacity building.

There will have to be a salary for the Rector. And modest funding for his/her small staff. The fees for teachers will be absorbed by the budgets for individual courses.

THE INTERNATIONAL OCEAN INSTITUTE

The International Ocean Institute (IOI) was created to promote education, capacity-building, and research as a means to enhance the peaceful and sustainable use and management of ocean and coastal spaces and their resources. The IOI was founded in 1972 by Professor Elisabeth Mann Borgese as an independent, non-profit non-governmental organisation headquartered at the University of Malta. The IOI Network currently consists of ten Operational Centres spanning the globe.

For more than two decades the IOI has stood at the forefront of organisations in the world in advocating and providing education, capacity-building and research to enhance the peaceful uses of ocean space and resources in the interests of present and future generations. The IOI's approach is interdisciplinary and comprehensive, bringing together experts from around the globe.

In addition to its capacity-building activities, the IOI has prepared working papers for the Third United Nations Conference on the Law of the Sea (UNCLOS III: 1973-1981), the Preparatory Commission for the International Seabed Authority, and for the International Tribunal for the Law of the Sea (1982-1994) as well as for various governments. It has provided consultants to UNEP, the World Bank, the United Nations Industrial Development Organisation (UNIDO) and the Asian-African Legal Consultative Committee (AALCC).

MISSION

The mission of the International Ocean Institute is to promote education, training and research to enhance the peaceful uses of ocean space and its resources, their management and regulation as well as the protection and conservation of the marine environment, guided by the principle of the Common Heritage of Mankind.

GOALS

The goals of the IOI are to:

- 1. Enhance the ability of developing countries to develop and manage their own resources sustainably for their own benefit, to establish self-reliant development, and help with education and eradication of poverty from community to national level;**
- 2. Enhance abilities for self-reliant development at community level, including control and protection of natural resources for future generations, and the eradication of poverty in coastal areas;**
- 3. Enhance participation of people, in particular women, in development projects which take into account environmental issues;**
- 4. Establish sustainable mechanisms able to tackle inter-related social, environmental and economical issues in an integrated fashion.**

AIMS

The aims by which the IOI gradually achieves its goals include:

1. Strengthening of institutions through capacity building, sharing and dissemination of information, and generating incentives and contact between local and national authorities;
2. Establishing partnerships and networks with the IOI Operational Centres, other NGOs, donors and between authorities and communities;
3. Increasing awareness and understanding of the sensitivity and the importance of the Coastal Zone and the Marine environment for sustainable development, through demonstrations, training, provision of educational material and information to local NGOs, schools and authorities;
4. Encouraging self-reliant development of sustainable livelihoods by means of aquaculture, farming, value added processing of resources, protection of water resources and application of traditional and new technology;
5. Emphasising decentralised decision making to local authorities and communities, and implementation of agreements, regulations, and development projects with the involvement of the private sector; and
6. Increasing the abilities at local and national level to transfer and apply scientific (social and natural sciences) knowledge and information, from generators to users, through hands-on training, case studies, and demonstration sites; and providing incentives through linkages to other sites, and to international agreements and commitments.

ACTIVITIES & SERVICES

The IOI's activities include training projects, information dissemination, conferences, research and publications.

- **Training** of hundreds of middle-level professionals, mainly from Developing Countries, through short and long duration interdisciplinary courses in ocean and coastal management;
- **Development work** among coastal communities with the objective of improving their livelihood while restoring and preserving coastal ecology;
- **Information dissemination** to NGOs and coastal communities through the global IOI networks and the IOI Websites;
- **Organisation** of the annual *PACEMIN MARIBUS* (Peace in the Oceans) Conference and other Seminars and Workshops on topics of regional and special interest;
- **Research** on a variety of ocean-related areas such as international and regional agreements and policies on oceans and the coastal zone; on regional and sub-regional cooperation and on scientific and technological approaches to sustainable management of living and nonliving marine resources; and

- **Publication** of the *Ocean Yearbook* in collaboration with the Dalhousie University, Canada, and *Across the Oceans*, the IOI's Newsletter. Regional operational centres also publish their own newsletters, research papers and reports.
- **Services** include advice, consultancy, information regarding ocean and coastal environments.

IOI OPERATIONAL CENTRES

The IOI's scope and presence is truly international with ten Operational Centres around the globe and with several new Centres or affiliates in the development stage. The current centres and their host institutions are:

- IOI-Canada, at Dalhousie University, Canada
- IOI-China, at the State Oceanic Administration, China
- IOI-Costa Rica, at the Universidad Nacional, Costa Rica
- IOI-South Pacific, at the University of the South Pacific, Fiji
- IOI-India, at the Indian Institute of Technology, Madras, India
- IOI-Japan, at Yokohama City University, Japan
- IOI-Malta, at the University of Malta
- IOI-Black Sea, at the Black Sea University, Romania
- IOI-Senegal, at the Centre de Recherches Océanographiques de Dakar- Thiaroye
- IOI-Southern Africa, at the University of Western Cape, South Africa.

Proposals for new Centres have come in from the Gulf Region, the Caribbean, Chile, Brazil, Egypt, Turkey, Russia, Ukraine, Germany and Sweden.

Each Centre is autonomous, uniquely identifying its own regional priorities for research and development, while benefiting from the support of the overall IOI network. This regional approach to research and capacity building enables the Institute to draw upon the different strengths of the Operational Centres to cater to the needs identified within each region. Each Centre is run by a Director, generally supported by a small staff with a large number of experts and volunteers on call. The Directors are members of the IOI's Planning Council, which meets annually. Four of the presidents/vice chancellors of the host institutions are members of the IOI governing board.

LOOKING AHEAD

Centres The IOI network provides a flexible mechanism with a global coverage through several nodes. It has a governing and coordinating structure that generates synergism and strategic planning of the network of semiautonomous nodes. This cohesive and comprehensive mechanism is capable of cooperating equally well with inter-governmental systems and the private sector.

Growing steadily and responding to global changes, the IOI network is now aiming at a multiplier effect to its spectrum of activities. It plans to move from direct training to training-the-trainers; from direct implementation of projects to offering advisory and consultative services; from a network of centres to a network of clusters and affiliates. IOI is also developing online and distance education systems. IOI is the future of the oceans.

HOW TO ACCESS SERVICES & INFORMATION

Requests may be directed to headquarters or to individual centres.

International Ocean Institute

Malta

E-mail:

On the web: <http://www.ioi.org/>