ASEAN INSTITUTE FOR MARINE RESOURCES MANAGEMENT (ASIMARE)

A PROPOSAL FOR A FEASIBILITY STUDY

I. The Concept

The name ASEAN Institute for Marine Resources Management (ASIMARE) is formulated to convey the conceptual essence of the proposed institute. The institute would undertake research and education/training in the ASEAN region, for ASEAN nations, and as far as is feasible, by ASEAN nationals. The institute would not be narrowly and esoterically individualistic and scientific, but would focus international, multidisciplinary teams on resource exploration, assessment, sustained development and management in support of ASEAN goals. These teams would provide technical support to formal and informal ASEAN committees and respond to ad hoc ASEAN requests for resource management studies. Highest priority would be on truly shared resource management problems that can only be solved by gathering data from several countries' areas. Second priority would be on issues held in common but not transnational in themselves. Research to only one nation's benefit would be of lowest priority and on a rotating basis. The institute would serve as a node and clearing house for access for requests for scientific research by foreign nations and international organizations, and offers of, and requests for technical assistance. Such research and technical assistance would have to fit the institute's existing research agenda. The institute would also be a central data bank, and a coordinator and implementor of human resource development for marine resource management.

II. The Rationale

Within the last decade, increased "marine awareness" on the part of many of the world's developing nations has resulted in the widespread unilateral

extensions of national resource jurisdictions up to 200 nautical miles or more from shore. This world sea enclosure movement has transferred one-third of former "high seas," and most known ocean resources and related activities to the theoretical control of individual states. All ASEAN nations except Singapore have declared exclusive economic zones in which they claim sovereign rights for the purpose of exploring, exploiting, conserving and managing the living and non-living natural resources of the seabed, subsoil and superjacent waters, and jurisdiction over marine scientific and preservation of the marine environment. For ASEAN, the marine area gained by extended jurisdiction is about 65 percent of its combined land area. The Philippines gained about 4.5 times its land area while Brunei gained 3.2, Malaysia 2.7, Indonesia 2.1, Thailand 0.5 and Singapore 0.4 times their land areas (Figure 1).

Stimulated by a marked increase in scientific knowledge and the rapid advance of exploitation technology, the major incentive for extended jurisdiction was the expectation of enlarged resource bases. Indeed most of the ASEAN states are now engaged in a conscious effort to identify and pursue their national interests in the ocean arena, because the new resources, activities, and concomitant responsibilities create new challenges and opportunities for national and regional development.

For ASEAN as a whole, the present direct economic contribution of quantifiable marine uses is about 8.5% of GNP. This ranges from 15.2% in Malaysia to 1.2% in Thailand. The greatest single marine contribution is from hydrocarbons (dominant in Brunei, Malaysia and Indonesia), followed closely by shipping (dominant in Singapore and also important in Indonesia). The dominant marine sector in the Philippines and Thailand is fisheries, which is also important in Malaysia. Fish also contribute significant protein to the diet--about 65% in Indonesia, Malaysia and the Philippines--as well as

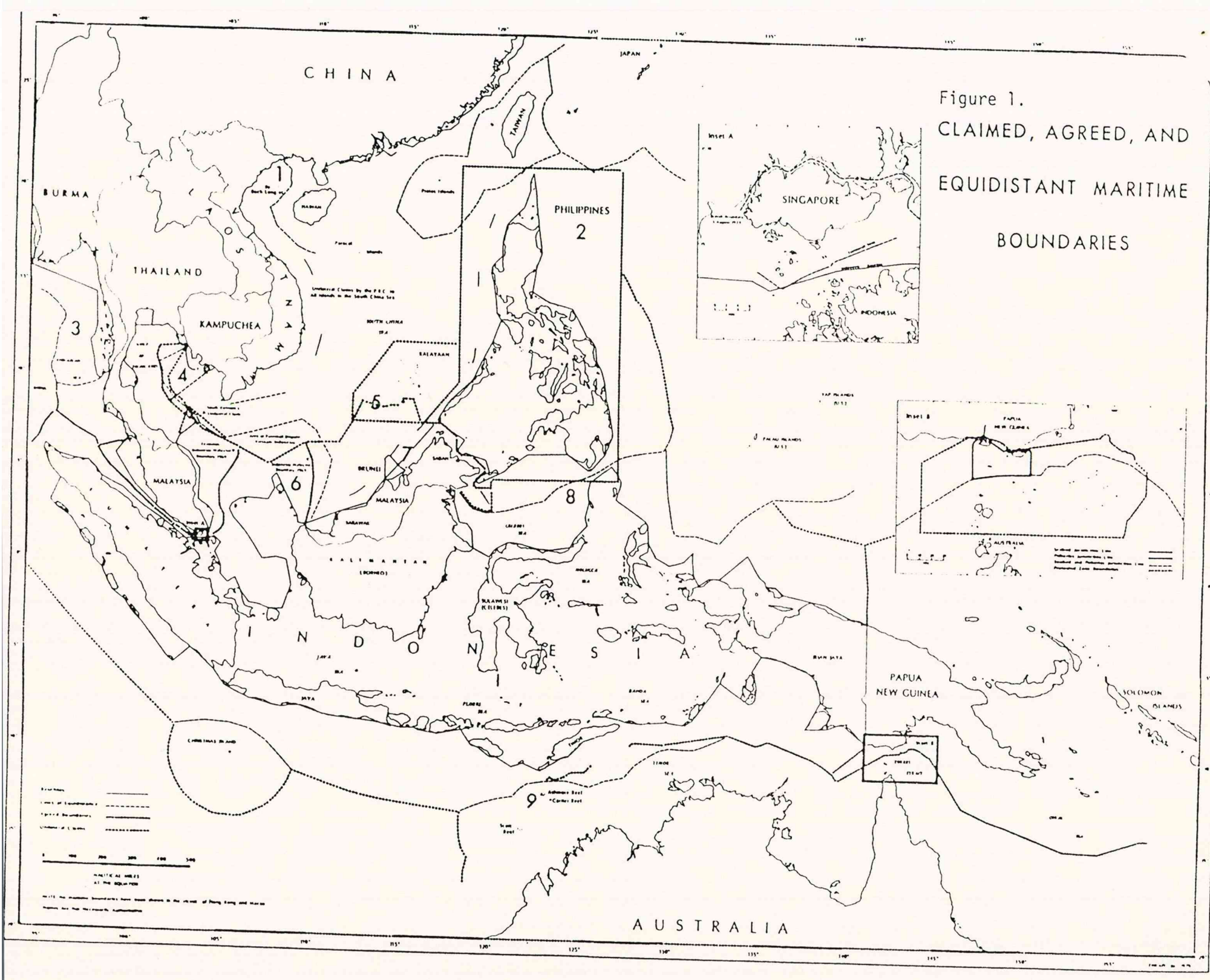

Figure 1.

CLAIMED, AGREED, AND EQUIDISTANT MARITIME BOUNDARIES

employment--some 2 million in all of ASEAN (neglecting secondary employment) with 1.6 million employed in fisheries in Indonesia alone. In 1978, ASEAN countries exported US$444 million worth of fishery products.

Brunei's economy is almost entirely dependent on its petroleum industry which is focused on offshore resources. Singapore's economy is boosted by its port, and its shipping and marine services industry. Both Thailand and the Philippines draw development hope from marine hydrocarbons. Major development projects such as the Eastern Seaboard project of Thailand and the Bintulu regional growth center in Sarawak (Malaysia) are based on offshore natural gas. Offshore marine resources and uses afford opportunities for stimulation of neglected rural areas. Others serve as nodes for population dispersal, such as fishing ports in rural areas of the Philippines, Indonesia and Thailand.

The ASEAN-wide growth rate of the fisheries sector is 4.9% and thus demand will double in fourteen years. The growth rate in demand for offshore petroleum reserves of 24.8% means a doubling time of about two years and nine months. Shipping demand, with a growth rate of 13.7%, will double in five years. Overall, with a growth rate of demand of about 17%, ASEAN's demand for marine resources will double every four years. Obviously these figures are provocative, not accurate forecasts. Nevertheless, the order of magnitude of demand growth rate is likely to be staggering.

Extended jurisdiction in the South China Sea--territorial seas, archipelagic waters and exclusive economic zones--brings a cornucopia of resource potential under the ownership and management of the region's coastal States. These resources include petroleum, possible mineral deposits--tin, manganese nodules, cobalt-rich manganese crusts, metallic sulfides, deep sea brines, and phosphorites; fish; energy--ocean thermal energy, wave energy, osmotic energy; fresh water; and sea space itself for use in transportation and defense.

Preliminary estimations of gross value of fisheries potential in extended jurisdictional zones indicate that Malaysia and Indonesia might expand their output about 3 times. Indonesia, Malaysia, and surprisingly, the Philippines have the highest values of hydrocarbon potential ranging from US$305 billion to more than 3 trillion dollars. For Malaysia, the lowest estimate is still 14 times its 1980 GNP; for Indonesia, 4-5 times its 1980 GNP, and the Philippines about 9 times its 1980 GNP. Thailand may have obtained US$53-530 billion worth of petroleum or about ten times its GNP. Marine resources and uses already make a significant contribution to GNP, and this contribution is likely to increase as land resources, including space, become depleted, and demand for, and discovery of marine resources increase. With the new Law of the Sea upon them it is particularly important for developing nations to formulate their maritime policies and to be able to respond readily to marine issues. A knowledge of the potential benefits of the specific resources gained and the costs of their management and development may facilitate this process. However, there is a mismatch between the great expectations of ASEAN countries for these resources and their capabilities to discover and harness or develop them. Area gained is not a comparative approximation of resource wealth. Resource potential can only be determined by applied marine resources research.

A focus on the marine dimension in national + regional development planning could provide a logical basis for multinational marine policy and planning, as well as for a multinational approach to the allocation of development support by international and regional development institutions. Multinational planning is relevant because national management policies for zones of extended jurisdiction may be developed and implemented with insufficient understanding and consideration of the transnational and interdependent character of the resources the ocean harbors and supports. The superimposition of a mosaic of

national policies on transnational resources and activities creates opportunities for cooperation.

The Need for ASEAN Cooperation in Marine Resources Research

The majority of the coastlines of countries in the ASEAN region are influenced by water masses of the same origin. Water circulation in one body of water has a direct or indirect effect on the current patterns of other bodies of water in the region. As a result, similar species and ecosystems are found throughout the region, including economically important marine biota.

For centuries the ASEAN countries have shared either fishing grounds or migratory species such as yellowfin and skipjack tuna, mackerels, scads, and sardines. As resources decline and fishing capabilities increase, such migratory and shared stocks are of increasing importance to fishery managers and policymakers of the region. Fish that migrate across national maritime boundaries present problems of ownership, allocation, and management, since heavy fishing activities by fishermen of one country may adversely affect the fishery of another country if based on the same stock. Similar problems occur with stocks that are a shared resource of two or more countries. Only limited information is available on the location, species composition, and physical range of shared stocks in ASEAN seas. The new Convention on the Law of the Sea states that in the case of stocks occurring within the EEZ of two or more coastal states, these states shall seek either directly or through appropriate subregional or regional organizations to agree on the measures necessary to coordinate the development and management of such stocks (Article 63). A similar principle is also applicable for the highly migratory species (Article 64). For the shared or highly migratory species, there must be a determination of which stocks are shared by whom, and which countries exploit them at what

stages of their life cycle, as well as spawning seasons and spawning grounds and, ultimately, the optimum yields that can be harvested from each fishing ground.

ASEAN countries not only have similar marine environments; they also have similar marine environmental problems. Moreover, marine pollutants do not recognize marine jurisdictional boundaries; thus, there is a need to increase understanding the input and distribution of transnational environmental pollutants and their impact on marine organisms in the region. Due to the proximity of bordering countries and the overlapping claims of extended maritime jurisdiction, the high-intensity exploitation of commercial species or the destruction of mangrove or coral reef ecosystems in one country could lead to the depletion of stocks and reduced productivity in adjacent countries' waters. For example, several species of penaeid shrimps are mangrove-dependent. Fries of seabass and milkfish are abundant in the mangrove areas of Southeast Asia. Thus, destruction of the mangrove ecosystem—for instance, along the east coast of Sumatra—may decrease the population of shrimp, seabass, and milkfish in the Strait of Malacca. Unfortunately, however, there is still scanty information on the correlation between mangroves or coral reef ecosystems on the one hand and the biology and ecology of commercially exploited species on the other.

Geologically, the Southeast Asian region is one of the most complex in the world. It is the meeting place of three major tectonic plates--the Asian Continental, the Pacific Oceanic, and the Indo-Australian. Therefore, it is an ideal location for in-depth studies of the nature of continental-oceanic and oceanic-oceanic plate interactions and the associated geological processes that control the genesis of ore and hydrocarbons. Seafloor spreading/plate tectonics provides a framework for integrating individual bits of geologic

data. The geologic history and origin of the South China Sea is not likely to be completely understood without data from many countries' areas within and peripheral to ASEAN seas. For example, there is a hypothesis that the South China Sea was formed by seafloor spreading and rifting of the Reed Bank area--northern Palawan Island--away from the Macclesfield Bank area in the Paracel Islands. To test this hypothesis, a match-up of the marine geology of these segments is necessary. This could be accomplished through collection of geological and geophysical data along transects from the inner Chinese margin all the way across the Dangerous Ground. Examples of specific pieces of knowledge important to this synthesis and requiring international cooperation for their acquisition include the origin of the peripheral ridge underlying the continental margin throughout the sea and an evaluation of a possible triple junction off central Vietnam. These gaps in knowledge could be closed most efficiently through regional cooperative scientific programs. It is only by piecing together the jigsaw puzzle of bits of information from different geographic areas on a synoptic basis that those questions can be scientifically answered.

Most marine science data in the region is still collected and analyzed by scientists of external countries; the United States has been particularly active in this regard through research cruises and remote sensing. Needed is a massive knowledge and technology transfer. The need for indigenous regional cooperation is accentuated by the inadequate trained human resources, facilities and funds in each of the ASEAN countries required to undertake major resource exploration and development programs. ASIMARE can be a regional focal point where knowledge and personnel could be pooled to carry out research and development on problems of common interest.[1] Since marine resources research

[1] Such regional organs, particularly in developing areas, are called for in Article 276 of the new Law of the Sea Convention.

is generally very costly, regional cooperation would also help to ease the financial burden of each member country. Regional cooperation in marine resource studies could also produce synoptic coverage over a longer time period and wider area. Thus cooperative marine resources research is the key to realizing the development benefits of the new resources in extended jurisdictional zones.

III. The Research Agenda - Some Examples

A. Overarching Themes

1. Present and potential economic costs and benefits of exploration/exploitation of the resources known or expected in the new jurisdictional space
2. The present and projected role of marine resources in development
3. Multinational sea use planning and management
4. The role of new national marine resources such as oil, minerals and space for navigation in the implementation of global concepts such as the New International Economic Order or a Pacific Community
5. Identification and evaluation of possible consortia of developed and ASEAN countries to harvest these new resources

B. Sector Themes

1. Fisheries
   - assessment of shared stocks, e.g., scads, mackerels, sardines and tunas
   - evaluation of "surplus" in national exclusive economic zones
   - harmonization of fisheries management regulations and techniques

- amelioration of national offshore/artisanal fishermen conflicts
- amelioration of transnational fisheries conflicts
- identification and evaluation of possible ASEAN cooperation in fish catching, processing, distribution, and marketing

2. Hydrocarbons and Minerals
   - assessment of resources in areas of overlapping claims in ASEAN nations and in shared basins
   - cross jurisdictional research of plate tectonics and its relation to hydrocarbon and ore deposits
   - identification and evaluation of possible ASEAN cooperation in hydrocarbon exploration, refining and marketing

3. Environment
   - standardization of sampling and analytical techniques and equipment
   - assessment of marine environmental quality in shared and adjacent areas
   - assessment of pollution effects on shared and common living resources
   - assessment of the transnational effects of deterioration of national marine ecosystems
   - harmonization of regulations
   - identification and evaluation of possibilities for ASEAN cooperation in marine environmental protection and management

4. Climate/weather
   - typhoon generation
   - tsunami generation
   - disaster preparedness

- monitoring of major oceanographic systems and weather forecasting

5. Shipping
   - surface circulation
   - tides and tidal phenomena
   - identification and evaluation of possible ASEAN cooperation in shipping

ASIMARE would also provide technical support for ASEAN committees and working groups. Permanent ASEAN committees of marine importance include Fisheries (as a part of food production and supply), Meterology (as part of air traffic service), Science and Technology, and Shipping. The Federation of ASEAN Shippers' Council sponsored the formation of a Federation of ASEAN Shipowners' Association, presumably to present a united bargaining position vis-à-vis the European-dominated Far Eastern Freight Conference, which controls trade and sets rates for transport of goods between Europe and Asia. There also is a 1975 ASEAN Agreement for the Facilitation of Search for Ships in Distress and Rescue of Survivors of Ship Accidents in which the contracting parties undertake to provide assistance to ships in distress in their territories and neighboring seas.

The ASEAN Committee on Science and Technology (COST) Subcommittee on Marine Sciences has discussed the possibility of a cooperative approach to extraregional access for marine scientific research and has approached the European Economic Community (EEC) and the United States for assistance in funding cooperative marine scientific research. COST also spawned an informal committee on pollution and an ASEAN Subregional Environment Programme. As part of this program, member nations have discussed a coordinated approach to marine

environmental protection with the Regional Seas Programme of the United Nations Environment Programme (UNEP). The Regional Seas Programme has as its goal to produce a Mediterranean-type protocol for the "ASEAN Seas" and to upgrade awareness and capabilities for its implementation. The ASEAN Committee on Petroleum (ASCOPE) also has within its terms of reference the development of subregional contingency plans for oil spills. ASCOPE has been discussing standardization of environmental and safety regulations concerning offshore oil exploration.

There are also several marine-relevant international organizations operating in the region which may serve as partial models, liaisons or stimuli for ASIMARE organization and research. These organizations are not indigenously derived or managed but do include ASEAN members. Such organizations are the Indo-Pacific Fishery Commission, the Southeast Asia Fisheries Development Centre, the International Center for Living Aquatic Resources Management, INFOFISH, the Committee for Co-ordination of Joint Prospecting for Mineral Resources in Asian Offshore Areas, and the Working Group for the Western Pacific of the Intergovernmental Oceanographic Commission. Several specialized United Nations agencies whose terms of reference include marine problems also have offices in the region, such as, the UNESCO Regional Office for Science and Technology for Southeast Asia in Jakarta, the United Nations Environment Programme Regional Office in Bangkok, and divisions of the Economic and Social Commission for Asia and the Pacific, concerned with transportation and natural resources. There are also many U.N.-sponsored or supported national projects and bilateral assistance programs with relevance to the marine sphere.

IV. The Implementation: Some Policy Questions

1. Funding

   a. Sources: would potential funders such as the United States, Japan, Canada and the EEC be willing to contribute jointly or would each wish to fund a separate organ or separate national programs?

   b. Indigenous funding: would indigenous funding in cash or in-kind, up front or later, be necessary, desirable or likely?

   c. Start up: how much initial capital would be required to form a critical mass of staff and facilities, and how much would be required for annual operations?

   d. Types: would it be preferable after the initial capital outlay to support operations by interest from a trust (like the UN University) or by grants for specific projects, or both? What are the actual and perceptual advantages and disadvantages of each style?

2. Organization

   a. Host country: where would the ASEAN members prefer to locate the institute and would it be acceptable to the potential host and donors?

   b. Charter: what would a draft look like?

   c. Governing board: how should the board be constituted and what should be its terms and mandate?

   d. Research agenda: what criteria should be used and how should priorities be set?

   e. Mix: how much effort should be devoted to scientific research, and how much to resource policy studies, and to education/training? Should the institute offer degrees or certificates?

   f. Staffing: given the institute's mission of technology and knowledge transfer, it may be impractical to begin initially with an all ASEAN

staff. What should be the indigenous/exogenous proportions of staff in research, education/training, and administration? To ensure fealty to ASEAN goals and objectives, should all staff be required to sign a loyalty oath that they put ASEAN above their personal and national allegiances (similar to that required of United Nations employees)? Should salaries be international scale or on a par with comparable host country positions?

The finding of common ground among ASEAN members and perhaps donors on answers to these and other policy questions is critical to the successful launching of ASIMARE. Needed now is

1. an expression of interest by ASEAN and prime potential donors, particularly the United States, and
2. a feasibility study to assess the degree of ASEAN compatibility on the answers to these and other policy questions that may arise, and where differences are found to exist, to identify common ground.