

A newsletter for policymakers, environmental managers, scientists and resource users

Sponsored by • SAREC Marine Science Programme • GEF/UNDP/IMO Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas and • Coastal Management Center

## The 1994 Royal Colloquium on Tropical Coastal Zones

### FROM KNOWLEDGE TO ACTION

**G**lobally, the coastal zones are under increasing pressure from human activities compounded by the burgeoning population, particularly in the tropical developing countries. The significant deterioration of the coastal environment is evident, especially in some of the productive natural systems on this planet such as coral reefs and mangrove forests. Because more than half of the world's populations are dependent on marine products and services for protein, income and settlement, degradation of the coastal and marine environments threatens health and food security, especially in the tropical and subtropical regions.

Since the 1972 United Nations conference on the Human Environment in Stockholm, His Majesty Carl XVI Gustaf of Sweden has been regularly updated on the developments in latest marine research and marine environmental problems. The King succinctly voiced his concern for the environment:

*Over the years, I have given a great deal of thought to nature conservation and to those activities that aim to protect our environment; issues that are close to my heart .... My impression is, however, that the techniques used to decrease and to alleviate marine damage in temperate zones are not directly applicable to the tropical and subtropical coastal regions. Protection measures need to be taken on the basis of ongoing research in these issues.*

Thus, His Majesty initiated the Royal Colloquia by inviting a number of political leaders and eminent scientists from both developed and developing countries (Canada, France, Germany, Italy, the Netherlands, Sweden, Switzerland, United Kingdom, United States of America, China, India, Indonesia, Philippines, the Seychelles, Tanzania and Thailand) as well as leading officials of international



His Majesty King Carl XVI Gustaf of Sweden (center) chairing the Royal Colloquium, with Prof. Carl Gustaf Bernhard (right) and Mr. Maurice Strong (standing).

agencies (e.g., Food and Agriculture Organization, International Maritime Organization [IMO], The World Conservation Union, United Nations Environment Programme, United Nations Educational Scientific and Cultural Organization and World Wide Fund for Nature) and multilateral lending institutions and donors (e.g., Swedish International Development Agency [SIDA] and the World Bank) to discuss problems and opportunities in the use of scientific knowledge for sustainable coastal and marine resource management. Three royal colloquia have been organized since 1992, the latest being the 1994 Royal Colloquium held at the Ulriksdal Palace, Stockholm on 22-23 August 1994. This was attended by 42 participants and 14 observers from 16 countries.

The first two royal colloquia in 1992 and 1993 delved into matters pertaining to the carrying capacity of the coastal zone in relation to the growing population and changing social and economic structures. Coastal problems with

*Continued on p. 5*

Since the 1972 Stockholm United Nations Conference on the Human Environment, many gatherings have been held and declarations issued at the international, regional and national levels, addressing the impacts of human activities on the environment, particularly in the tropical and subtropical developing countries. To date, there are over 120 international treaties and conventions and more than 350 similar declarations and agreements at the regional and local levels as well as a comprehensive blueprint for sustainable development, Agenda 21. Yet, the environmental problems remain unresolved and are even worsening.

In the front-page article on the 1994 Royal Colloquium, Sir Martin Holdgate enumerated the obstacles to implementation. One is defective communication between scientists and politicians. Too often, scientific data are not processed into information that decisionmakers and politicians can readily understand and use. This results in poor implementation of actions and solutions deemed to mitigate environmental problems. The other is defective public information. Public information largely falls within the informal educational system, which has a most striking influence. Sadly, informal education is generally in the hands of the media that is often driven by commercial motives more than altruism.

Certainly, there is a need to address such disparities. There is a need to bridge the gulf between scientists and laymen; and on the long term reorient the politicians, media and the rest of the public into sound environmental consciousness. Amidst the cornucopia of newsletters on the tropical coastal zone, none as yet centers on policy, technological and management interventions in addressing problems in the coastal and marine environments. Likewise, not many cover marine pollution prevention and management within the framework of integrated coastal management (ICM) as well as risk assessment and management in international waters.

The **Tropical Coasts** newsletter is a joint effort of the International Maritime Organization (IMO), Coastal Management Center (CMC) and the Swedish Agency for Research Cooperation with Developing Countries (SAREC). IMO is the only specialized agency of the United Nations dealing with maritime affairs. Its activities focus on maritime safety, navigational efficiency and marine pollution prevention as well as on the development of treaty instruments, conventions and codes on maritime safety and pollution. One of its latest activities is the Global Environment Facility/United Nations Development Programme's Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas. As its executing agency, IMO seeks to support marine pollution prevention and management activities of various participating countries in the East Asian seas and hopes to facilitate information exchange through a newsletter.

The CMC is a nonstock, nonprofit and nongovernmental organization registered in the Philippines that promotes the concept of ICM and assists in the formulation and implementation of such programmes in tropical developing countries to achieve the goal of sustainable development. It operates through a network of professionals and a consortium of research/training and private institutions in collaborative network throughout the developing and developed countries.

SAREC through its Marine Science Programme supports research that contributes to the development of developing countries. Its activities cover capacity-building in coastal and marine research, particularly concerning coastal ecology, natural resources and environmental management. It supports bilateral research and training activities in developing countries. SAREC is interested in disseminating scientific information and interpretations essential to the sustained use of coastal and marine resources, particularly to decisionmakers.

This newsletter aims to serve as a vehicle to widely disseminate news and information on ICM, marine pollution prevention and management and related topics, particularly relevant to the tropical and subtropical coastal developing countries; reaching out not only to scientists and managers but also to politicians, policymakers, the private sector, especially the industries; and the general public. We enjoin everyone to support this undertaking. Please share your ideas, novel concepts, alternative technologies and innovative solutions to our problems today.

**Tropical Coasts** welcomes articles, reviews, illustrations and photographs for publication.

**Contents**

The 1994 Royal Colloquium on Tropical Coastal Zones: From Knowledge to Action (T.-E. Chua, J. Paw, D. Diamante) • 1

Editorial • 2

A Regional Global Environment Facility Initiative to Reduce Marine Pollution in the East Asian Seas (J. Paw, T.-E. Chua) • 5

National Capacity-Building for Coastal and Marine Resources Management (E. Tech, D. Diamante, J. Paw) • 8

The Coastal Management Center: What It Is and How It Works (R. Juliano) • 10

SAREC's Flagship Programme: Marine Sciences Research in Developing Countries (O. Lindén, M. Ngoile) • 12

Stressing the Role of Research in ICM (T.-E. Chua) • 13

Post-Rio Perspective: SEAPOL 1994 Conference on Sustainable Development of Coastal and Ocean Areas in Southeast Asia (J. Paw, T.-E. Chua) • 16

Wanted: An Effective Pollution Monitoring Network (G. Jacinto) • 17

Malacca Strait and Sustainable Use: Littoral States Rise to the Challenge (D. Diamante) • 18

The East Asian Battle Against Marine Pollution: Country Updates (T.-E. Chua) • 19

Marine Pollution Experts Meet in London (A. Ross) • 22

Research on Natural Resources Management in the Coastal Areas of Sri Lanka (P. Dayaratne, O. Lindén) • 23

Special Features  
Statement of His Majesty King Carl XVI Gustaf of Sweden • 14

Message from the Secretary General of the International Maritime Organization • 15

MPP-EAS Newsbriefs • 24  
Batangas Demo Project Launched • 24  
Green Citizens vs. Pollution • 24  
PDMO Set into Motion • 24  
Training Needs Surveyed • 25  
UN Interagency Meet • 25  
PSC Approves Workplan • 25  
Call for Interns • 25

Facts and Figures • 26

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respect to failures in other sectors of the social systems were also examined. In support of the earlier colloquia, the 1994 Royal Colloquium enjoined key politicians to determine political approaches to sustainable development, thus moving from the knowledge phase to the action phase. Needless to say, this is vital to the livelihood of millions of coastal communities in many developing countries. The Swedish Agency for Research Cooperation with Developing Countries (SAREC) shares these concerns and cosponsored the colloquia.

King Carl XVI himself took keen interest in looking into the possible actions for sustainable use of the tropical ecosystems and personally chaired the colloquium. Mr. Maurice Strong, former secretary general of the United Nations Conference on Environment and Development (UNCED), served as the moderator. Discussions revolved around the need for action. Reacting to the current situation, Mr. Strong said "if we had acted on the knowledge we had then, environmental problems would likely be less severe than what they are now."

Harmful effects of pollutants in the marine ecosystems have been increasingly understood. The need to meet the growing demand for food, employment and shelter in many of the developing countries amid poverty, a fast population growth and want of wise management led to the application of environmentally destructive technologies in agriculture, fishing, aquaculture and industries, compromising the health, food security and opportunities of future generations. At the colloquium, scientists suggested controlling carbon flow into the marine environment but noted that much of the richness of the tropical marine ecosystems, such as estuaries and bays, is also attributed to the flow of nutrients from land. They discussed recycling wastes, a practice that has been in existence for generations in China and other countries in Asia. However, recycling does not seem to be efficiently adopted nor developed.

Even some top political leaders realize the need for integrated coastal management. The following statements by the four ministers who attended the colloquium support the call for actions to address the complex management issues in the coastal zones:

*... there are plenty of signals that the present production/consumption pattern is destroying the life support of future generations. — Dr. Klaus Topfer, Minister of the Environment, Germany and presently chairman of the United Nations Commission on Sustainable Development.*

*The political cost of placing environmental concern as a priority intervention by government has its costs not only in lost opportunities and greater flexibility of resource use... it also has the effect of diminishing the available foreign and local capital investment. — Ms. Danielle de St. Jorre, Minister of Foreign Affairs, Planning and Environment, Republic of Seychelles.*

*Human interference with the environment is on the increase ... overfishing is a pressing problem and worse, continued practice of destructive fishing practices. — Mr. Juma H. Omar, Minister of Tourism, Natural Resources and Environment, Tanzania.*

*... integrated coastal management should therefore be a tool for dealing with the most harmful land-based sources of degradation, poorly planned or unplanned coastal development and the environmental damage caused by poverty as well as unsustainable development. — Mrs. Gorel Thurdin, Minister of the Environment and Natural Resources, Sweden.*

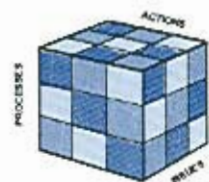
Despite improved understanding of the ecosystems, Mr. Strong added that "the other constraints of social, political and financial nature are part of the reasons why there is too little [management] actions... the will to act is lacking even more than the means to act." Mr. Strong's statement is amplified by Ms. de St. Jorre who said, "political will and national policies are not enough," to protect the sensitive ecosystems from impacts of a host of human interventions.

One area that came out quite clearly from the colloquium is the need to strengthen the capability of developing countries to formulate and implement integrated coastal management (ICM) programmes. Dr. Nay Htun, assistant administrator of the United Nations Development Programme (UNDP) and undersecretary general of the United Nations, puts great emphasis on more training courses on ICM. To underscore his point, he cited an old Chinese saying:

*if you want to plan for one year, plant rice,  
if you want to plan for ten years, plant trees,  
if you want to plan for a hundred years  
then educate and train.*

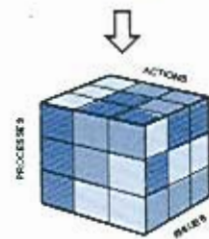
Both the director generals of SAREC and SIDA, Messrs Anders Wijkman and Carl Tham, highlighted their roles in building up national capacity, particularly along the line of North-South cooperation. The former Indonesian minister of environment and population, Prof. Emil Salim, however, noted that "there are North-South imbalances" and called for "a free access to scientific and technical knowledge". One way towards free access is to develop less conventional alliances among institutions, combining North-South knowledge for which strategies can then be developed, particularly in the control of carbon flow. Also, institutional structures in the South need to be strengthened. More importantly, capacity-building must be focused at the local level.

Dr. Chua Thia-Eng, programme manager of the Global Environment Facility/UNDP/IMO Regional

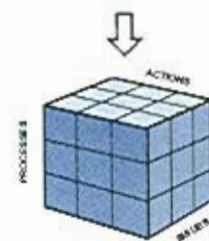


**Nonsustainable Development**

- Environmental degradation
- Resource depletion
- Multiple resource-use conflicts



Moving Towards Sustainability  
(Transitional)



**Sustainable Development**

- Protection of environment and biodiversity
- Sustainable use of resources
- Minimization of resource-use conflicts
- Improved quality of life

*ICZM can be a blueprint for sustainable development at the local level by helping to put the right things into a proper perspective and order.*

Programme for the Prevention and Management of Marine Pollution in the East Asian Seas emphasized the ICM experience of the Association of Southeast Asian Nations at the local level. He pointed out that appropriate planning and implementation processes for a variety of environmental management issues in the coastal and marine areas will provide a better chance of achieving sustainable development by doing things in the right way (See above).

One of the highlights of the colloquium is the presentation of Sir Martin Holdgate, former director general of The World Conservation Union. Stressing the obstacles to action, he referred to the general agreement reached during the last Colloquium: that the constraint lies in translating knowledge to implementation, and that both problem and solution have underlying social implications. He further listed six limiting factors which should be overcome to address the coastal problems effectively (See box).

The colloquium recommended more pilot case studies to demonstrate the success of ICM, emphasizing the need to build on existing initiatives in East Asia, Africa and Latin America and the lessons learned in past ICM programmes.

The colloquium has, indeed, deepened the sense of urgency and importance of finding solutions to the environmental problems of the tropical coastal zone. Nonetheless, it is by no means the only one. The call for the management of the coastal areas has been echoed in a number of international and regional conferences. In 1988, a conference of policymakers, administrators and scientists was held in Johore Bahru, Malaysia. It was followed by a

more elaborate policy conference held in Baguio, Philippines, in 1990 attended by about 100 participants. Among them were senior government ministers, senators, assemblymen, governors, mayors, senior officials of international agencies, bilateral and multilateral banking institutions, scientists, and the private sector. The end-result was the "Baguio Resolution on Integrated Coastal Zone Management." A year later, a similar policy conference, though specific to waste management, was organized in Singapore which put forth the "Singapore Resolution on Waste Management." In 1993, the first Policy Conference on Integrated Coastal Zone Management for East Africa and the Island States was held in Arusha, Tanzania, through the auspices of the SAREC, producing the "Arusha Resolution on ICZM in Eastern Africa including Island States." More recently, the Pattaya Seminar held in Pattaya, Thailand, and sponsored by the Advisory Committee on Protection of the Seas, led to the "Declaration on the Management of Southeast Asian Coastal Cities and Towns."

Given the priority accorded to integrated management of coastal and marine areas under Agenda 21 adopted at the 1992 UNCED, there is a better chance now more than ever, to achieve sustainable development. The challenge, however, is that giant leap from the conference table to the field, right where the action is. T.-E. CHUA, J. PAW and D. DEWARA



## Coastal Management: The Six Obstacles to Action

*In his presentation at the 1994 Royal Colloquium, Sir Martin Holdgate, former director general of the World Conservation Union (IUCN), highlighted six obstacles to management action:*

1. defective communication between scientists and those making social and political decisions;
2. intellectual and cultural arrogance, especially dismissive of tradition and the "wisdom of the poor; "
3. defective economics, leading to distorted valuation of natural resources and hence errors in cost/benefit analysis;
4. defective governance, especially through sectoralism and over-centralization;
5. defective public information; and
6. defective ethics.

# A REGIONAL GLOBAL ENVIRONMENT FACILITY INITIATIVE TO REDUCE MARINE POLLUTION IN THE EAST ASIAN SEAS



## Rationale

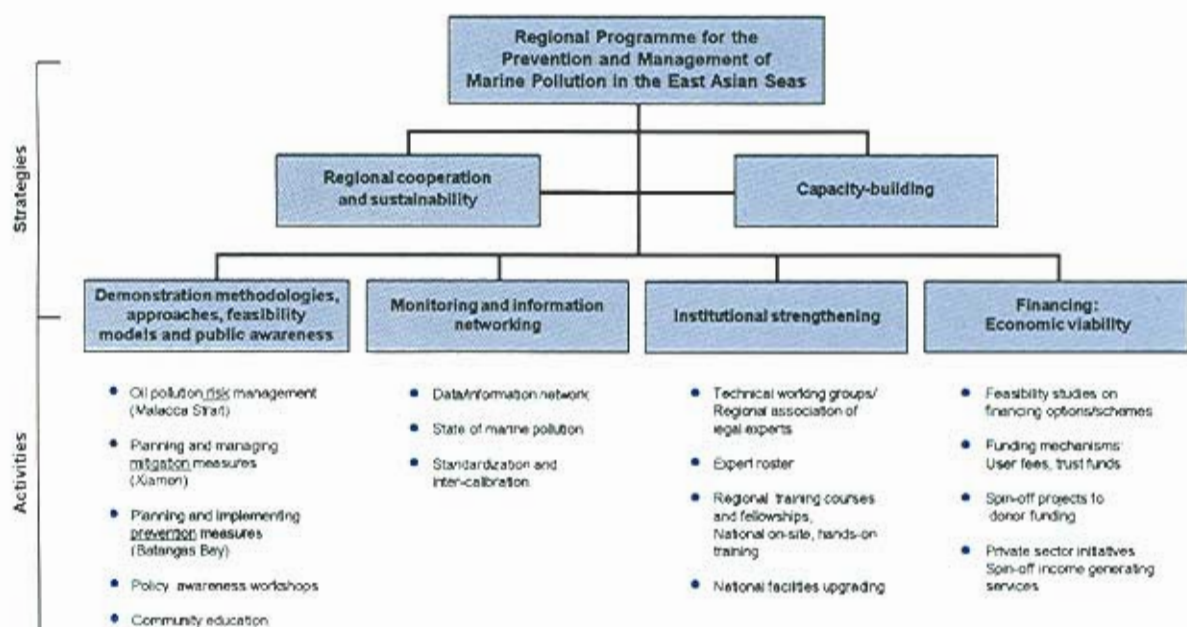
While concern for the state of the marine environment is widespread, particularly the impact of pollution and unregulated exploitation of coastal and marine resources, many countries in the East Asian region are unable to adequately address such concern within their jurisdiction and more so on transboundary issues. This is largely due to lack of financial resources and technical and management capabilities to plan, implement and manage marine pollution programmes. This situation and the increasing public awareness that pollution severely affects sustainable development led to the formulation of the Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas (MPP-EAS) by the United Nations Development Programme (UNDP). The formulation was based on the proposals submitted to the Global Environment Facility

(GEF) by the Association of Southeast Asian Nations Senior Officials on the Environment (ASOEN) building on the framework of the ASOEN Action Plan; and four other countries, namely, China, Cambodia, Democratic People's Republic of Korea and Vietnam. The GEF is a cooperative venture among national governments, the UNDP, the United Nations Environment Programme (UNEP) and the World Bank. Of the four global environmental concerns of GEF, namely, reduction of global warming, conservation of biological diversity, protection of international waters and protection of the ozone layer, the MPP-EAS responds to the third concern. The need for a regional initiative on marine pollution management is compelling, especially with respect to transboundary issues constrained by differing water quality standards, pollution regulations and existing resource-use

conflicts. The International Maritime Organization (IMO) is the executing agency of the programme with a duration of five years (1994-1998) and a funding support of US\$8 million from UNDP.

## Programme Design and Strategies

The MPP-EAS framework is built upon innovative and effective schemes for marine pollution management, technical assistance in the most strategic marine sector of the region, and provision of opportunities to attract other agencies and the private sector for funding and investment. The MPP-EAS is designed to control and manage marine pollution using a multidisciplinary and participatory approach that targets appropriate policy, institutional and technical interventions. The countries of the East Asian region have diverse geographical, political, social, cultural and economic characteristics, which present a challenge to the programme. Its main objective is to support the efforts of participating governments in the prevention and management of marine pollution at both national and sub-regional levels on a long-term



Programme Framework - Strategies and Activities

and self-reliant basis. The overall programme strategy is twofold, i.e., achieving regional cooperation and sustainability, and capacity-building.

Specific strategies to attain the objective are:

- Develop and demonstrate workable models on marine pollution reduction/prevention and risk management
- Assist countries in developing the necessary legislation and technical capability to implement international conventions relating to marine pollution.
- Strengthen institutional capacity to manage marine pollution problems.
- Develop a regional network of

stations for marine pollution monitoring and information management.

- Promote public awareness on and participation in the abatement of marine pollution.
- Facilitate standardization and intercalibration of sampling and analytical techniques and environmental impact assessment procedures.
- Promote sustainable financing for activities requiring long-term commitments.

### Programme Components

The MPP-EAS has five components that articulate the above strategies. Each component has various interlinked activities that address

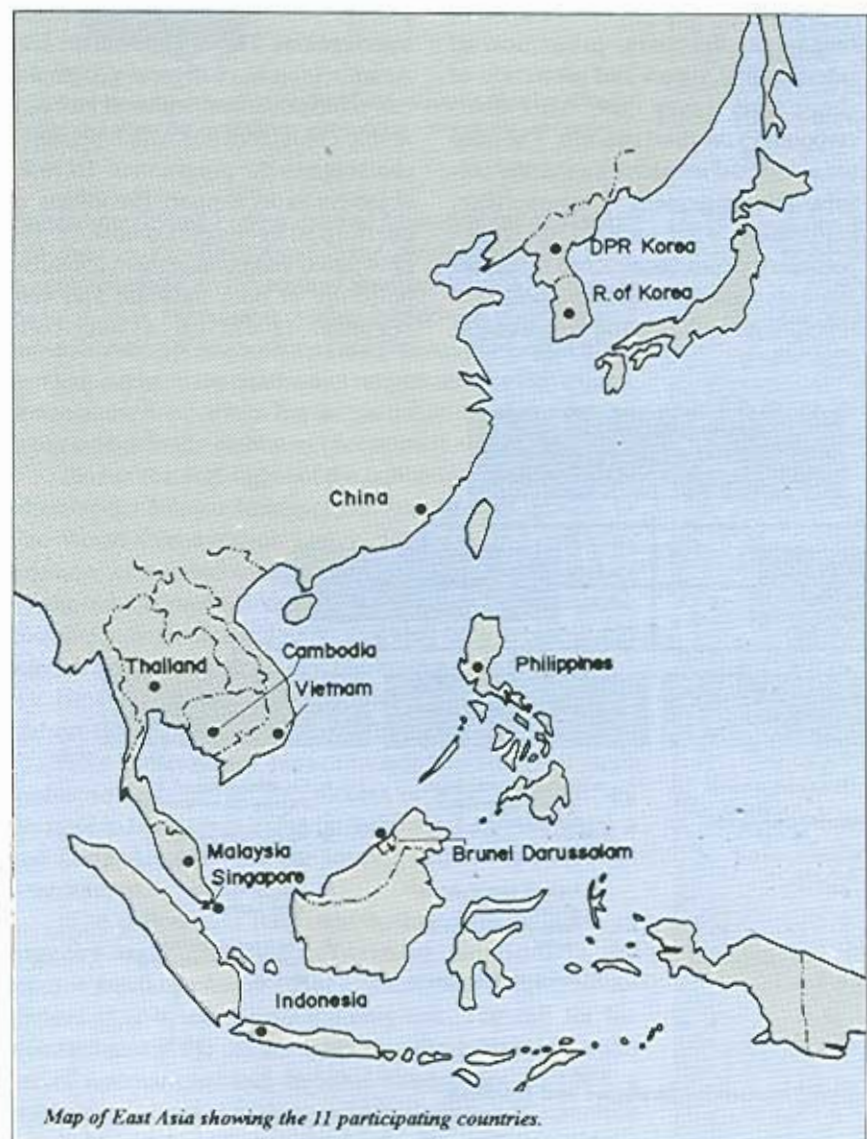
management issues covering cross-sectoral and transnational concerns within the financial and temporal boundaries of the programme.

**Demonstration Projects.** The MPP-EAS is developing demonstration projects with a two-pronged approach. The first is to establish and validate the viability of integrated coastal management (ICM) as the most appropriate framework to control land-based sources of marine pollution at the local level. ICM is an effective mechanism to achieve sustainable development in the coastal areas, being a planned, preemptive and management-based approach. The demonstration projects take into account environmental issues, multisectoral conflicts and public consultation in the overall planning of coastal development. The projects that focus on ICM are in Xiamen, China, and Batangas Bay, Philippines.

The second approach explores how marine pollution risk in international waters can be minimized and managed through regional cooperation and ratification of international conventions, treaties and protocols with the collaboration and cooperation of the industries. The Malacca Strait has been selected as the demonstration site for the effectiveness of pollution risk assessment, preparedness and response techniques in international waters, particularly on oil spill and discharge arising from shipping activities.

All the demonstration projects are designed to be replicated in other coastal areas and subregional seas in East Asia and elsewhere. For those interested in innovative planning and management techniques where economic growth and environmental quality complements each other, these projects can serve as primary training grounds. New demonstration sites will be developed as the need arises and as funding support allows.

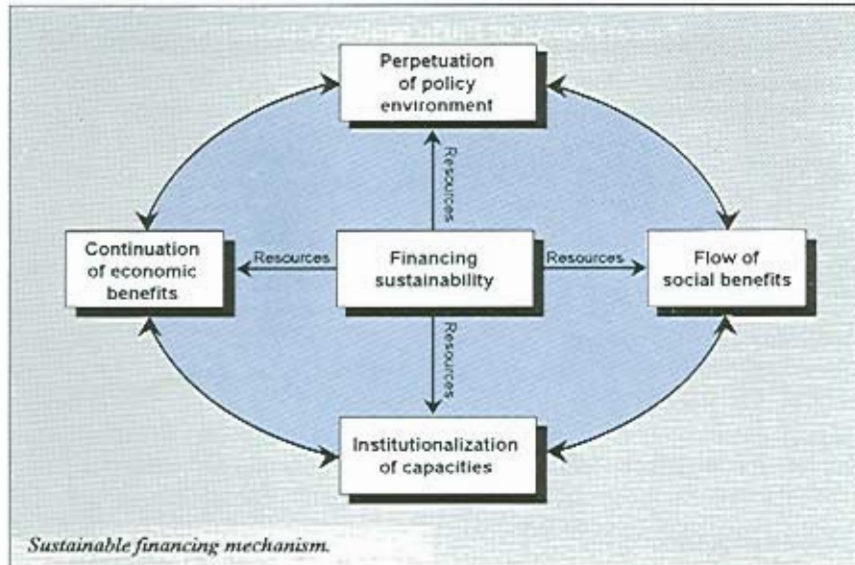
**Marine Pollution Monitoring and Information Management.** A network for pollution monitoring and information management will be established to: (a) review and adopt a common pollution monitoring strategy;



Map of East Asia showing the 11 participating countries.

(b) select appropriate parameters to monitor; (c) standardize sampling and analytical procedures; and (d) generate data for policy and management. (See related story on page 17.) Effective marine pollution management requires reliable technical and scientific advice for policy and management decisions. Thus, linkages with institutions/bodies within and outside of the region such as concerned United Nations agencies, including the Joint Group of Experts on the Scientific Aspects of Marine Pollution, Global Investigation on Pollution in the Marine Environment and Group of Experts on Effects of Pollution, will be forged. Also, there is considerable scientific strengths in the region like the Association of Southeast Asian Marine Scientists whose expertise can be tapped to contribute to marine pollution management. The MPP-EAS recognizes that an informed public is a valuable resource for the decisionmaking process in environmental management. Thus, public awareness will be an important element, too.

**Capacity-Building.** The Governing Council of the UNDP defines capacity-building as a set of activities involving support for human resource development, organizational strengthening and the emergence of an overall policy environment conducive to sustainable development. The activities envisioned include assessment of training needs in terms of marine pollution prevention and management, regional training courses, staff exchange programme, technical assistance and strengthening of existing regional networks addressing marine pollution. Training will emphasize the practical aspects of marine prevention, management and monitoring, based on lessons learned and experiences from the three demonstration sites. Flexibility will be maintained in the design and implementation of training activities to consider the special needs of the region and the participating countries. The programme will also promote the spirit of technical cooperation among developing countries as well as between North and South, including



volunteer programmes of the United Nations (UN) and the developed countries in the region.

**Strengthening Regional Capability to Implement International Conventions.** Another key component is the assistance to participating countries in developing necessary legislation and technical capability to implement international conventions on marine pollution through the auspices of IMO and UNEP as well as those resulting from the United Nations Convention on the Law of the Sea. Currently, only a few countries in the region have ratified international conventions. (See message from the IMO Secretary General.) The MPP-EAS will actively promote such ratification as compliance and cooperation of the participating countries, and the shipping and oil industries. An action plan will be developed and implemented addressing management issues on the ratification and compliance of international conventions, codes and protocols, including the development, adoption and harmonization of national legislation throughout the region for uniform implementation of such international instruments.

**Sustainable Financing Mechanisms.** Prevention and management of marine pollution require the concerted efforts of all sectors active in the coastal and marine areas (e.g., communities, government agencies, nongovernmen-

tal organizations and the industry, etc.). The programme recognizes the important role of the private sector and involves this sector accordingly. A critical component of the MPP-EAS, sustainable financing mechanisms will ensure sustained and long-term activities on marine pollution prevention and management beyond the life of the programme (See above). Essential activities that will be developed are the identification of potential sources of financing, both traditional and innovative (such as trust funds, environmental swaps, green taxes, user fees, revolving funds and pollution prevention incentives); analysis of current national financial and administrative infrastructure relevant to long-term support for marine pollution management programmes; establishing guidelines for evaluating environmental damage and compensation in the coastal zone; and identifying and soliciting donor funding for replication of demonstration site activities.

#### **Programme Operations**

A Programme Development and Management Office (PDMO) has been set up by IMO in Quezon City, Metro Manila, Philippines, to coordinate and manage activities. The MPP-EAS is headed by a Programme Manager. The Government of the Philippines, as host country, through the Department of Environment and Natural Resources, provided basic infrastructure and

## Focal Points of Participating Countries

### Brunei Darussalam

Ministry of Communications

### Cambodia

State Ministry for Environment

### Democratic People's Republic of Korea

General Bureau for Cooperation with International Organizations

### Indonesia

Agency for Environmental Impact Assessment

### Malaysia

Ministry of Science, Technology and the Environment

### People's Republic of China

State Oceanic Administration

### Philippines

Department of Environment and Natural Resources

### Republic of Korea

Korea Ocean Research and Development Institute

### Singapore

Ministry of Environment

### Thailand

Ministry of Transport and Communications

### Vietnam

Ministry of Science, Technology and the Environment

support staff to the programme. The PDMO reports directly to the IMO Headquarters in London and maintains regular contact and dialogue with UNDP New York and Manila.

A Programme Steering Committee provides policy guidance, strategies and support in implementing activities. It is composed of representatives from all participating countries as well as UNDP and IMO with other concerned UN agencies and donors as observers.



*Dr. Chua Thia-Eng welcomes the assistant administrator of UNDP and undersecretary general of the United Nations, Dr. Nay Htun (right), at the PDMO Manila.*

Implementation takes place in close consultation with the national focal points. An interagency meeting composed of concerned UN agencies also convenes annually to provide a forum for collaboration and sharing of information. J. PAW and T.-E. CHUA

## NATIONAL CAPACITY-BUILDING for COASTAL AND MARINE RESOURCES MANAGEMENT

The sustainable development of the coastal zone and its myriad resources, especially in tropical developing countries, requires an integrated management approach. Success in such an endeavor presupposes a holistic cross-sectoral mechanism that is based on a sound scientific and multidisciplinary paradigm. This aspect is most lacking and/or inadequate in the planning and resource management programmes or activities of many developing countries. Thus, there is a need to strengthen the national capacity in marine research as well as in coastal and marine resources management.

In recent years, increasing attention has been given to the tropical coastal zone because of significant environmental problems affecting some of the world's most productive marine ecosystems. A number of programmes and projects are being implemented to address various issues

on the coastal zone and the marine ecosystems. To ensure greater and long-term impacts, cooperative arrangements among international organizations and regional networks are necessary, especially when the target areas are the same.

The Coastal Management Center (CMC), the Marine Science Programme of the Swedish Agency for Research Cooperation with Developing Countries (SAREC) and the GEF/UNDP/IMO Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas (MPP-EAS) banded together in two separate activities to strengthen national capacity in effectively managing the coastal and marine environments in the East Asian region.

The first is the joint effort to assist developing countries in East Asia in building up their institutional capacity for coastal resources and environmental management. CMC

and SAREC endeavor to ensure the optimal utilization of national, regional and international financial and human resources in those areas.

Objectives are focused on the generation and dissemination of scientific information. The latter includes interpretations necessary for the sustained use of coastal and marine resources and the overall protection of the aquatic environment. It also involves the promotion of regional and South-South scientific cooperation and collaboration among countries.

To achieve these goals, several strategies will be adopted. One is to provide assistance in the formulation and implementation of research policies and programs. Second, to develop and execute manpower training and infrastructure development activities in response to national needs. Third, regional activities will be conducted to promote regional cooperation and collaboration in the generation of



scientific information. This will likewise develop scientific and information management skills. Another strategy is to assist in the establishment and operation of professional nongovernmental organizations dealing with coastal and marine resources management, which could help mobilize professionals of the region.

Eight major activities are lined up under this joint undertaking, namely: (1) needs assessment for research, training and information management in relation to coastal and marine area management; (2) publication of a newsletter on coastal and marine area management; (3) publication and distribution of a practical handbook on integrated coastal area management; (4) support for the publication of the *Asian Fisheries Science Journal*; (5) organization of a technical assistance scientific panel; (6) conduct of a technical conference on lessons learned from planning and implementing coastal area management in tropical developing nations; (7) conduct of a training course on

impact assessment; and (8) publication of educational materials.

The second initiative aims to strengthen institutional capacity in marine pollution research and management in Vietnam.

Vietnam's coastline stretches to more than 3,200 km. Its coastal zone, which is teeming with mangrove forests and coral reefs, extends to about 1.3 million ha of land and another 3.2 million ha of coastal waters. Vietnam waters are rich in minerals and other resources, which have high economic value apart from possessing a great potential for marine transportation and tourism.

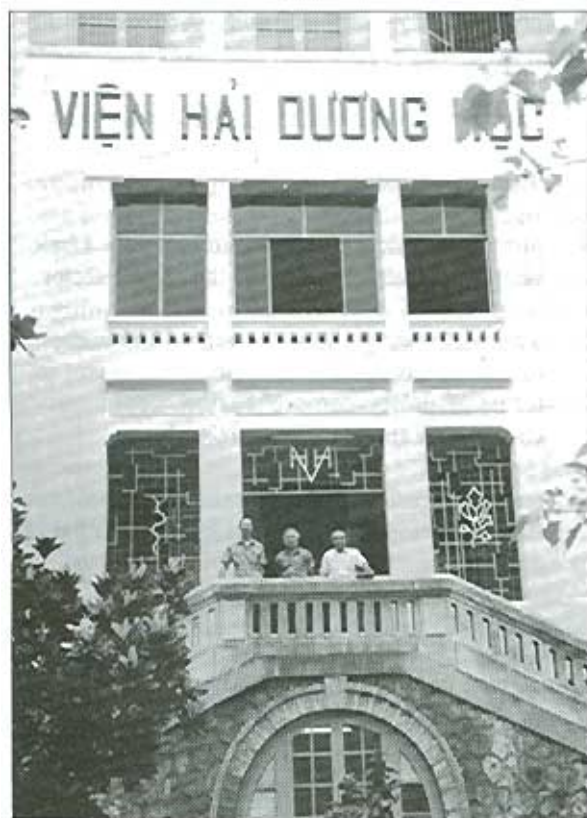
Already ravaged by war in earlier years, Vietnam continues to feel the assault inflicted by man in recent times. Conversion of fertile but fragile wetlands into aquaculture ponds, sedimentation brought on by settlements and agricultural activities, coastal erosion and the onslaught of pollution from industries as well as domestic wastewater are exacting their toll.

Nevertheless, while the marine environment of Vietnam is not yet seriously polluted, the increasing threat of pollution arising from both land- and sea-based sources led to the agreement among SAREC, CMC and UNDP/IMO MPP-EAS. Deeply concerned about the threats posed by modern man's activities to the coastal environment of Vietnam, the donors agreed to optimize financial and manpower resources to strengthen the national capacity of Vietnam in marine pollution prevention and management. CMC, on the other hand, will be the implementing body.

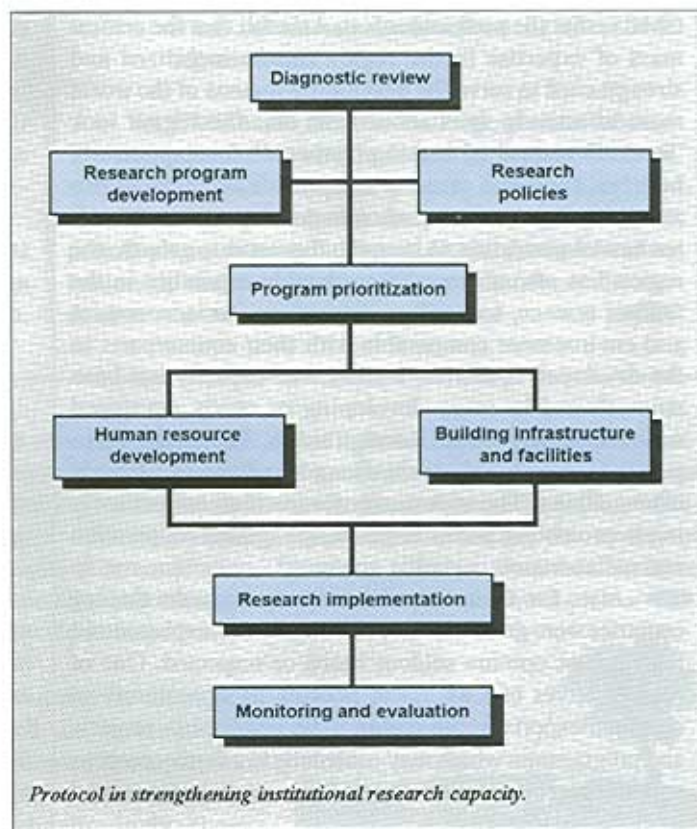
The Ministry of Science, Technology and Environment, which serves as a focal point of both SAREC and the UNDP/IMO MPP-EAS has identified two leading national institutions in Vietnam that require capacity-building. These are the Haiphong Institute of Oceanology and the Nha Trang Institute of Oceanography.

The programme proposes to take these steps: (1) conduct a diagnostic

*Continued on p. 11*



Dr. Ed Gomez (left) and Dr. Nguyen Chu Hoi (center), director of Haiphong Institute of Oceanology visited Dr. Nguyen Tac An, director of Nha Trang Institute of Oceanography.



# THE COASTAL MANAGEMENT CENTER:

## WHAT IT IS AND HOW IT WORKS

The Coastal Management Center (CMC) was officially registered in February 1994 in the Philippines as a nonstock, nonprofit, autonomous, professional organization. To some, CMC is simply another consulting company, a product of new market forces in response to the changes in funding policy and areas of interest among donors and lending institutions. However, those who were involved in its creation will not forget the two years of lengthy discussions and debates to justify its formation.

Perhaps a more accurate description of this organization is that it is a distinct league of interdisciplinary professionals committed to pursuing the concept and practices of sustainable development without compromising the functional integrity of the environment. Recognizing the importance of economic development and understanding the plight of millions of poor coastal inhabitants, CMC seeks to ensure the perpetuation of national policies that favor sustainable development, institutionalizing capabilities and promoting sustained economic and social benefits.

Another compelling reason for the establishment of CMC is that the professionals in Asia felt that the critical mass of expertise in the region can be mobilized and strengthened to serve the developing regions of the world more effectively. It is about time that the region look "inward" instead of looking "outward" for expertise to help build national capacity and provide technical advice and skills for national economic development and environmental protection. Along rapid economic growth, the region has also achieved considerable capability in the field of science, technology, legislation, socioeconomics and environment comparable with their counterparts in the developed countries. Institutional capacity has been strengthened in many developing or newly developed countries such as South Korea, Taiwan, Thailand, Philippines, Singapore, Malaysia, Hong Kong and to a certain extent, China. The opportunity for institutional networking in promoting and strengthening regional cooperation and collaboration is greatly enhanced.

Also, for many decades, experts from developing countries were grossly underpaid, largely overexploited and their expert opinion seldom heard or respected. One of the objectives of CMC is to provide an opportunity to qualified experts in the region to be involved in projects and programmes which may contribute to a better compensation thereby strengthening their social status and professional integrity.

Over the last two years, a small group of senior scientists in the region started conceptualizing and developing a working model for this institution. After much consultation and consideration, CMC was formed so that it could serve as the focal point for professional interaction on sustainable development in the coastal and marine areas.

The specific functions of the center are to:

1. provide technical and secretariat support to the consortium of institutions and network of professionals in collaborative projects;
2. serve as a major link between donors and the consortium/network and participate actively in the development and coordination of regional projects;
3. play a catalytic role in generating and coordinating project activities in research, human resource development and information exchange in developing countries;
4. provide technical assistance and serve as a link between the government and the private sector;
5. assist in creating public awareness and interest to support coastal and marine management in terms of policy comprehension, community cooperation and participation; and
6. render other services and assistance related to coastal development and management within the competence of the center.

Membership is open to invited experts worldwide who believe in the philosophy and approaches of the organization. While the membership of CMC is kept small and exclusive, it promotes associate membership particularly among young but highly qualified professionals so that a new generation of a broadly based, dynamic group of regional experts would be established. CMC's institutional network is indeed the strength of its operations.



A major focus of CMC is capacity-building in the area of coastal management. The purpose is to develop national capacity to plan and execute an integrated coastal management (ICM) programme. The CMC approach in capacity-building is structured on the following premises:

- develop management capability through the establishment of a national ICM demonstration site both for the training of local officials and serving as a laboratory for methodological improvement;
- develop research capability by assisting research institutions in developing appropriate, goal-oriented research programmes to address prioritized research issues of management significance; and
- develop the appropriate human resources for various levels of ICM programme requirements through training of trainers, preparation of training materials and short-term training for senior management personnel.

The center believes that it is time to put the concept of South-South cooperation into practice, at least in the areas of environmental research and management. The center is fortunate to have obtained financial support from the Swedish Agency for Research Cooperation with Developing Countries (SAREC) to enable the realization of South-South cooperation such as between research institutions in Vietnam and those with advanced laboratories in the Philippines and other Southeast Asian institutions. It also provides opportunity for cooperation between Southeast Asian institutions and their counterparts in East Africa.

While CMC is primarily focused on the tropical region, it also promotes close cooperation between professional bodies in the North and those in the South.

Negotiations to formalize such cooperative effort between CMC and a number of advanced centers in developed countries are underway.

Seven months after its formation, the CMC signed a Memorandum of Agreement with SAREC and the International Maritime Organization for collaborative activities. Collectively, the collaboration enables CMC to undertake a number of activities:

- publication of a joint newsletter, *Tropical Coasts*;
- provision of technical assistance to strengthen two research institutions in Vietnam;
- development of training materials on ICM and impact assessments;
- organization of an international conference on ICM;
- preparation of public awareness materials to translate scientific information for managers and policymakers;
- production of practical handbooks on ICM; and
- publication of workshop proceedings, technical reports and educational materials arising from initiatives undertaken by the three organizations.

Yet, CMC has to face the challenge of sustainability. The center cannot survive on donations or goodwill from sympathetic philanthropists. It has to develop a sustainable financing mechanism to keep it running beyond the project phase. A lot still depends on the dynamism of its leadership and more importantly, on what the center can deliver. R. JULIANO

*Continued from p. 9*

review of the national capacity for effective management of coastal and marine pollution (includes a review of existing information on the state of Vietnam's coastal and marine pollution); (2) formulate a research programme on coastal and marine pollution for the two institutions; (3) develop human resources for research and management of pollution in coastal and marine areas; (4) improve existing research infrastructure to increase the efficiency and effectiveness of

marine pollution research; (5) initiate a research program with limited research to validate methodologies and proposed strategies; and (6) prepare for the establishment of demonstration sites for the prevention and management of marine pollution (see box on p. 9).

The above initiatives exemplify the donors' and the international agencies' commitment to cooperation and development in environmental management, particularly those directed at developing countries. In

the light of the current global environmental situation, such initiatives foster greater interaction thus, effectively demonstrating the merits of working together towards a common goal. E. TECH, D. DIAMANTE and J. PAW



## SAREC'S FLAGSHIP PROGRAMME: MARINE SCIENCES RESEARCH IN DEVELOPING COUNTRIES



*Participants to the workshop and policy conference on integrated coastal zone management in Eastern Africa including the Island States.*

In developing countries where the world population growth is highly concentrated and where more than one-half of the population is in coastal areas, there is increasing pressure to utilize coastal and marine resources for food and economic purposes. Most economic and industrial activities are also located in coastal areas. The pressure on coastal and marine resources utilization has resulted in degradation of the ecosystems and coastal habitats and depletion of fish stocks. In Africa, the per capita fish supply decreased from 11.5 to 9.0 kg in 1970 to 1986, indicating that total fish supply has not kept pace with population growth. Global warming and the consequential rise in sea level will compound problems of coastal erosion, now in worrying proportions in Kenya, Tanzania and the island of Malagasy. The need to develop and upgrade capabilities of East African countries to properly manage their coastal and marine area is considered crucial for sustainable development.

The Regional Marine Science Programme was established as a result of the recommendations from a workshop jointly organized by the Swedish Agency for Research Cooperation with Developing Countries (SAREC) and the University of Dar es Salaam, Tanzania, in 1989. The main part of the programme is concentrated in East Africa while activities in the Caribbean and in South-east Asia are being developed. The specific aims of the programme are to:

- strengthen national research capacity in the coastal and marine area, particularly in coastal ecology, natural resources and environmental management;
- encourage multidisciplinary approaches to coastal and marine research including socioeconomic aspects;
- strengthen regional cooperation and coordination of coastal and marine research carried out in the different countries through regional research initiatives and regular scientific meetings;
- initiate collaboration with SAREC's bilateral activities and with programmes supported by other donors;
- encourage donor collaboration to improve effectiveness and complementarity, and
- make research known to different user groups, the public and decisionmakers for wider application of scientific results for development and management.

The Regional Marine Science Programme initially focused on training of researchers; organization of seminars and workshops on different topics relating to developing knowledge in coastal research and management; and formation of networks of marine scientists in the region. SAREC also funded

studies on marine flora and fauna in East Africa and provided travel grants for attendance to conferences/workshops and fellowships for graduate studies in Sweden (University of Gothenburg). Some of the seminars/workshops were coorganized and cosponsored by other donor agencies such as the International Oceanographic Commission and the United Nations Environment Programme.

Research manpower development took the form of fellowships for graduate studies. Outside the formal education programme, some specific workshops/seminars on nutrient fluxes, dynamics and intercalibration of analytical methods were conducted in Zanzibar, Tanzania, and in Maputo and Mombasa in Kenya between 1991 and 1993. A diving course was held at the Institute of Marine Sciences, Zanzibar, in 1992 during which researchers, technicians and boatmen became certified SCUBA divers.

A workshop on coral reef research in Tanzania was held in 1990, and another on coastal lagoon ecosystems in East Africa was held in Mozambique in 1991. In 1993, a technical workshop followed by a policy conference on integrated coastal management (ICM) was held in Arusha, Tanzania. Recommendations for research and implementation of various initiatives, projects and programmes to improve coastal resources management were made.

The Western Indian Ocean Marine Science Association (WIOMSA) was established in response to the needs expressed by marine scientists in the East African region. SAREC provided the financial support, and the Institute of Marine Sciences in Zanzibar provided secretariat support.

Research activities in the East African region will concentrate on coral reefs, coastal geochemistry, erosion and sedimentation; social and economic patterns and trends in coastal

communities; and ICM. For information dissemination and networking, the programme will publish the work on the fauna and flora of the shores of East Africa. In addition, funding will be provided to strengthen and sustain WIOMSA for three years. Funding will also be provided to support various publications aimed at the distribution of information relevant to the development of marine science in the region.

A modest support for the Southeast Asian region is provided because of its considerable experience in ICM. Through this activity, some solutions to problems of coastal environmental and resources management may be transferred to the East African region. The Southeast Asian (SEA) programme is envisioned to contribute to the dissemination of scientific information and interpretations needed for the sustainable use of coastal and marine

resources. To attain this, the SAREC programme assisted in the establishment and operation of a professional organization, the Coastal Management Center, which will handle scientific information interpretation and dissemination for the SEA programme. An additional advantage of the SEA programme is the benefits to the bilateral marine science programme in Vietnam.

In succeeding years until 1996, SAREC will pursue regional workshops and courses in various topics relevant to strengthening capability in marine and coastal environmental management. Regional training courses on laboratory safety and good laboratory practice; experimental design and statistics in marine sciences; algal physiology, cultivation and nitrogen/carbon metabolism; diving courses for coral reef research; marine primary and

secondary productivity; zooplankton and fish larvae ecology; and ICM will be held in different East African countries. In addition, more systematic research programmes will be launched in areas of regional importance making use of knowledge gained from courses/workshops and seminars in the different countries.

The overall programme is coordinated by Prof. Olof Lindén, Department of Zoology, Stockholm University. Dr. Magnus Ngoile (director), Institute of Marine Sciences, University of Dar es Salaam, Zanzibar, coordinates the East African part of the programme. Administrative services are provided by the Swedish Center for Coastal Development and Management of Aquatic Resources, Board of Fisheries, Gothenburg, Sweden. *O. LINDE* and *M. NGOILE*



## STRESSING THE ROLE OF RESEARCH IN ICM

Research is an important and integral part of coastal management. The resolution of management issues depends heavily on the results of research and correct interpretations. Too often, scientific information on coastal management problems are not translated into layman's language, which is useful for decisionmakers, environmental managers and the public. Thus, nonscientists perceive that a large part of research is simply data-gathering.

To respond to the challenges of integrated coastal management (ICM) and to define the role of research, the Coastal Management Center, International Development Research Centre and the Global Environment Facility/United Nations Development Programme/International Maritime Organization Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas jointly organized a workshop session on research issues for the Coastal Zone Canada '94 conference on 22 September 1994 in Halifax, Nova Scotia. The work-

shop was chaired by Dr. Chua Thia-ling, Dr. Peter Burbridge (UK), Ms. Maren Hatzelos (World Bank), Prof. Zhou Qulin (China), Dr. Edgardo Gomez (Philippines) and Dr. Padermsak Jarayabhand (Thailand) served as resource speakers.

The workshop re-affirmed that the major environmental problems in the coastal and marine areas are the deterioration of water quality and the subsequent breakdown in the functions of the resource systems. The tropical region alone, which has one of the world's largest biodiversity, is so adversely affected

that it has become imperative to prevent marine pollution from further endangering the fragile ecosystems in the region. Already, many of these valuable resources are exploited beyond their natural regenerative capacity.

The issue of the role of research in ICM came to the fore again. The workshop debated on the role of research in ICM, particularly the demanding role of science in providing a reliable database and scientific interpretation of coastal issues. The meeting recognized both the wisdom of

utilizing scientific data in responding to management problems and the substantial contribution from scientists in coastal research and development. Nonetheless, workshop participants were quite aware that a lot of research work to date are not immediately relevant to the present needs, especially with respect to environmental accounting, resource recruitment, resource valuation and management.

Thus, the environmental manager needs to play a stronger role in setting the research agenda. However, it was noted that many managers tend to use gray literature rather than refereed journals. Perhaps, there is also a need for a refereed regional journal on coastal area management to ensure the use of quality information as well as to promote the publication of quality papers. In addition, a campaign to promote research results geared towards policymakers was suggested to facilitate policy, management or technological interventions.

Finally, the workshop addressed research needs in relation to community participation, interagency cooperation, resource valuation, resource obligation and distribution of benefits, identification and qualification of users and beneficiaries, and policy environment for management strategies and actions.





## STATEMENT of HIS MAJESTY KING CARL XVI GUSTAF of SWEDEN

Due to the alarming increase in global coastal inhabitants, in the year 2000, 70% of the world's population is expected to live in close proximity to the coast. Already, the pollution in coastal zones caused by human activities is threatening the fisheries, the primary source of food in coastal countries. In tropical regions, where seafood is the major source of protein, the situation is critical. The magnitude of the problem is clearly illustrated by the fact that over two billion people currently depend on life-sustaining marine resources.

As chairman of the Swedish section of the World Wide Fund for Nature, and through participation in meetings of the Royal Swedish Academy of Science, I have kept up-to-date on developments in marine research.

Ever since the United Nations Conference in Stockholm in 1972, I have given much thought to the protection and conservation of the environment. I am also a firm believer in human ingenuity and capacity to develop appropriate technologies to meet the demands of environmental protection and sustainable use of resources. However, my impression is that the techniques being used to prevent marine degradation in temperate zones are not applicable to tropical coastal areas.

To bring about a better dialogue between scientists and decisionmakers in industry, trade and funding agencies, I initiated two Royal Colloquia in 1992 and 1993. The discussions during the 1992 Colloquium focused on possible technical solutions to prevent further depletion and degradation of the coastal and marine resources and environment. The colloquium recognized the problem of uncontrolled material flows from land and emphasized that these must be regulated, and that all sectors of society should be involved in protecting vital coastal ecosystems. The 1993 Colloquium concentrated on carbon flows in tropical and subtropical coastal zones. Since the threat to coastal ecosystems is caused by activities in all sectors of society, integrated management is needed if we are to achieve sustainable resource use. This also implies measures to minimize rural to urban migration and adverse alteration of existing urban areas. The material presented at these meetings was published in a special issue of *Ambio*. In an attempt to bring the process further, I have invited a gathering of key politicians from different parts of the world at a third colloquium in 1994 to discuss policy interventions needed to facilitate effective management action.

I welcome the initiative to produce the *Tropical Coasts* Newsletter to share and spread the experiences generated from various endeavors around the world to improve the management of coastal and marine areas. It is my sincere hope that many more efforts are taken to arrest the destructive trend and enhance the productivity and quality of valuable tropical coastal environments. Future generations must be given the opportunity to benefit from the bountiful resources that the coastal areas provide for the whole of mankind.

## MESSAGE from the SECRETARY GENERAL of the INTERNATIONAL MARITIME ORGANIZATION



William A. O'Neil

The first year of operation of the Global Environment Facility (GEF)/United Nations Development Programme (UNDP)/International Maritime Organization (IMO) Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas (MPP-EAS) is nearing completion. Upon reflection, it is apparent that a number of important milestones have been achieved during these first 11 months, not the least of which has been the agreement by all 11 countries in the region to participate in this unique and comprehensive GEF initiative.

Globally speaking, the United Nations Conference on Environment and Development (UNCED), which took place in Rio de Janeiro in 1992, was one of the most important events of the 1990s. To my mind, the conference's main achievement was the bringing together of two themes, development and environment, and confirmation that such themes are not mutually exclusive but interdependent. This consideration is especially important in the East Asian region where the rate of economic growth has outpaced that of all other regions over the past 15-20 years. UNCED's Agenda 21, described as "an action plan for the 1990s and well into the 21st century," provides the foundation upon which this GEF initiative has been established. In particular, Chapter 17 of Agenda 21 focuses on oceans and coastal areas and specifies the roles and responsibilities of governments, with appropriate support from international agencies, in protecting the environment. The action agenda includes:

- implementation of integrated coastal and marine management and sustainable development plans;
- support for the wider ratification and implementation of relevant international shipping and marine pollution prevention conventions and protocols;
- assessment of the state of the marine environment in areas of congested shipping waterways, such as international straits, with a view to ensuring compliance with generally accepted international regulations; and
- provision of adequate financial and technical resources to assist developing countries in preventing and solving problems associated with activities that threaten the marine environment.

These four objectives are at the heart of the GEF/UNDP/IMO MPP-EAS. More importantly, a major effort of the project concentrates on implementing strategies and actions designed to demonstrate "how" to achieve the objectives. The approach adopted by the MPP-EAS Programme Steering Committee in June last year called for the identification, development and implementation of operational modalities for integrated coastal zone management and risk assessment and risk management at selected sites in the region. The knowledge, experience and skills gained at each site will then be "packaged" and transferred to other sites. Given the complexity and multiplicity of interactions in the coastal and marine environment throughout the region, the implementation strategy of the steering committee is a most practical and cost-effective scheme for putting "the right tools into the right hands" for long-term benefits to the region.

The GEF project also has global significance. For example, the demonstration project in the Strait of Malacca concerns risk assessment and risk management, which have a number of features that are highly relevant to the global shipping community. Recognized as one of the busiest international waterways in the world, the strait is developing as a tourist and recreational facility, and includes significant subregional commercial shipping. It is an important source of food and natural resources for the livelihood of the coastal populations of the littoral states and contains a number of unique and sensitive ecosystems along its reach. What better location to cultivate and "package" a working prototype on effective risk assessment and risk management of marine pollution emanating from ships? The lessons learned during the Malacca Strait demonstration project will surely be applicable to other regions.

Another area of acute importance to the region, and beyond, is the promotion and implementation of international conventions. At present, I am sorry to report, very few countries in the region have ratified IMO conventions and protocols related to shipping and marine environment protection. The fact of the matter is, pollution prevention and management can be achieved throughout the East Asian Seas region, with the help of international conventions particularly for international cooperation in realizing the UNCED objectives. I am confident that the importance and benefits of these global instruments will become apparent to all participating countries as this project proceeds. I also assure you that this organization is ready and willing to provide technical assistance and support to countries wishing to accede to and implement IMO conventions and protocols.

The comprehensive, cross-sectoral and multidisciplinary nature of this GEF project implies that significant effort and commitment is required of all participating countries, cooperating agencies and organizations, industry, NGOs, UNDP and IMO if success is to be achieved. After 11 months, it appears that the political will, working arrangements and human resources are now in place to do things right. I look forward to the next 12 months of activity, to seeing results and outputs that show the resourcefulness, skill and dedication characteristic of the countries and people of East Asia.

## Post-Rio Perspective: SEAPOL 1994 Conference on Sustainable Development of Coastal and Ocean Areas in Southeast Asia

The Southeast Asian Programme in Ocean Law, Policy and Management (SEAPOL) conference was designed to review the major issues on the implementation of ocean-related recommendations in the 1992 United Nations Conference on Environment and Development (UNCED) Agenda 21 and to make recommendations for increased cooperation among governmental and nongovernmental organizations in the region for sustainable development and enhanced protection and management of the coastal and ocean areas.

Held in Singapore on 26-28 May 1994, this conference was organized by the Faculty of Law, National University of Singapore and The World Conservation Union Commission on Environmental Law. SEAPOL is a nongovernmental network of scholars, government officials, members of the private sector, scientists, lawyers and individuals with a professional interest in ocean affairs of Southeast Asia.

There were 71 participants from 16 countries in East and South Asian countries, Canada, United States, the Netherlands, Australia and Germany. Conference Chairs were Prof. Tommy Koh, ambassador at-large, Ministry of Foreign Affairs and director, Institute of Policy Studies, Singapore, and Prof. Douglas Johnston, Faculty of Law, University of Victoria, Canada.

The first session was devoted to a general overview of the implications of UNCED and Agenda 21 on the coastal environment and of current diplomatic initiatives designed to facilitate universal acceptance of the United Nations Convention on the Law of the Sea (UNCLOS). The subsequent sessions covered marine pollution, integrated coastal zone management (ICZM) and fisheries. Five papers were presented at the conference. Dr. Chua Thia-Eng presented "Marine pollution: developments since UNCLOS III and prospects for regional cooperation in Southeast Asia." Chua is the programme manager of the Global Environment Facility/United Nations Development Programme/International Maritime Organization Regional Programme on the Prevention and Management of Marine Pollution in the East Asian Seas. Dr. Edgardo Gomez, president of the Coastal Management Center and director of the Marine Science Institute, University of the Philippines, read his "Coastal zone

management and ecosystem protection: prospects for cooperation in Southeast Asia." ■

*Dr. Ed Gomez (center), Prof. Tommy Koh (extreme right), Prof. Douglas Johnston (right), Dr. Alan White (partly hidden) and Dr. Reza Amini (left) in a SEAPOL Conference discussion in Singapore.*



Adopted at the conference were 35 recommendations arising from the papers presented and the extensive discussions. Among the significant recommendations are:

1. In the light of the environmental significance of the 1982 UNCLOS; its enforcement since November 15, 1994; the importance of Agenda 21, and in particular Chapter 17; and the endorsement of Agenda 21 by the Association of Southeast Asian Nations under its Strategic Plan of Action on the Environment 1994-1998; it is recommended that the governments of the region consider becoming parties to the UNCLOS, as proposed to be amended by the Draft Agreement Relating to the Implementation of Part XI of the UNCLOS.
2. The governments should undertake regional and subregional efforts to take cooperative measures as called for in the UNCLOS and Chapter 17 of Agenda 21 for the sustainable development of ocean and coastal areas, the protection and preservation of the marine environment and the conservation and sustainable use of living resources.
3. In determining the appropriate levels of regional cooperation, special priority should be given to semi-enclosed bays, congested waters, critical habitat areas and heavily polluted estuaries and bays.
4. The conference strongly supports the current trend toward the growing involvement of nongovernmental networks and institutions in the analysis and implementation of public policy decisions in the field of environmental management of coastal and marine areas, and recommends the further development of multisectoral conferences and workshops organized for the benefit of the governments of the region.
5. ICZM should become the framework for the planning and implementation of arrangements for the management of fisheries and other resources, pollution control, and the regulation of human activities that affect coastal zone resources.
6. To achieve more effective treatment of land-based marine pollution problems at the local level, the states of Southeast Asia should adopt the concept of ICZM, as prescribed in Chapter 17 of Agenda 21.
7. Improved networking in the field of marine pollution control should be undertaken by developing stronger linkages among management agencies, research institutions and the private sector and by strengthening efforts to harmonize national legislation and administrative practices through regular consultations among the appropriate marine environmental law experts of the region.
8. To reduce the risk of vessel-source pollution, the governments of the region should fully support the recently concluded arrangement of port-state control in the Asia-Pacific and should be further encouraged to strengthen flag-state control.
9. In the light of the growing international consensus that open-access fishing regimes are incompatible with sustainable development of fisheries, serious consideration should be given to shifting the emphasis from the current system of fisheries management based on the concept of maximum physical yield to one based on optimizing socioeconomic benefits over the long term.



**WANTED:**

## AN EFFECTIVE POLLUTION MONITORING NETWORK

### Ineffective Marine Pollution Monitoring Programmes

Marine pollution monitoring programmes exist in the East Asian region but most are not effective. The information gathered from these have not been properly used because they are not necessarily in a form readily usable by managers and policymakers, translated into sound management strategies, and reliable or relevant due to deficiencies in programme planning and design.

Often, the value of the monitoring activity itself lacks assessment, partly due to ambiguity in the programme objectives.

The "shotgun" approach is also frequently used in pollution monitoring programmes. This entails the measurement of a whole range of parameters simply because they are in a standard list and have always been determined, without seriously considering the major contaminants in the area and their sources or appropriateness of the contaminants and matrices being monitored to indicate long-term changes. This approach has yielded information not directly useful in addressing fundamental pollution problems. Consequently, there is inefficient use of resources and the marine environment continues to deteriorate because policy or technical interventions are not in place.

A related issue in monitoring is the absence of workable solutions to address the state of contamination. For developing countries, environmental management approaches that rely on the best available control technology may be too expensive. On the other hand, compliance monitoring may work in localities where compliance can be enforced but this assumes adequate government resources and political will.

A monitoring programme that targets selected critical problems and inputs to the formulation of cost-effective strategies is believed to be better suited for the East Asian region. Coupled with a participatory approach involving the various users and custodians of the marine environment in the monitoring, safeguarding and management processes, more effective results can be expected.

### The Network and its Functions

The network is envisioned to be an effective means to periodically assess the state and trend of marine pollution in various sites in the East Asian region and ascertain improvements, if any, as a result of pollution management strategies and interventions.

The information and experiences from the identified network stations will serve as the basis for developing and refining a monitoring programme for the region. This programme will include the:

- review and adoption of a common pollution monitoring strategy based on selected critical coastal activities;
- selection of appropriate parameters and sample matrices to monitor trends;
- standardization of sampling and analytical procedures;
- adoption of a common quality assurance programme; and
- provision of suitable data intended for policy and management actions.

A unique feature of the programme is that the responsibility rests on a consortium of major stakeholders (e.g., relevant government agencies, industries, coastal communities and academic institutions) at a network site. The monitoring effort should enable an assessment, not only of pollution trends, but also of the effectiveness, cost and efficiency of existing and new control strategies.

### How to Join the Network

The bases for admitting sites into the network will be, among others:

1. an interest to start or continue a marine pollution monitoring programme preferably within the context of an integrated coastal management programme;
2. the openness to reconsider pollution monitoring strategies that may already be in place, determine common and appropriate parameters for the programme, and adopt a quality assurance programme; and

3. the willingness to contribute and exchange information.

Other sites could also be brought into the network where there exist functioning monitoring programmes that use advanced technologies for adoption elsewhere in the region.

### Mechanisms of Interaction

- The newsletter, *Tropical Coasts*—for information exchange.
- Planning workshops—to consider experiences of participating countries, define objectives, develop and refine strategies and methodologies, which will be adopted for the demonstration and other network sites. An important aspect of these workshops will be the quality assurance programmes.
- Training
- Site visits—in which participants from the major demonstration sites (e.g., Batangas Bay, Xiamen and Strait of Malacca) will obtain first-hand perspectives of developments at other sites.
- Development of database system—for sharing of data. Quality will be considered; data will be screened and evaluated before inclusion in the database. Where available, electronic mail and bulletin board will be used.

### Linkages

The network aims to strengthen linkages among scientists and also build on initiatives by various groups in the East Asian region, such as the United Nations Environment Programme Regional Seas Programme, Group of Experts on Scientific Aspects of Marine Environmental Protection, Global Investigation of Pollution in the Marine Environment and the Association of Southeast Asian Nations-Canada. Expertise outside the region will be tapped to contribute to the programme as needed. ■

*For more information, please contact: Dr. Gil S. Jacinto, Network Coordinator, Marine Science Institute, University of the Philippines, Diliman, Quezon City, Philippines.*

## MALACCA STRAIT AND SUSTAINABLE USE: LITTORAL STATES RISE TO THE CHALLENGE

Endowed with highly productive ecosystems such as mangroves, seagrasses and estuaries, the Strait of Malacca has provided livelihood to coastal communities in the littoral states of Malaysia, Indonesia and Singapore for centuries. Today, the strait continues to be an important source of food and other raw materials and facilities for the surrounding coastal populations. A substantial part of Malaysia's fishing industry depends on the Malacca Strait. On the other hand, the aquaculture and tourism industries have been developed extensively along the Malacca Strait coasts of Indonesia, Malaysia and Singapore.

Touted as the most important international waterway in the world today, the Malacca

Strait is one of the most congested straits connecting the Indian Ocean and the South China Sea. A great deal of subregional commercial shipping also passes through the strait. Indeed, the strait is a multiple-use waterway that has been rendered ecologically vulnerable to both land-based and ship-source pollution.

Sewage, agricultural wastes, sediments, industrial effluent and hazardous wastes degrade valuable nearshore ecosystems. The strait faces the grim prospect of increasing pollution from growing maritime activities such as offshore mineral, gas and oil exploration and production activities.

Heightened economic development and growing environmental awareness made proper resources management and sustainable development buzzwords in recent years. In the process, different peoples, including experts in various disciplines, have learned that a significant drawback to resolving marine pollution problems involve a combination of insufficient political will, lack of resources,



inappropriate legislation, poor enforcement of laws, and outdated management schemes. It is in the main interest of the user states of the strait therefore, to pursue an integrated effort at combating marine pollution.

The clamor for assistance to reduce marine pollution in East Asia prompted the United Nations Development Programme through the Global Environment Facility to formulate the Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas.

Aware of the multiple and large-scale utility of the strait and the sensitive nature of existing impediments towards controlling pollution in the area, the programme sought to confer with top officials of the governments involved and pertinent organizations, taking the high-level approach in tackling the issue. The programme hopes to attack the problem on a regional scale. Participation among the different user and littoral states and concerned industries is deemed essential.

A series of meetings and conferences began with the Southeast Asian Programme in Law, Policy and Management (SEAPOL) conference in Singapore on 24-26 May 1994. This was immediately followed by an international conference organized by the Malaysia Institute of Marine Affairs (MIMA) in Kuala Lumpur, Malaysia on 14-15 June; highlighted by the Consultative Meeting organized by MIMA and IMO on 16 June; and culminated in a meeting with the Minister of Science, Technology and the Environment for Malaysia on 17 June. The latter actually invited the IMO to send a delegation to discuss the Malacca Strait issues.

The SEAPOL is primarily concerned with policies in the Southeast Asian seas. On the other hand, MIMA and the Consultative Meeting focused on the Malacca Strait with the former attending to more general matters.

The consultative meeting was particularly useful in determining what the governments and industry considered the priority areas for the Malacca Strait project. Based on previous agreements, the programme's workplan will be revised prior to implementation, taking into account the recommendations and the considerable work already undertaken on marine safety and pollution responses in the region.

In general, the three conferences and workshops agreed on seven issues:

- Adopt the Integrated Coastal Zone Management framework.
- Give priority to the ratification and implementation of IMO conventions on marine pollution.
- Develop contingency plans concerning navigational and

environmental protection operations.

- Develop sustainable financing mechanisms for environmental protection activities.
- Forge a strong linkage or network among appropriate sectors and countries.
- Give priority to local and international programmes for capacity-building.
- Strengthen the information base to ensure a firm basis for decisions.

There is not enough consolidated information on the Malacca Strait as a waterway particularly on the types and values of the natural resources at risk or a clear idea of either users or beneficiaries. While there are general statements on pollution in the strait, there is no adequate data to indicate the level of pollution and their sources as well as the ecological impacts from shipping traffic. The desire to assess

the risks posed by maritime transport of hazardous chemicals through the strait and arrangements that deal with marine casualties involving such substances have been stressed in a number of national and regional meetings.

Despite the above inadequacies, positive actions are being undertaken both by the littoral governments and the industries to address the issues of shipping safety and marine pollution from oil spills. The Tripartite Technical Expert Group, formed by the three littoral states of Malaysia, Indonesia and Singapore, is a useful government mechanism to provide advice to the concerned governments on management actions. The formation of cooperative bodies of oil companies such as the Petroleum Industries Malaysian Mutual Aids Group, Tiered Area Response Capability and the East Asia Response Ltd. is an example of concerted effort of industries to minimize risks of oil pollution.

One of the user states, Japan, with over 90% of its crude oil imports passing through the strait, has also played a positive role. It has provided financial support and oil spill response equipment through the Petroleum Association of Japan and the Malacca Strait Council to concerned littoral states to combat oil spills and impose navigational safety in the strait. Thus, good cooperation has been established among the governments, the industries and the user states towards minimizing marine pollution arising from sea-based activities.

This cooperation can be further strengthened through a longer-term management regime involving both the littoral and user states as well as the shipping and oil industries. With more reliable databases and a strong commitment from concerned parties, the prospect of achieving a cleaner sea and safer Malacca Strait is certainly not a dream but an achievable reality. ■

## THE EAST ASIAN BATTLE AGAINST MARINE POLLUTION:

### Country Updates

Since the establishment of the Global Environment Facility (GEF)/United Nations Development Programme (UNDP)/International Maritime Organization (IMO) Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas (MPP-EAS) in January 1994, Programme Manager Dr. Chua Thia-Eng has been spending a large part of his time initiating pollution management activities in the 11 participating countries. He assessed existing efforts on marine pollution and coastal environmental management, explored opportunities for regional cooperation and determined areas where modest contributions can be made. Some of the highlights in MPP-EAS activities in each country are given below.

#### Brunei Darussalam

The Marine Department has recently received oil spill response equipment from Japan as part of the ASEAN/Japan Oil Spill Preparedness and Response (OSPAR) programme. The department is keen on having its field staff trained in the use of the equipment. The director and his deputy participated in the IMO/International Petroleum Industry Environmental Conservation Association (IPIECA) Seminar on Contingency Planning for Oil Spill Response held in Hong Kong last 23-25 November 1994.

Brunei Darussalam has already prepared an integrated coastal zone management plan, and most parts are being implemented by concerned line agencies. Thus, lessons learned in plan implementation will contribute

to the MPP-EAS efforts in developing working modalities and typologies in marine pollution management.

#### Cambodia

The major focus of the programme in Cambodia is to assist the government in developing necessary technical and environmental management capabilities. The ministry has suggested Sihanoukville, which is one of the three major economic development regions, as a potential national integrated coastal management (ICM) demonstration site to be linked with the programme's regional ICM network. The programme is developing a project proposal for Sihanoukville on this aspect.

The programme supported the involvement of Cambodia in the United Nations Environment Programme/Coordinating Body on the Seas in East Asia (UNEP/COBSEA) Public Awareness Workshop in Singapore.

### China

The Xiamen Demonstration Project in China is on ICM and is hosted by the Municipal Government. China also hosted the launching meeting of the programme in November 1993. In October 1994, the local government signed a Memorandum of Agreement with IMO providing US\$1,388 million both in cash and in kind as their counterpart contribution. A newly constructed 60-t marine surveillance vessel, a new vehicle (Pajero) and a two-story office building are three of the nonmonetary contributions to the project. The programme will be providing US\$932,280 over the next four years to develop ICM working modalities and typologies for replication in other parts of the East Asian region.

The Xiamen Demonstration Project has just completed a three-month public awareness campaign as part of efforts to generate public support. The programme supported the travel expenses of a project staff who shared the Xiamen experience with the other participants of the UNEP/COBSEA Public Awareness Workshop in Singapore.

### Democratic People's Republic of Korea

In view of the limited scale of industrial development in DPR Korea, there is certainly no immediate threat of serious marine pollution that is already evident in many of its neighboring countries. However, inadequate reception and treatment facilities in many of the old industrial complexes in coastal cities, such as Hamhung and Sinuiju area, may have resulted in industrial waste discharges into the Yellow and Japan Seas. Certainly, there is a lack of baseline information on the level of pollutants in the coastal and marine waters of the country. Yet, the

government is conscious of the potential threats and has been negotiating with the programme for technical and financial assistance to develop proactive marine pollution measures. The government has identified Nampo as a potential national ICM demonstration site. In the initial phase, the programme will be focusing on training and basic infrastructure development to ensure basic capability to undertake marine pollution assessment

In another development, two senior officers from the Maritime Administration attended the IMO/IPIECA seminar in Hong Kong.

### Indonesia

The programme has been arranging the implementation of the Malacca Strait Project through its focal point, the Agency for Environmental Impact Assessment (BAPEDAL). BAPEDAL and other concerned agencies, including the Directorate of Sea Communication, Center for Development of Petroleum and Gas Technology, the Indonesian Institute of Sciences, a number of non-governmental agencies and the Indonesian Chamber of Commerce, have been consulted about the involvement of Indonesia in the project and other programme activities. Key officials were invited to attend the Consultative Workshop on the Management of the Malacca Strait in June in Kuala Lumpur, Malaysia, and the IMO/IPIECA Seminar on Contingency Planning for Oil Spill Responses in November in Hong Kong.

### Malaysia

Malaysia and Indonesia form the eastern and western borders of the Strait of Malacca, respectively. A large part of Malaysia's prosperity can be attributed to the country's historical



*The new surveillance and research vessel of the Xiamen Marine Management Division from the Municipal Government.*

and economic relationship with the strait. Malaysia has formed a national steering committee to enable coordinated involvement of the concerned Malaysian institutions in the Malacca Strait Project. The Malaysian Institute of Marine Affairs (MIMA), a partner of the programme, hosted a number of national workshops on the safety and pollution of the strait. MIMA organized the international conference on the Strait of Malacca from 14-15 June 1994, in which a number of IMO officials participated. MIMA also assisted the programme in organizing the Consultative Workshop for Pollution Risk Management in the Strait of Malacca.

### Philippines

The Government of the Philippines, through the Department of Environment and Natural Resources (DENR), hosted the regional Programme Development and Management Office (PDMO), providing the basic infrastructure (e.g., building, office facilities and equipment) and basic support personnel as well as a modest operating fund. In addition, the Provincial Government of Batangas provided the Batangas ICM demonstration project with a field office, infrastructure and modest operating budget for 1994 and 1995.

In addition, the programme provided about US\$700,000 for the demonstration project while the Batangas Bay Coastal Resource Management Foundation, which was formed by a consortium of major industries along the bay, contributed

in kind and supports some project activities.

A citizens' movement known as "Kilos Kabayan para sa Kalikasan" (KKK) or Citizens' Movement for Nature, plays a major role in mobilizing community support for environmental protection. The KKK was instrumental in organizing a three-month public awareness campaign for environment and cleanliness.

The programme sent a project staff to the UNEP/COBSEA Public Awareness Workshop in Singapore to share the Philippine experience with the other participants.

### Singapore

Singapore's involvement is essential, particularly in the Malacca Strait project. Its excellent port facilities, well planned and organized activities dealing with port and waste management, and the wealth of experiences and lessons learned in cleaning up the country's rivers serve as a valuable showcase for other countries in the region. Singapore could contribute to the regional programme by sharing its experience and expertise and providing training opportunities to its neighbors. Singapore will be one of the training sites for the planned training course on ICM.

### South Korea

Considerable technical skills in South Korea could contribute to the regional effort to combat marine pollution in the East Asian Seas. The

Korea Ocean Research and Development Institute (KORDI), the focal point of the programme, has developed a real-time monitoring system for tides, waves and wind. The system could be used in forecasting oil spills, pollutants and sediment transport. Discussions with KORDI about the installation of the monitoring system in the demonstration sites are underway.

The Marine Policies Center of KORDI has identified Masan-Chinhae Bay as an ICM demonstration site linked with the programme.

A number of areas for collaboration have been identified. They are: sponsorship of training courses, secondment of experts to the programme, establishment of the ICM demonstration project, collaborative research and marine pollution monitoring.

### Thailand

The Royal Government of Thailand has placed considerable importance on the management of the coastal and marine environment. Thailand has substantial experience in ICM through active involvement in many bilateral (e.g., United States Agency for International Development [USAID], Danish International Development Assistance [DANIDA]) and multilateral (e.g., ASEAN-Australia, -Japan, -Canada and -US; and EC) ICM and marine pollution projects and programmes. The director general of the Harbour Department, the programme's focal point, participated in the IMO/IPIECA seminar in Hong Kong together with representatives from the Pollution Agency and industries.

The DANIDA has been assisting the government through the Harbour Department to develop a national oil spill contingency plan including the provision of a vessel and neces-

sary response equipment (booms and skimmers). In addition, the Japan-supported OSPAR programme is enhancing Thailand's stockpile of oil spill response equipment. The oil companies in Thailand have also formed themselves into a cooperative or mutual aid group, thus improving their efficiency and preparedness in response to oil spills arising from their own activities. Provided there are adequately trained staff in the use of response equipment and effective contingency response plan for oil spills, Thailand will have acquired the basic capability to handle oil spills in the Gulf of Thailand and nearby coastal waters.

The experiences and progress made in coastal management and marine pollution activities could be synthesized into useful information for other countries in the region developing similar programmes.

Thailand will be hosting the Second MPP-EAS Programme Steering Committee in 1995.

### Vietnam

IMO and SAREC signed a Memorandum of Agreement with the Ministry of Science, Technology and the Environment to undertake capacity-building programmes involving two oceanographic institutions in Haiphong and Nha Trang. The activities include a systematic approach in developing prioritized research programmes, human resource training development and undertaking marine pollution and coastal environment research. The two institutions would then participate in assisting the local government in developing ICM demonstration sites, which could be linked with the regional networks of the programme.

Vietnam is also developing contingency plans for oil spill response. IMO's assistance is being arranged.

The programme supported an ongoing UNEP/COBSEA feasibility study on a comprehensive preparedness and response plan to oil and chemical spills in the East Asian region by extending the study to include Haiphong Port. ■



Singapore has successfully cleaned the Kallang River basin. (Photo courtesy of the Ministry of Environment, Singapore).

The International Maritime Organization (IMO) convened scientific experts involved in the Programme for Global Investigation of Pollution in the Marine Environment (GIPME) at the IMO Headquarters, London, from 12 to 14 October 1994. The purpose of the meeting was to discuss opportunities for co-operation between GIPME and the Global Environment Facility (GEF)/United Nations Development Programme (UNDP)/IMO Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas (MPP-EAS) and the development of a regional marine pollution monitoring and information management network. The meeting was presided by Dr N.R. Andersen, GIPME chairman, and attended by representatives from GIPME experts groups, as well as from the Intergovernmental Oceanographic Commission (IOC) and IMO.

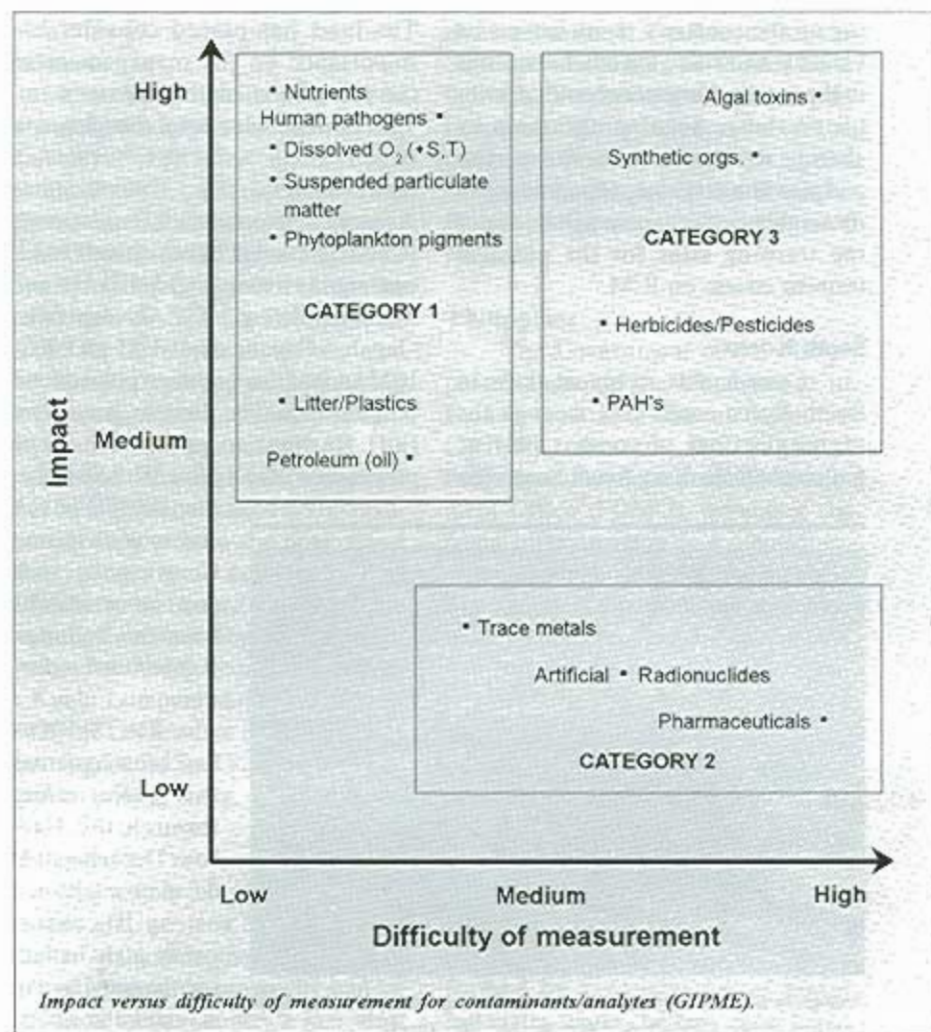
GIPME was established at the Ninth Session of the Assembly of the IOC in 1975, to provide a scientific basis for the assessment and regulation of contamination and pollution of the marine environment on both regional and global levels. It is sponsored by the IOC, UNEP and IMO. The scientific and technical work of GIPME is, to a large extent, carried out through three expert groups and involves, among others, the development of scientific research manuals, organization of global and regional workshops, and training exercises. Activities of the Group of Experts on Methods, Standards and Intercalibration include identifying research and development needs in relation to the conduct of baseline or monitoring operations, assisting in technical development and methodological intercomparison, and providing information on operational planning of intercomparison, training and baseline activities. The Group of Experts on the Effects of Pollutants focuses on the formulation of international cooperative research proposals

for the study of the effects of pollutants on marine organisms and ecosystems, and advice on methods required for quantification of these effects. The Group of Experts on Standards and Reference Material deals with procedures for standardized methods of measurements for a wide variety of marine substances, including contaminants.

The meeting identified a number of special opportunities for cooperation between GIPME and the MPP-EAS. The *Health of the Ocean* pilot project is one of five modules of the Global Ocean Observing System. The module intends to provide an information base for determining the prevailing condi-

tion and trends in the marine environment in relation to the effects of anthropogenic activities, particularly those resulting in the release of contaminants into the environment. Activities involve collection of data on physical/chemical parameters, bio-monitoring and biological assessment on both global and regional bases, using international standards and methodologies. It was suggested that many of the parameters proposed for analysis under the module be common to those in the MPP-EAS.

*The International Musselwatch* is a coastal monitoring programme utilizing sentinel bivalves, primarily oysters and mussels, which reflect equilibrium concentrations of contaminants (e.g., organochlorine pesticides, PCBs and PAH). The programme has just completed its initial phase, with



collections from 80 stations, representing the coastline of every country in South and Central America. Its second phase, the Asia-Pacific Musselwatch, which includes the East Asian Seas region, has commenced. The first planning workshop, organized in Bali, Indonesia, in November 1994, identified the sites and established a network of scientists from each country. The meeting suggested that demonstration sites of the MPP-EAS be included in the Asia-Pacific Musselwatch programme.

The development and establishment of a monitoring programme in the East Asian Seas region was discussed at length by the experts. A preliminary list of physical/chemical parameters that could be measured in different parts of the marine environments, i.e., the water column, sedi-

ments, biota, point sources and riverine inputs, was developed. The proposed core measurements were: turbidity, temperature, salinity and dissolved oxygen. It was pointed out that additional measurements will depend on the site characteristics and sources of pollution and should be planned when more detailed information on the demonstration sites becomes available (See fig. on p. 22).

To ensure the quality of physical/chemical measurements, GIPME proposed to conduct a set of laboratory intercomparison exercises (e.g., nutrients, biological effects and organic contaminants) in the region, in which laboratories involved in the MPP-EAS could participate.

The meeting recognized that tropical and subtropical habitats, such as coral reefs, mangroves and

seagrasses, are suitable as biological/ecological indicators to monitor changes in the marine environment. New techniques to analyze these communities should be evaluated in an intercomparison exercise and if they are shown to be successful, these methods should be used not only in the East Asian Seas region, but also in many other tropical areas. Further consideration is required to assess the feasibility of setting up such an exercise within the MPP-EAS.

Linkages between GIPME and the MPP-EAS will be further assessed and established when the environmental profiles of the demonstration sites have been completed. This could involve a programme planning meeting in the region with scientists from both programmes and representatives from participating countries. A. ROSS ■



Most of the economic activities in Sri Lanka, such as industry, fishing and tourism, are concentrated on its coastal areas along with an estimated population of five million. Overfishing in the shallow coastal seas has led to a decrease in commercially important fish stocks. In addition, increasing activities in tourism, industry and others, coupled with rising population pressure, have led to the degradation of the coastal habitats such as mangroves, coral reefs and lagoons. About 10% of the coral reefs are being destroyed annually due to unregulated and unmanaged human activities.

There is evidence of large-scale destruction of valuable coastal resources such as mangroves, overexploitation of

## RESEARCH ON NATURAL RESOURCES MANAGEMENT IN THE COASTAL AREAS OF SRI LANKA

lagoon and shallow coastal fisheries, indiscriminate use and abuse of coral resources, and inadequate economic development planning and management, which have all contributed to declining productivity, pollution and deterioration of the environment. Consequently, socioeconomic repercussions on the coastal inhabitants could be ominous. Foremost among the reasons for this serious situation is the lack of knowledge and understanding of the coastal resources and their interaction with terrestrial and marine processes.

### *SAREC support to marine and coastal research in Sri Lanka*

In 1989, the Swedish Agency for Research Cooperation with Developing Countries (SAREC) initiated a Coastal Ecology Programme with the National Aquatic Resources Agency (NARA) in Sri Lanka. Phase I of this programme is now in the final stage of implementation. Its objectives are to build and strengthen the manpower and technical capabilities of NARA and to provide scientific data relevant to coastal zone and resource management in the country.

Since the initiation of the programme, scientists from various disciplines have been working together to

provide information on the environment and natural resources of the Puttalam Lagoon-Mundal Lake area in the North-West Province of Sri Lanka. One of the largest lagoons in Sri Lanka, Puttalam covers an area of approximately 400 km<sup>2</sup>. It is generally very shallow with a mean depth of about 2 m but can reach 4-5 m in the central channel. The lagoon and adjacent coastal areas support a population of over 200,000. Fishing and agriculture are the most important economic activities.

The research carried out by NARA in cooperation with overseas scientists has been focused on disciplines such as fisheries biology, aquaculture, coral reef ecology, nutrient cycling and chemistry, physical oceanography, environmental fate of pesticides, and the socioeconomics of coastal communities. At the same time, attempts have been made to resolve the multidisciplinary character of the more general problem of integrating scientific environmental data into coastal area management.

The outcome of the programme will form the basis of activities under the Swedish International Development Programme project on a coastal zone management programme in the North-West Province. PAULINE DAYARATNE, NARA, OTTILINDEN, SAREC ■

## Batangas Demo Project Launched

The Batangas Demonstration Project, one of the three demonstration sites of the Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas (MPP-EAS), was launched on 28 April 1994. The ceremony was held at the Batangas National High School Stadium in Batangas City. It coincided with the culminating programme of a three-month long environmental awareness campaign in the province. The launching was highlighted by the signing of the Memorandum of Understanding (MOU) concerning the implementation of the project by the United Nations Development Programme (UNDP), International Maritime Organization, Department of Environment and Natural Resources (DENR), the Provincial Government of Batangas, the Municipal Governments of San Pascual, Bauan, Mabini, City Government of Batangas and the Batangas Coastal Resource Management Foundation, Inc. (BCRMF). The affair was attended by Mr. Jorge Reyes, UNDP senior programme officer, who signed the MOU on behalf of UNDP Manila, Dr. Chua Thia-Eng, MPP-EAS programme manager, Undersecretary Ben Malayang III who represented DENR, Hon. Vicente Mayo, Batangas Governor and Mr. Eddie Cataquis, vice president of BCRMF, who signed on behalf of BCRMF. The four mayors present were Hon. Eduardo Dimacuja (Batangas City), Hon. Bienvenido Castillo (Bauan), Hon. Ruben Amurao (Mabini) and Hon. Mario Magsaysay (San Pascual).

With the signing of the MOU, Gov. Mayo created the Management Task Force of the project whose members are the mayors of the four municipalities, heads of line agencies in the region (National Economic and Development Authority, DENR, Philippine Ports Authority, Philippine Coast Guard, Department of Education, Culture and Sports, and the Philippine Information Agency, representatives from nongovernmental organizations and BCRMF. The task force will



◀ The winners of the cleanest barangay contest.

President of *Pilipinas Shell Petroleum Corp.* and BCRMF, Mr. Reinier Willems (left) and the Provincial Administrator, Mr. Augusto Claveria (2nd from left) at the awarding ceremony. ▼



provide the policy directions of the project, review and facilitate implementation of activities including the establishment of a site management office.

## Green Citizens vs. Pollution

The local governments of Batangas in cooperation with the national government agencies and the Batangas Coastal Resources Management Foundation, an organization composed of the industries operating along Batangas Bay, embarked on a three-month long campaign against pollution (February-April 1994). The campaign, dubbed as "Kilos Kabayan para sa Kalikasan (KKK)" or Citizens' Movement for Nature, aimed to organize an environmental movement in Batangas that will foster a reorientation of values and practices necessary for sustainable development. The campaign covered the municipalities bordering the Batangas Bay, namely, Batangas City, San Pascual, Bauan and Mabini.

The local and national governments, business and industry sector, religious sector, academe, youth, nongovernmental

organizations, people's organizations and the coastal communities, participated in the campaign. Among the activities undertaken were seminars on waste management given to each municipality, actual cleaning of streets, marketplaces and beaches by different sectors of the community; showing of environmental films in schools and stage concerts participated in by prominent artists in the country.

During the culminating activity of the campaign, the local government kicked off the cleanest barangay (village) contest involving coastal barangays in the four municipalities. Winners will be awarded a project with a total cost of one hundred thousand pesos (P100,000) to be announced in December after a series of evaluations by the KKK organizers

## PDMO Set into Motion

The Programme Development and Management Office (PDMO), which is the office of the MPP-EAS, was launched on 4 June 1994 following the conclusion of the first Programme Steering Committee (PSC) meeting. The occasion was graced by Mrs. Naomi Alcalá, the wife of Secretary Angel Alcalá of the Philippine Department of Environment and Natural Resources (DENR), who was assisted by DENR Undersecretary Benjamin Bagadion Jr. Mr. David Edwards representing IMO and Mrs. Alcalá delivered the launching remarks. The PDMO is located at the DENR Compound, Visayas Avenue, Quezon City.

The launching was attended by the delegates of the first PSC meeting, UNDP New York and Manila, IMO, officials and staff of DENR. The basic infrastructure, furniture and equipment of the PDMO were contributed by the Government of the Philippines through the DENR.



### Training Needs Surveyed

In response to the recommendation of the first PSC meeting, a survey of the training needs of the participating maritime countries, in terms of marine pollution management and integrated coastal management, was undertaken last November. Survey questionnaires covered specific training areas to be organized through the MPP-EAS.

Results of this survey will be the basis for formulating detailed training programmes in marine prevention and management at regional and national levels.

### UN Interagency Meet

The UN Interagency Technical Meeting for the GEF/UNDP/IMO Regional Programme for the Prevention and Management of Marine Pollution in East Asian Seas (MPP-EAS) was held on 8 June 1994 at the Department of Environment and Natural Resources, Quezon City, Philippines. The participants were the representatives of the UN agencies, i.e., United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational Scientific and Cultural Organization, Food and Agriculture Organization (FAO) and International Maritime Organization (IMO).

The ongoing projects of these agencies were discussed. Among the areas identified for possible coordination and collaboration with respect to the MPP-EAS are: hazard assessment of pollution of Batangas Bay and Xiamen coming from rivers and land discharges (with FAO); risk management of marine pollution originating from shipping activities on fisheries resources in Malacca Strait (with FAO); action plan for land-based sources of pollution (with UNEP/Coordinating Body on the Seas in East Asia); feasibility study on comprehensive preparedness and response to oil and chemical spills integrating national, subregional and regional plans (with UNEP/IMO); Malacca Strait pollution monitoring (with IOC/Sub-Commission for the Western Pacific Region); application and testing of hazardous and industrial waste management guidelines, and codes of practice prepared by



### Call for Interns

The MPP-EAS welcomes applications from highly motivated young scientists intending to enhance their work experience in regional activities and who are willing to work for a period of six months or more in any of the following areas:

- *integrated coastal zone management;*
- *marine pollution monitoring;*
- *oil spill prevention, response and management;*
- *international marine environmental laws;*
- *economic analysis in marine environmental management;*

UNEP and the Economic and Social Commission for Asia and the Pacific, which are relevant to the local level, and technical assistance from UNDP's Technical Services Support Facility. The details of the above cooperation will be developed by the MPP-EAS and the concerned UN agency.

### PSC Approves Workplan

The first annual Programme Steering Committee (PSC) meeting of the MPP-EAS was held on 1-3 June 1994 in Quezon City, Philippines. The PSC is composed of permanent representatives from the eleven participating countries of MPP-EAS (See box page 7). The PSC sets the policy direction, provides guidance and strategies in the implementation of the activities as well as reviews and approves the annual workplan of MPP-EAS.

At the meeting, the participants reviewed and subsequently approved the overall programme activities, budget and operational mechanisms to implement the activities. Also, the role and responsibilities of the national focal points were discussed and clarified, as well as the attendance of any observer in future PSC

- *application of GIS in marine pollution data management;*
- *waste management in coastal and marine environment;*
- *marine environmental impact assessment;*
- *oil spill trajectory modeling; and*
- *environmental accounting in integrated coastal zone management.*

International travel and local accommodations will be provided.

Interested parties may send their applications and *Curriculum Vitae* or address further inquiries to the IMO Programme Development and Management Office, Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas, P.O. Box 2502, Quezon City 1165, Metro Manila, Philippines.

meetings. Strategies for capacity-building were evaluated and approved, including the early implementation of the survey that will assess the training requirements of the participating countries. Suggestions were made to increase the number of demonstration sites to include Sihanoukville, Cambodia; Haiphong and Nha Trang, Vietnam; and Nampo, DPR Korea.

Representing the Secretary of the Department of Environment and Natural Resources (DENR) of the Philippines, Dr. Angel C. Aleala, was Undersecretary Ben Malayang III who gave the keynote address. Statements were also delivered by Mr. Sebastian Zacharia, chief of the UNDP Regional Bureau of Asia and Pacific and Mr. David Edwards, deputy director of the IMO Marine Environment Division. Mr. Kevin McGrath, UNDP representative to the Philippines presided during the opening ceremony.

The meeting was chaired by both Mr. Zacharia and Dr. Benjamin Bagadion, Jr., DENR Undersecretary for Environment and Research, with Mr. Vichet Rojanadhamkul of Thailand as vice chairman.

The next PSC meeting will be hosted by the Government of Thailand.

## Facts and Figures

Country	Length of coastline (km)	Shelf to 200-m depth (k x km <sup>2</sup> )	EEZ (k x km <sup>2</sup> )	Coastal population <sup>a</sup> (k) 1980	Coastal population (k) 2000
BRUNEI DARUSSALAM	161	8.6 <sup>b</sup>	38.6 <sup>b</sup>	218 <sup>c</sup>	
CAMBODIA	443		55.6	50	287
CHINA	14,500	869.8	1,355.8	38,936	66,510
HONG KONG	733			4,614	6,088
INDONESIA	54,716	2,776.9	5,408.6	29,166	58,303
JAPAN	13,685	480.5	3,861.1	78,349	88,798
DPR KOREA	2,495		129.6	5,973	14,233
REP. KOREA	2,413	244.6		16,911	29,292
MALAYSIA	4,675	373.5	475.6	3,997	9,158
PHILIPPINES	22,540	178.4	1,786.0	17,736	37,181
SINGAPORE	193	0.3	0.3	2,414	2,950
THAILAND	3,219	257.6	85.8	5,698	13,541
VIETNAM	3,444	327.9	722.1	5,585	14,317

Notes: 1. Unless otherwise stated, the source is World Resources Institute 1994-1995, Table 22.6.

2. k = 1,000

3. <sup>a</sup> - for urban agglomerations only

<sup>b</sup> - Source: Silvestre et al. 1992, pp. 1-38 and 165-187.

<sup>c</sup> - ICLARM Conf. Proc. 34, 1990.

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