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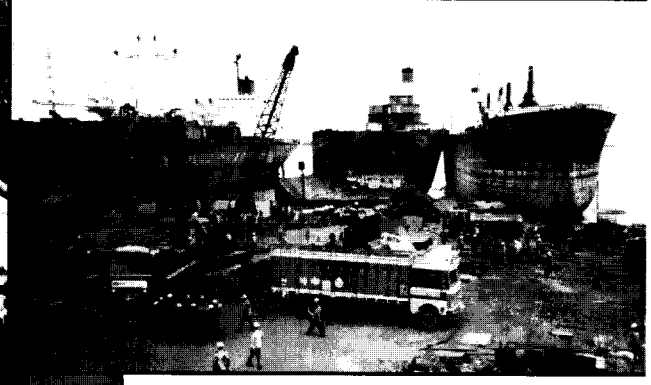
ENVIRONMENT AND DEVELOPMENT IN COASTAL REGIONS AND IN SMALL ISLANDS

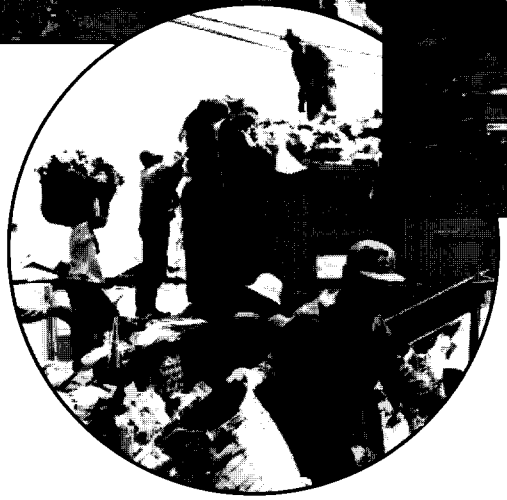
N° 10

Wise coastal practices

for sustainable human development

RESULTS OF AN INTERSECTORAL WORKSHOP
AND PRELIMINARY FINDINGS
OF A FOLLOW-UP VIRTUAL FORUM





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CSI info N°10

WISE COASTAL PRACTICES

FOR SUSTAINABLE HUMAN DEVELOPMENT

Results of an intersectoral workshop,

and preliminary findings of a follow-up virtual forum

UNESCO, 2000. *Wise coastal practices for sustainable human development.* Results of an intersectoral workshop, 30 November to 4 December 1998, and preliminary findings of a follow-up virtual forum. *CSI info* 10, UNESCO, Paris, viii + 126 pp. (English and French)

The *CSI info* series was launched by the Organization in 1997. Information on CSI activities can be obtained at the following address:

Coastal Regions and Small Islands (CSI) platform,
UNESCO, 1 rue Miollis,
75732 Paris Cedex 15, France.
fax: +33-1 45 68 58 08
e-mail: csi@unesco.org
website: http://www.unesco.org/csi

Cover photos: G. Cambers, S. Diop, N. Hinshiranan and Y. Wibowo

Layout: R. Fourgeaud

Published in 2000 by the United Nations Educational,
Scientific and Cultural Organization
7, place de Fontenoy, 75352 Paris 07 SP

Printed in UNESCO's workshops
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Printed in France

FOREWORD

Integrated coastal management encompasses a wealth of topics, approaches, disciplines and geographical areas, such that it is very difficult to provide a cohesive framework that has general applicability from the conceptual to the field implementation level. The carefully elaborated framework of diagrams and flow charts conceptualized at a theoretical level or at the beginning of a project often have little relation to the reality of the coastal practitioner, who is faced with having to make quick decisions against a background of little or no information and with a deadline of yesterday!

Integrated coastal management, without an accepted theoretical background or guiding principles, is very difficult to practice in the field. All too often the only type of evaluation is self-evaluation, which is usually favourable but does not necessarily advance the management process. While it is accepted that integrated coastal management is interdisciplinary and intersectoral, *the basic tenets of science and the scientific method are all too often forgotten and local indigenous knowledge and management practices ignored.* Sometimes, too, workers in integrated coastal management focus on the process or the tool, be it the participatory approach or geographical information systems, and lose sight of the ultimate goal which is the sustainable management of human activities in coastal areas.

UNESCO, on its platform for Environment and Development in Coastal Regions and in Small Islands (CSI), initiated a process which brings together many different approaches in order to improve the practice of integrated coastal management, primarily at a grassroots level, but in so doing, also at a conceptual level. With a relatively small core staff – relying on the collaboration of colleagues and specialists from various domains and sectors, both within and outside the Organization – more than twenty pilot projects have been launched and are already producing thought-provoking results. In order to discuss and evaluate the initial orientation, philosophy, bases and first steps of these projects, an intersectoral workshop was organized at the Organization's headquarters in Paris, 30 November to 4 December 1998. Invited were the pilot project leaders, holders of UNESCO Chairs in Sustainable Coastal Management, and other specialists of relevant domains.

One of CSI's major contributions is to seek out, analyse, develop and record – for use by stakeholders and others in Member States – those practices which seem to be the most appropriate or which would yield optimum results for sustainable human development. Thus, following the workshop, a virtual forum on 'wise coastal practices for sustainable human development' was set up to continue the work initiated during the workshop.

This volume contains the summarized presentations and opinions of the workshop participants (Part A) as well as an overview of the 'virtual forum' (Part B). Although the latter part is much smaller than the former, it is nonetheless of equal importance since it documents a major follow-up to the workshop. We trust that this information will indeed be of interest and enhance coastal management activities around the world.

Dirk G. Troost and
Douglas Nakashima
UNESCO – CSI

Gillian Cambers
Virtual Forum Co-moderator

TABLE OF CONTENTS

PART A

WORKSHOP REPORT

INTRODUCTION

An intersectoral workshop 'Towards Wise Coastal Development Practices' was convened at UNESCO Headquarters in Paris from 30 November to 4 December 1998 and organized by the Organization's Environment and Development in Coastal Regions and in Small Islands (CSI) platform. Leaders of the pilot projects and related UNESCO Chairs, from around the world, met together with colleagues from the UNESCO sectors dealing with basic and natural sciences, human and social sciences, culture, communication and education as well as the World Heritage Centre.

Presentations and discussions covered a variety of topics ranging from ways to integrate natural and social sciences to the role of community participation and communication in wise practice development; and from preserving underwater cultural heritage to defining the role of environmental economics. The diversity of the topics emphasised the variety of subject material in CSI's pilot projects and Chairs as well as the range in geographical scope, which varied from a single city to a circumpolar network. However, throughout the workshop, trying to define the nature and scope of wise practices for sustainable coastal development was the central theme uniting the interests and experiences of the participants. At the beginning of the workshop many participants felt there was a need to develop a common language to discuss wise practices in a productive manner; however, towards the end of the workshop, people began to realize that the wise practices themselves are the common language.

Prior to the workshop an electronic discussion group (EDG) had been convened for a period of two months to develop some initial ideas about wise practices. The results of this EDG were combined with contributions prepared prior to the workshop by the pilot project leaders to provide a starting point for the discussions. These discussion papers dealt with characteristics of wise practices, example wise practices and the implementation of wise practices. During the workshop some progress was made on trying to define wise practices by developing a list of characteristics that could be used to describe wise practices.

Throughout the workshop the need for communication among all sectors of society and using all available methods for communication was emphasised continually. Two relatively new means of communication were used in this workshop, one was the electronic discussion group convened prior to the meeting; and the second was a video conference held during the meeting between a group of workshop participants and a group of fishers in Jamaica who were an integral part of one of the CSI pilot projects. Both these two 'new' means of communication were successful and greatly enhanced the deliberations of the participants.

The workshop participants recognised that their work was not finished after one week in Paris, indeed it had only just begun. A decision was taken to continue the deliberations further through the means of electronic discussion groups which would be conducted at the global and regional levels and would, in the first instance, concentrate on further development of the work done on defining the characteristics of wise practices and on developing example wise practices. The work would also be continued at regional meetings and through a dedicated website. Part B to this document is a summary of CSI's general orientation as well as comments on the evolution of the forum's wise practice discussion, as at early 2000.

Notes:

- As for the specific term 'wise' versus the more common term 'best' (as in best practice), 'best', as a superlative, implies the existence of a SINGLE course of action that is superior to all others. Given the social, cultural and ecological diversity of local contexts, to which these recommendations should apply, such a monolithic and inflexible terminology is judged to be inappropriate.
- ICM, ICZM, ICAM etc. Several terms and their corresponding acronyms are currently in use throughout the world to designate the same or similar idea, sometimes with emphasis on one or another aspect of the global concept. UNESCO's CSI usage gives preference to Integrated Coastal Management (ICM); however, in this document each participant's choice is respected.

OPENING SESSION

OPENING ADDRESS

Mr M. Iaccarino, Assistant Director-General for Natural Sciences, welcomed the participants and expressed his satisfaction about the great diversity of expertise and experience of the workshop participants. He underlined the importance of the integrated and intersectoral effort towards the sustainable development of coastal regions and small islands. He mentioned the international policy framework for this effort:

1. the 1992 UN Conference on Environment and Development that led to the Río Declaration and Agenda 21 (Chapter 17);
2. the UN Global Conference on Sustainable Development of Small Island Developing States or SIDS, which took place in Barbados in 1994;
3. the 'Convention on Biodiversity' and the 'Global Programme of Action on the Protection of the Marine Environment from Land-Based Sources of Pollution';
4. the 'Pan-African Congress on Sustainable Integrated Coastal Management' or PACSICOM which was held in Maputo, Mozambique, in 1998.

He drew the attention of the participants to one of UNESCO's greatest strengths, this is the breadth of its mandate ..., one that includes basic and natural sciences, social and human sciences, culture, communication and information, as well as education. By rallying these diverse but complementary areas of expertise, CSI – the Environment and Development in Coastal Regions and in Small Islands platform – makes the most of its comparative advantage and is able to address complex problems in a holistic and all-encompassing manner. As a platform for intersectoral collaboration, CSI fosters co-operation amongst stakeholders in Member States, amongst scientists from diverse intellectual traditions, and amongst complementary programmes and projects within UNESCO's areas of activities. This pooling of expertise and experience provides the necessary foundation for developing integrated solutions to challenging coastal problems.

Ms L. Prott, representing the Assistant Director-General for Culture, explained that there are two reasons for the interest of the Culture Sector in 'Wise Coastal Development Practice'. The first reason relates to the general policy of this sector, namely 'the importance of cultural factors in development and the need for cultural development'. Coastal and island peoples have millennial traditions in their relationship with the sea, which has had an extraordinary impact on cultural history. Because of their sense of adventure and their skills, early cultural interchanges were more extensive and more numerous in coastal regions and small islands than in the interior parts of countries. This fact can be seen in the persistence of languages, history and skills in non-literate societies over vast distances and many centuries, while at the same time providing a microcosm for gradual cultural differentiation. The second reason is the particular concern of the Culture Sector in the coming years for the international development of the indigenous peoples' movement. These peoples are making demands of us not to divorce biodiversity, nor medicine, from traditional knowledge of resources, not to separate museum objects from the workaday objects made with artistry for daily use, not to ignore burial traditions in the race for better scientific knowledge of human biology, and, most importantly, not to separate the past from the present and the future. They are the first interdisciplinary thinkers, and they have much to tell us in all these areas if we listen. Many of them are island and coastal peoples. She thanked the Coastal Regions and Small Islands Unit which has taken the lead in these interdisciplinary projects and helped to co-ordinate the many different units and diverse consultants involved.

Ms B. Colin, representing the Assistant Director-General for Social and Human Sciences, pointed out that the MOST Programme (Management of Social Transformations) is concerned with several intersectoral pilot projects developed within the framework established by the 'Environment and Development in Coastal Regions and in Small Islands' (CSI) Unit. Three projects developed by the Social and Human Sciences Sector within the framework of CSI, in partnership with the Division of Water Sciences, the World Heritage Centre and the Education Sector, emphasize the importance of social and human factors in the study and implementation of realistic demonstrative projects. These are:

1. 'Support to neighbourhoods for improving living conditions' which is based in the outskirts of Dakar, where 120,000 people are living within an urban context with no basic urban infrastructures;
2. 'Circumpolar coping processes' which relates to coping locally and regionally with global economic, technological and environmental transformations in a northern circumpolar perspective. Countries involved are Norway, Denmark, Finland, Russia, Sweden, Iceland and Canada;
3. 'Network of small historical coastal cities' launched in June 1997; the first pilot city is Essaouira (Morocco), the second pilot city is Mahdia (Tunisia), and a forthcoming one is Saida (Lebanon).

She emphasized that the experience of intersectoral work is the major issue in the success of UNESCO's forthcoming research and actions. It gives another vision of development and a better comprehension of UNESCO's actions on site and 'vis-à-vis' national counterparts. She added that the MOST Programme and in particular the Cities and Human Habitat Unit would appreciate being integrated into CSI projects including social and human issues, to ensure a real benefit for Member States of UNESCO's programmes.

Election of the Chairperson and Rapporteur

The meeting elected Mr S. Diop as Chairperson and accepted the recommendation of Mr D. Nakashima as Rapporteur and Mr P. Maclenahan as Assistant Rapporteur. The Chairperson presented the agenda and timetable for the meeting and asked for comments and revisions. The agenda and timetable were accepted without change.

SECTION I

PILOT PROJECT PRESENTATIONS

ON INTEGRATING NATURAL AND SOCIAL SCIENCES

WHAT DO NATURAL SCIENTISTS EXPECT FROM SOCIAL SCIENTISTS (AND VICE-VERSA)? THE CASE OF THE RÍO DE LA PLATA ESTUARY, URUGUAY

J. Calvo, Facultad de Ciencias Sociales, Universidad de la República, Montevideo, Uruguay

ABOUT THE ECOPLATA PROJECT

The EcoPlata Programme dates back to 1989 when a General Agreement on Co-operative Development between the Canadian and Uruguayan governments was signed. A research programme, named EcoPlata, began operating in July 1994, with as its main aim to understand the effects of environmental factors and human activity interacting in an important area of the Uruguayan coastal zone. A secondary aim was to strengthen and develop human resources in the scientific and fishing communities and prevent the depletion of natural resources.

'The Río de la Plata is a river located on the east coast of South America, covering an area of about 38,800 km^2 and draining a 3,170,000 km^2 basin (the second largest one in the continent)'[1]. This drainage basin occupies part of the territories of five countries and it is surpassed in size only by the Amazon River basin. The natural and anthropogenic changes experienced in this basin, and their interaction with the surrounding sea, can potentially affect the most relevant characteristics of the estuary and hence will ultimately affect the lives of over ten million people living in the area.

This region has been recently affected by a series of radical changes framed within the global context of local opening and economic liberalization. At a more local level, a steady process of integration is evidenced in the economy through the birth of the economic union called MERCOSUR (Southern Cone Common Economic Market) which encompasses the two main countries in Latin America, Argentina and Brazil, and their two other partners, Uruguay and Paraguay, which have less economic and demographic weight.

There are important projects for investment in infrastructure which are associated with this process of integration, namely the building of a bridge over the Río de la Plata to connect the cities of Buenos Aires (Argentina) and Colonia (Uruguay); a deep-water harbour on the Uruguayan Atlantic coast; the construction of the Buenos Aires – São Paulo (Brazil) highway; an increase in urban development on both sides of the river; a project to access the upper sections of the river for maritime traffic (Hidrovía). An increase in maritime traffic and tourism is also expected to bring increased potential for tourism. These coastal areas and the surrounding bodies of water are home to significant biodiversity which is threatened by the non-sustainable use of the area. In the management area the main problems requiring attention in a first approach are:

- A limited capacity to assess and survey the current state of the coastal environment;
- A markedly limited experience in environmental management and planning.

INCORPORATING SOCIAL SCIENCES IN A BIO-OCEANOGRAPHIC PROJECT

The first two phases of the EcoPlata Project (EcoPlata I and II) have been mainly oriented towards marine biology and oceanography. In July 1998 the participating institutions[2] moved into a new phase: 'Support for the integrated management of the Río de la Plata Coastal Zone' (ICZM), where social scientists became involved in the project. The practice of ICZM requires information from both the natural and social science fields, an open and participatory decision-making process with capacity for conflict resolution, as well as

adequate communication with those involved at the private and public levels.

In a first approach, from July to November 1998, the EcoPlata Project undertook a diagnostic assessment to identify areas for pilot ICZM programmes. The School of Social Sciences of the University of the Republic investigated socio-demographic and socio-economic factors. Indicators were identified relating to population and environment, based on census data and in-depth interviews, and a public opinion survey yielded information on concerns and disposition of the population.

Inter-institutional conflicts

After a year of collaboration between scientists from the social and natural sciences, the results are both positive and promising. A productive multidisciplinary dialogue developed. However, major problems relating to the multi-institutional dimension emerged:

1. *Institutional diversity*
   Participating institutions came from different countries, with diverse aims, different organizational structures, as well as varying degrees of relation to the political power, e.g. the University of the Republic is autonomous in relation to the State, whereas SOHMA is a service dependent on the National Army.
2. *Conflicts between research and management*
   The idea that research and management should go hand in hand was shared by all institutions; however, when the time came to develop concrete projects and interventions, the research/management conflict became evident.
3. *Structural organization*
   The various participating institutions all have different structures and organizational arrangements. For instance, the high degree of autonomy of the University of the Republic researchers in the preparation and presentation of projects was not always compatible with the administrative methods of other institutions.

Interdisciplinary conflicts

The main innovation implemented in the new phase of the EcoPlata Project was the incorporation of social scientists, who came with their own aims and activities, and viewed their incorporation in the project as a positive symptom of a change which opened new paths into research and management. On the other hand, the natural scientists had not clearly specified what was required of the social scientists and did not understand their issues and methods. Because of this, the 'social element' seemed to constitute a hazy field which needed demarcation. Some examples follow:

1. *Some language problems:*
   Although the expression 'anthroprogenic effect' seemed to be the natural scientists' catchphrase when referring to those issues related to the socio-economic aspects of the project, none of the social scientists involved in EcoPlata seemed to recognize, in that expression, a concept belonging to their field of study. The ensuing process of construction of a 'common language' which would allow fluent communication between members of both disciplines, was the main stumbling block which the scientists involved had to overcome.
2. *Budget problems* (when the social sciences are not as economical as they seem to be):
   Stemming from a lack of knowledge of the methods required to explore the socio-economic aspects of the project, there seemed to be an underestimation on the part of the natural scientists of the costs involving in carrying out socio-demographic research.

Some lessons learnt

The preceding examples might prove useful for future collaboration. Conflicts between research objectives and management objectives still exist. However, the dialogue between institutions is better now than at the beginning of the project, and this is the result of the creation of an Inter-institutional Technical Group (GTI)[3] which has served to avoid some

of the conflicts between management and research.

Organizational problems were eventually overcome by an agent who did not belong to any of the participating institutions, but who had enough technical skill to merge the different proposals into one which would satisfy all those involved. The lesson to be learnt here is that the Inter-institutional Technical Group needed a General Co-ordinator who would at times play the role of referee, and who should preferably be an independent party with a high degree of political and technical authority to implement executive decisions.

A similar solution was found to back up the position of the social sciences in the project elaboration phases. Here, external agents, who did not belong to the participating institutions, and who knew of similar examples where the socio-economic contribution was beneficial to a project, were involved in the project.

Those conflicts, stemming from the absence of a common code of communication, as well as from the lack of knowledge about the aims and methods of the various disciplines, seem to be heading towards a positive resolution. Greater understanding between the different scientists resulted from various horizontal exchanges and seminars and interdisciplinary workshops. A healthy team spirit emerged and participants stopped seeing themselves as members of different scientific or institutional 'clans' but rather as part of a cooperative project.

SUMMARY OF DISCUSSION

Criticism can be directed at both natural and social scientists. Resource management agencies in many countries are exclusively staffed by natural scientists. Those responsible for management must be made aware of the need for social science expertise. After all, natural resource management is not so much management of resources as it is management of people. Social scientists, on the other hand, remain largely unaware of the role that social science has to play in resource management. Few social scientists work on resource-related issues and when invited to attend such meetings they are conspicuous by their absence.

A social science perspective may avoid the tendency for presenting project results in terms of cost/benefits analysis. Results must be productive but not disconnected from people.

The identification of common goals among institutions is a way forward to co-ordinate activities between scientists of various backgrounds, so that they can approach issues with a complementary perspective rather than in a conflict modality. Issues in this difficult dialogue include how to develop a common language, successful communication, and adequate human resources. Persons with inter-disciplinary training often make very good mediators.

Finally, in some instances, science-based understanding of coastal environments would benefit from the 'wisdom' of local communities.

1. Lopez Laborde, J. 'Geomorphology and Geology of Río de la Plata', in P.G. Wells and G.R. Daborn (1998) *The Río de la Plata, an environmental overview* (page 1), Dalhousie University.

2. The EcoPlata Project is currently being developed within an inter-institutional framework in which the following institutions participate: Army Oceanography, Hydrography and Meteorology Service (SOHMA), National Fishery Institute (INAPE), National Administration for the Environment (DINAMA), Ministry of Housing, Territory and Environment, School of Social Studies and School of Sciences of the University of the Republic. As their Canadian counterpart, the project incorporates scientists from the University of Acadia, Dalhousie University, Environment Canada, Fisheries and Oceans Canada and Geological Survey. Canada's International Centre for Research on Development (ICRD), United Nations Development Programme (UNDP), UNESCO through its Montevideo-based office and its Coastal Regions and Small Islands Unit (CSI) are also co-operating in the financial and organizational areas of the project.

3. An Inter-institutional Technical Group (GTI) meets on a weekly basis and works as a technical liaison among the various institutions, serving also as an interface among technicians and the project's Board of Directors.

RECONCILING DECISION-MAKERS WITH SCIENTISTS AND OTHER KNOWLEDGE-PRODUCERS

PROVIDING TOOLS FOR MANAGING BEACH EROSION IN THE EASTERN CARIBBEAN

G. Cambers, University of Puerto Rico, Sea Grant College Program, Mayagüez, Puerto Rico

A project entitled 'Coast and Beach Stability in the Caribbean' (COSALC) has been active since 1985 and has as its goal to develop in-country capability so that island states can measure, assess and manage their beach resources within a framework of integrated coastal management. Three case studies on reconciling decision-makers with scientists are presented from Anguilla, Grenada and Montserrat.

CASE STUDY 1: COASTAL DEVELOPMENT IN ANGUILLA

Wise management practice: promoting beach conservation and reducing shoreline erosion by placing new buildings a 'safe' distance from the active beach zone.

Pre-1970's:
Most construction inland, away from the beach, because of danger of sea flooding, salt spray and mosquitoes.

1980 – present:
Advent of tourism and construction close to the beach and on primary dunes.

1995:
Passage of Hurricane Luis, a category 4 hurricane, extensive damage to coastal infrastructure and the environment.

1996:
Design of new coastal development setbacks using a new methodology incorporating historical shoreline change, hurricane impact and sea level rise. Incorporation of new coastal development setbacks into national physical development plan (plan still to be approved by political governance).

1997:
Implementation of new coastal development setbacks by Physical Planning Unit.

1997 – present:
Extensive education and awareness campaign by Physical Planning Unit. Success of programme and awareness campaign indicated by the fact that there have been fewer appeals against setback decisions, as compared with pre-1995.

LESSONS LEARNT

- Implementation of wise management practices (WMPs) requires a long time scale.
- In the Caribbean context it is necessary to distinguish between senior administrators (civil servants) and politicians (elected officials).
- Some WMPs can be at least partially implemented with only the support of senior administrators (civil servants).
- It may sometimes be necessary to delay regulating WMPs into legislation until sympathetic politicians are in power.
- After natural disasters is often a good time to reconcile senior administrators and politicians as well as the public to particular WMPs, particularly if some reluctance was shown to the particular practice prior to the disaster.

CASE STUDY 2: CONSTRUCTION MATERIAL IN MONTSERRAT

Wise management practice: reduce shoreline and beach erosion by stopping beach sand mining and promoting the use of other building materials.

1950 – 1979
All construction sand obtained from

beaches; gradual shift from wooden to cement houses; and erosion of beaches.

1979:

Passage of Hurricane David, serious erosion during the event and afterwards as a result of the hurricane rebuilding effort.

1980 – 1983:

Studies undertaken and management plans prepared to control sand extraction from the beaches.

1984 – 1989:

Beach mining continues as WMP is not implemented.

1989:

Passage of Hurricane Hugo, 70% of housing stock destroyed, again extensive erosion during and after hurricane.

1990 – 1992:

WMP again reviewed.

1992 – 1993:

New government formed and new sand crusher obtained.

1993 – 1995:

WMP implemented together with an extensive education and awareness campaign; inland sand sources identified for construction aggregate; sand extraction from the beaches controlled; and beaches begin to recover.

1995 – 1997:

Volcano crisis, half the population flees, other half move to the northern part of the island, considered 'safe'. Some beach sand mining is carried out during this crisis, as the quarry and crusher are in the 'unsafe' zone.

1995 – 1998:

WMP implemented in a different format as Montserrat temporarily imports sand for construction and investigates the use of the 'new' volcanic deposits.

Lessons learnt

- Took more than 14 years to convince the political directorate to adopt the WMP.
- It was necessary to wait until the political climate was 'right' before the WMP could be implemented.
- There were two natural disasters (hurricanes) before people were convinced of the need to adopt the WMP.
- The education campaign, which covered everyone from builders to architects to taxi drivers, played a very important role.
- If the foundations of a WMP are well laid, then the practice will continue despite political changes and/or other natural disasters.

Case Study 3: Construction material in Grenada

Wise management practice: Changing attitudes to beach sand extraction.

1950 – 1998:

All construction sand obtained from beaches; gradual shift from wooden to cement houses; erosion of beaches occurs.

1985 – 1998:

Results from beach monitoring programme show the impact of mining on beaches.

1994 – 1997:

Several workshops and meetings regarding beach sand mining with government officials, politicians, contractors and public.

1997:

During a workshop several government officials suggested that senior administrators and politicians knew all about the problem but the political agenda was very different from the environmental agenda. A suggestion was made that the issues and concerns must be brought into the 'living room' so that voters could influence the decisions made by elected officials.

1998:

Training workshops to provide persons from the environmental agencies and local broadcasting network with the skills and equipment to make short environmental videos to be shown on a frequent basis on the local TV station.

Lessons learnt

- Involvement and endorsement of senior administrators and politicians is essential for the full implementation of WMPs.
- In the Caribbean context, TV (video) and radio may well be the most important media forms to get the message across to the general public, although the printed media should not be abandoned.
- Science must be put in terms that senior administrators and particularly politicians can relate to: e.g. 'Sand mining at Pearl's Beach is causing beach erosion' becomes 'Pearl's Beach lost to community because of sand mining'.

Reconciling decision-makers with science: Summary of lessons learnt from the 3 case studies

- In the Caribbean context 'decision-makers' is too general a term, it is necessary to distinguish between 'senior administrators' (civil servants) and 'politicians' (elected officials).
- The involvement and endorsement of senior administrators and politicians is essential for the full implementation of WMPs, although in some cases WMPs can be partially implemented with the endorsement of senior administrators alone.
- The political agenda is different from the environmental agenda. Science must be placed in words and contexts that relate directly to the political agenda.
- Reconciling politicians to WMPs may require a long-term time frame (15 years+) and it may be necessary to wait for the 'right' political grouping to come to power in order to get a WMP implemented.
- One of the most important ways to influence senior administrators and especially politicians is through the voters (general public).
- In the Caribbean, TV and radio are the best forms of media to influence and educate the general public.
- If the foundations for a WMP have been well grounded, then the WMP should survive political change and further natural disasters, although the implementation of the WMP may evolve over time.
- Politicians and senior administrators, and indeed the public, may well be more receptive to a WMP after a natural disaster.

Summary of discussion

Several examples were given of similar experiences of responses to coastal erosion/ natural hazard impact in other countries. In particular, the varying degrees of availability and enforcement of regulations was emphasized. However, it was felt that in some contexts, one should not wait for completely appropriate political conditions to be established. Rather community-based education on coastal erosion awareness should be developed. In other instances, governments do not carry out appropriate development in sensitive coastal areas, i.e. they provide a bad example by building in exposed areas and the local population then follows. It was concluded that lack of constructive political will could anihilate several years of awareness-building efforts in one day.

ESTABLISHING A DIALOGUE BETWEEN RESOURCE MANAGERS AND PEOPLE LIVING IN PROTECTED AREAS

SHARING DECISION-MAKING AUTHORITY AND POWER WITH RESOURCE USERS: FISHER ASSOCIATIONS, MANAGEMENT AUTHORITIES AND PROTECTED AREAS IN JAMAICA

P. Espeut, Caribbean Coastal Area Management Foundation, Kingston, Jamaica

The political context plays an important role in the management context. The Jamaican government has taken a wise decision to establish co-management of its protected areas. However, it was noted that not all practices are transferable.

The Portland Bight area of Jamaica is rich in natural resources, especially in the biodiversity of its flora and fauna as seen by the extensive wetland, seagrass and mangrove areas, wide coastal shelf and high endemic level. Portland Bight is also a multiple use area with many impacts: housing and marijuana plantations which destroy forests and increase agricultural runoff, land-use conflicts, over-fishing, and pollution by oil spills and sewage.

Management of natural resources must be treated as a social science and co-management adopted as the operative philosophy: top-bottom approaches fail and more horizontal approaches making reference to stakeholders are required. There is a need to develop co-management mechanisms such as co-management councils for fishermen, foresters, citizens, etc.; such councils should develop their own legal status and operating regimes.

An example is the Fishers Council, comprising 32 members, which issues permits, determines user-fees and fishing practices including regulations and penalties. Penalties were the hardest to negotiate (up to $100,000 or one year in prison). Established regulations are not yet laws, but game and fishing inspectors have been appointed – fishers who act as wardens to regulate other fishers. In addition, family ties influence people's attitudes, a bad attitude is shameful to the rest of the family.

Once all these arrangements are in place, then and only then, the scientist comes in to provide the best available data and monitoring. The Portland Bay management plan calls for continuous monitoring of natural resources (e.g. botanical study, coral reef study, fish stock assessment, socio-economic study). Videos for public education can help transfer the experiences of such projects.

THE INDIGENOUS MOKEN AND PARK AUTHORITIES ALONG THE ANDAMAN SEA COAST OF THAILAND: RECOGNISING AND ENCOURAGING WISE PRACTICES

N. Hinshiranan, Social Research Institute, Chulalongkorn University, Bangkok, Thailand

The Moken people, the 'Sea Nomads' of the Surin Islands in Thailand, have preserved their traditional way of life due to the protection afforded by their distance from more densely inhabited regions. Their area has been a National Park since 1981 and is about to be designated a World Heritage site. The area became popular with Thai tourists about 15 years ago. It is the best diving site in Thailand but still not much frequented by foreign tourists.

At present, the national park authority are concerned with the Moken's extraction of

certain species, e.g. sea cucumber, top shells, green snails, and other decorative shells which they gather for commercial purposes. Thus, the park authority exerts a ban on gathering these species. As a result, the Moken no longer have a source of income to buy rice and other necessities. The 'Moken Fund' was set up by the park superintendent as a means to provide necessities for the Moken, but it was terminated due to some misunderstandings.

There has not been a definite policy about local people living in protected areas. The Moken existence in the Surin Islands is considered a 'privilege' by some. Thus, the second phase of the Andaman Pilot Project has been carried out with three main objectives:

1. To provide a forum for horizontal communication between different stakeholders and for identification of appropriate support from each party to keep the Surin Islands as the shared natural and cultural heritage.
2. To encourage the Moken's maintenance of 'wise practices', e.g. the use of appropriate technology.
3. To ensure that tourism potential on the islands develops in a sustainable manner and to provide the opportunity for the Moken to participate in tourism activities so as to provide an extra source of income.

In November 1998, the project co-ordinators organized two meetings which brought together stakeholders of the Surin Islands to discuss relevant issues and to seek commitment and support from those concerned.

The first meeting 'Identifying Participatory Sustainable Development Options for the Moken of the Surin Islands' was held in Bangkok as a brainstorming session for government officials, academics, and NGO workers to identify crucial issues leading to the strategic goal of sustainable development options for the Moken.

The second meeting 'Towards the Strategic Goal of Sustainable Development for the Moken: Commitment and Support' was a participatory workshop, held in the Surin Islands, and attended by participants from the first meeting and the Moken representatives. The activities include the evaluation of the Moken's potential in organising tourism activities and the confirmation of commitment and support by each party.

SUMMARY OF DISCUSSION

The discussion briefly addressed the balance between the 'carrot and stick' approaches to resource management. Local communities in Jamaica enforce their own regulations, even when offenders are members of family or friends, because their direct livelihood is involved. On the other hand, in the Philippines, even though fishers know when a practice is bad (e.g. dynamite fishing), they still implement the practice, hence the need for the 'stick' approach.

These presentations raised the wider issue of conflicts arising from local populations having to adapt to external pressures from outsiders, e.g. Hong Kong companies operating in the North West Territories in Australia. In the case of the Moken people in the Surin Islands, even though they are partners in the conservation of the marine park, it is the park authorities who decide on the activities (selling crafts to tourists, acting as guides). The Moken cannot benefit from available funds to develop their own activities as they are not Thai nationals. In this respect, the sustainability of eco-tourism was questioned. In whose terms is it sustainable, especially viewing the particular impact on the local lifestyle?

ON INTERLINKING MUNICIPAL AUTHORITIES AND URBAN RESIDENTS

SEEKING SOCIAL/ENVIRONMENTAL JUSTICE ON THE MARGINS OF A MEGACITY: ALTERNATIVE LIVELIHOODS IN JAKARTA AND PULAU SERIBU, INDONESIA.

H. Sangkoyo, School of Social Science & Planning, Melbourne, Australia

Jakarta, the capital city of Indonesia, is a large tropical megacity with a population of more than 20 million people. In the bay north of Jakarta lies a chain of small islands, the Pulau Seribu, which are heavily impacted by Jakarta's activities. Since the 1980s, there has been a major influx of poor migrants into the Greater Jakarta area which has raised the population density significantly. Against a background of mass poverty and in the absence of critical basic services for many of the city's residents, as well as absence of any strategic approach by the state to manage the environment or the economy, the spread effect of the fiscal crisis, which started in 1997, has dealt a serious blow to the region.

The high population growth rate, together with the expansion of Jakarta City, has led to serious pollution and over-exploitation of coastal and marine resources. This has included deterioration of the coral reefs, mangrove clearance for fish pond development, and pollution of Jakarta Bay from the sewage, sedimentation, agricultural and industrial effluents, and solid waste from the Greater Jakarta area.

In the islands, the Pulau Seribu, there are a variety of issues that need addressing. Some of the islands have disappeared as a result of dredging. The national park has no proper management; as a result the wildlife sanctuaries, although protected by law, are destroyed by development. The reefs are declining and so too are the fisheries on which many of the islanders depend for a livelihood.

State-based efforts have failed to solve these problems because of fragmented resource-use policies, inability to integrate policies and programmes, and insufficient land-use planning at the city and local levels. In addition, the suppression of political rights and the absence of basic rights for the local Kampong communities have compounded the situation.

The UNESCO-CSI initiative has tried to address some of these problems by focusing on community-based management, assisting some of the poorer communities to manage their resources and clean up the environment, and promoting changes in lifestyles through educational campaigns. Other collaborative efforts have also adopted a community-based approach by developing social safety nets and food-for-work programmes, an advocacy network against destructive fishing in the Pulau Seribu, and revision of the Basic Agrarian Law.

THE MOTU KOITABU COASTAL URBAN VILLAGES IN THE NATIONAL CAPITAL DISTRICT, PAPUA NEW GUINEA

H. Gaudi, landowner and former lecturer, University of Papua New Guinea

From the perspective of a land owner and a social scientist, the author focuses on the environmental impact associated with the increased pressure from newly arrived people and investors in the Port Moresby area in Papua New Guinea, especially the effects on the Motu Koitabu coastal urban villages.

Papua New Guinea comprises 3,000 ethnic groups with two fifths (80) of the world's languages. The Motu Koitabu are the traditional land owners of the cities. The arrival of migrants to the cities generates housing problems (40% are squatters) and in parallel creates competition for mangrove wood, which is now used as a building material, reducing its availability as firewood for the host population. The disposal of non-biodegradable garbage near houses is a cause of bad smell and creates conditions for the spread of typhus and cholera.

Coastal environments are also under threat from other wealthy outsiders who invest large amounts of money to reclaim coral reefs for the building of marinas.

Foreign demand for sea cucumbers (a delicacy on the Malaysian and Japanese market) depletes the resources, and locals invest in diving equipment to benefit from this lucrative activity. With no formal training many divers die from decompression and bombing.

The question is raised of why the Motu Koitabu people are not consulted on the developments that will ultimately have an impact on their lives. It was further noted that awareness campaigns are needed to help them make informed decisions.

SUMMARY OF DISCUSSION

Several participants pointed to the importance of community participation in management. The example of oasis management in Egypt showed that people's participation, especially women, is of paramount importance. This approach to the sustainable management of fragile ecosystems in the desert could be transferred to sensitive coastal areas. Demonstrating the short-term benefits of community-based involvement often has a snowball effect, wherein more and more people want to learn about ways in which they can benefit.

With reference to a lack of response from governments in the face of oil spills, it was suggested that local communities could find information on the internet about ways to cope with pollution instead of waiting for help from the authorities.

The lessons to be learnt from the unwise practices were discussed, e.g. destructive fishing in Samoa and mangrove depletion in Nigeria. Regarding fishing activities, reference was made to the positive impact of transferring responsibility for resource management to local population in Samoa, Chile and Mauritius. The importance of maintaining continuity with traditional fishing practices was also noted.

ESTABLISHING A DIALOGUE AMONG STAKEHOLDERS IN URBAN CENTRES AND INDUSTRIAL SITES

UNDERWATER CULTURAL HERITAGE, COASTAL EROSION AND WASTEWATER TREATMENT: TOWARDS AN INTEGRATED MANAGEMENT PLAN FOR ALEXANDRIA, EGYPT

S. Riad, Geology Department, Assiut University, Cairo, Egypt

Establishing a marina in Alexandria's Eastern Harbour is an important issue for UNESCO as it fits within its mandate to promote the integrated development and management of coastal areas. This includes, among other things, the need to conserve coastal (onshore and underwater) cultural heritage.

In response to the recommendations of the International Workshop on Submarine Archaeology and Coastal Management (SARCOM 97), organized by the University of Alexandria, the Supreme Council of Antiquities and UNESCO, in Alexandria, Egypt in April 1997, and upon the request to UNESCO by the Egyptian Supreme Council of Antiquities, an evaluation mission recommended various actions to protect the area of the Citadel, Pharos Lighthouse underwater site and the Eastern Harbour.

The main objective for the future development of the Citadel and Pharos Lighthouse sites is to develop an integrated plan for their preservation and touristic use. In this respect it is sensible to incorporate into this plan the underwater archaeological site known as the 'Palace of Cleopatra', situated within the Eastern Harbour. All three sites are located in close proximity to each other and would favour the concept of a unique cultural theme park in the form of a combined 'open-air and open-water' museum or marine archaeological reserve.

To determine the feasibility of establishing such a park, experts in environmental, oceanographic and archaeological fields were consulted. The underwater sites need to be surveyed using advanced techniques to obtain a precise overview of the distribution of the archaeological items. In addition, the current practice of discharging untreated sewage into the Eastern Harbour and other adjacent near shore sites is an obstacle to the development of sustainable tourism. It was recommended that UNESCO's International Hydrological Programme (IHP) contribute to the development of an integrated urban water management plan for Alexandria, including the assessment of the wastewater problem.

Once the full cultural value of the archaeological sites has been established, a brain-storming task force with representatives from all interested organizations should be set up to work out a long-term plan. Implementation of this plan may eventually involve some offshore constructions and hence requires a comprehensive knowledge of the oceanography, geology and sediment dynamics of the wider region. Consequently, a carefully designed data collection programme should be implemented after a decision is taken concerning the future of the underwater sites.

The necessary data include:

- A detailed historical account of the site;
- Collection and compilation of all the data currently available in the various institutes and authorities;
- A geological site survey of the wider region to establish the subsurface lithology and stratigraphy of the bedrock, sediment distribution and thickness;
- A bathymetric survey of the area;
- The collection of a long-time series of nearshore currents and seasonal wave climate coupled with meteorological data;
- At a later stage, hydraulic modelling using the collected environmental data.

Several actions were undertaken during the latter half of 1998. Two UNESCO consultants visited Cairo and Alexandria between September 11–18, 1998, to examine the following:

1. The feasibility of establishing an underwater museum at the site of the archaeological remains believed to be the ancient Alexandria Lighthouse off the Alexandria coast near the eastern and western harbours in the locality of the Qait Bey Fort.
2. A proposed strategy for the establishment of such a museum including different display alternatives and a management scheme for tourists' access to the site.

A UNESCO consultant on hydrology was requested to evaluate and develop an integrated urban water management plan for Alexandria, including the assessment of the wastewater problem. He studied the impact of the urban water drainage from Alexandria on the project area. He pointed out that three outlets of untreated sewage water are now draining into the sea, one very near to the area of the project.

A roundtable meeting on 'Underwater archaeology and coastal zone management of the Qait Bey area' (in Alexandria) was organized by the UNESCO Cairo Office in collaboration with the Supreme Council of Antiquities in Alexandria on 16 September 1998. The aim was to bring all concerned parties together in the presence of the two UNESCO consultants on underwater archaeology and the one on hydrology, to discuss their findings. Visits were also made to the site of the Qait Bey Fort, the underwater site next to it and the Roman theatre, where archaeological objects taken from the underwater site are housed.

Experts found that the site is of principle significance and is of unique importance on a global scale. It is feasible to establish a submarine museum on the site because of its proximity to the shore and to the other underwater archaeological remains in the Eastern Harbour. Also the Qait Bey Fort would be a convenient place to house support facilities and to function as an orientation centre for the proposed underwater museum; the fort could become a living museum in its own right. Experts stressed that the project cannot succeed without solving the sewage problem.

The UNESCO Cairo Office (UCO) and the Supreme Council of Antiquities agreed in principal to share the costs of the next step, including the collection of data required for the development of the project. It has also been agreed that at least one other roundtable meeting be held during December to discuss a draft plan of action being prepared by the UCO consultant.

MAKING UNSUSTAINABLE DEVELOPMENT SUSTAINABLE: THE CASE OF THE ALANG SHIP-BREAKING INDUSTRY IN GUJARAT, INDIA

H.C. Dube, Department of Life Sciences, Bhavnagar University, Gujarat, India

INTRODUCTION

The Alang and Sosia Ship-Breaking Yard (ASSBY) is located on the coast of Bhavnagar district, in the Gulf of Cambay , 56 kms south of Bhavnagar City in the state of Gujarat, India. The Gulf of Cambay is known for its high tidal range, which is around 10 meters. The vast expanse of intertidal zone gets exposed during ebb-tide which makes it convenient for ship-breaking activities, whereas the high tide makes it possible to accommodate big ships. Alang and Sosia combined boast the biggest ship-breaking yard in the whole of Asia. Today this activity is conducted in 182 plots around the year.

ASSBY impacts different groups of people depending on their interests.

There are basically four interest groups directly involved in and affected by the ship-breaking activity. They are the Government of Gujarat through the Gujarat Maritime Board, the ship-plot owners, the workers or labourers, and the villagers in the ASSBY area.

All four interest groups have diverse cultures and sometimes conflicting interests. The wise practice in this case would be to create a common culture for a common future on the lines of sustainable development.

Concerns of the Gujarat Maritime Board

- Long-term planning for infrastructure, e.g. roads, housing, drainage, water, electricity.
- Social infrastructure like schools, hospitals, temples and entertainment structures.
- Work safety as per norms.
- Minimum harm to marine ecology.

Concerns of the ship-breaking management

- Organising the industry so that it is profitable and sustainable.
- Updating and improving ship-breaking technology to make it environmentally friendly.
- Health and safety aspects.

Concerns of the workers

ASSBY plot holders employ some 30,000 workers directly for ship-breaking activities. There may be an equal number of workers employed in ancillary activities. The direct workers are migrant labourers mainly from Utah Pradesh, Bihar, and Orissa. They are young men, almost 70% of them stay in rented shanty dwellings available near ASSBY. Most of them do not have potable water. Their monthly income from ship-breaking activities is around Rs. 3600 per person. This amount is on the high side for such manual, casual and hazardous work. The concerns of this labour group are:

- Good living conditions with clean water, air and accommodations.
- Safe, healthy and standardized working conditions.

Concerns of the ASSBY villages

There are around ten villages in the vicinity of ASSBY, each having a population of about 1,000 residents. All these villages are near or on the seashore and within a radius of 12 kms from ASSBY. A majority of the people from these villages are from the 'Koli caste' which is a socially and educationally backward group, popularly known as 'bakshipanch' in Gujarat. Paleval (brahmin), Garasia (kshatria) and Kharak (agriculturist) are three other significant groups in these villages. The villages are part of Talaja taluka, which is a backward region. Their main concerns are:

- To grab new life chances provided by ASSBY, in terms of small odd jobs, ancillary economic activities, tea shops, eateries, sundry provision shops and other such small businesses. Different ethnic groups have different life-chance biases.
- Depletion of water and fuel resources, degeneration of the resource base in general, and salinity ingress in well water.
- They like the new opportunities, but do not like the damage to ecology, yet they do not understand the relationship between the two.

Wise practice awareness package

The interests of all the four concerned groups have to converge at one point and that point is sustainable development. A free dialogue and resultant understanding will help in evolving a common culture and a shared programme.

Apart from the above-mentioned groups, there are some peripheral groups who have a partial interest in ASSBY from their own vantage points. These groups are: people's representatives, media persons and non-governmental organizations (NGOs).

Conclusion

Any awareness programme is not just an academic endeavour, it is supposed to bring the participants to a level of cognition, transfer information and form relevant attitudes or change attitudes. Furthermore, it should prepare participants to change the situation for the better and to prepare common ground where various stakeholders can interact and participate in the sustainable development programme.

Summary of discussion

Given the universal cultural and historical significance of the site of the Alexandria lighthouse and the economic implications of tourism for Alexandria and Egypt at large, a major international effort appears necessary. In particular major sewage and engineering problems must be solved. It is estimated that no tourism project, such as an underwater marine museum, could realistically be developed before 10 years or so. A major constraint is to have agreement among all the stakeholders.

The issue of the ship-breaking/building impact on the natural environment and the population is also a concern in Bangladesh, especially the problem of knowing what the old ships carried (e.g. chemicals). There should be an assessment study of potential hazards and damages but this is an economic issue in developing countries where the industry completely controls access to shipyards. A major problem is indeed the awareness of population and availability of data. A possible solution may be to increase pressure on governments or to involve donors.

Some participants pointed to the different visions of sustainable development according to one's own economic situation: rubbish in one area becomes resources in others.

RELATIONSHIP BETWEEN TRADITIONAL/LOCAL KNOWLEDGE AND SCIENTIFIC/TECHNOLOGICAL KNOWLEDGE

CUSTOMARY MANAGEMENT SYSTEMS IN SAMOA: A FUTURE FOR CULTURE-BASED CONSERVATION

P. Varghese, Department of Education, Apia, Samoa

INTRODUCTION

In Samoa, the great majority of the population reside in and around coastal areas and have maintained a traditional way of life as subsistence farmer/fisher folk. Samoan culture and traditions are very strong and alive despite the conflicts between traditional and modern practices. The subsistence fishery continues to be crucially important to the majority of those living in rural areas.

Samoa is largely lacking in exploitable natural resources. The main industry, copra, failed in the 1980s because of the collapse in export demand. The economy of Samoa was severely affected by severe cyclones in 1990 and 1991. A catastrophic fungal blight in 1992 destroyed the nation's staple food crop, taro. The cultivation of taro is still not possible without the use of fungicides.

The basic social unit in a village, the aiga (extended family), is headed by the matai (chief). Like most others in Polynesia, Samoan society had no central political authority or government. Political organization rests largely upon the village council in which the heads of the extended families and their chiefs join in dealing with local problems and order.

TRADITIONAL FISHING PRACTICES

Equitable fishing resource sharing is at the heart of traditional practices involving the whole or most of the community. Utilization of most resources was carefully controlled and protected by taboos and folklore. The socio-cultural conditions in the coastal communities were such that custom and tradition were strong enough to support and enforce management practices. This has declined, however, as the fisher now thinks more of his personal gains. For example, palolo (sea worm) is a Samoan delicacy; knowledge and information about it are passed on from generation to generation. Traditionally palolo was not to be sold for money but today it is available in the markets.

PRESENT CHANGES

Rapid population growth, urbanization, more effective techniques for fishing and storage, use of destructive fishing techniques such as explosives and poisons, the introduction of commercial fisheries and loss of essential fisheries habitat have placed considerable pressures on Samoa's inshore fisheries, rendering them unsustainable. Many mangrove swamps and marshes, which are important nurseries for many species of fish such as the mullet, trevallies and crab, have been drained and reclaimed. Clearing of mountain slopes and forests has created serious soil erosion problems with disastrous effects on inshore reefs. Significant areas of coral reefs and lagoons have been degraded by destructive fishing practices.

Today's fisheries management is being undermined by such factors as the emphasis on production, participation in the modern economy, an increased capacity for fishing, a lack of information on which to base management and the destabilising effect of the cash economy. The knowledge that took centuries to accumulate is rapidly discarded as people adopt more contemporary ways of

using their marine resources. There is little chance for the future generations to enjoy a healthy marine environment and plentiful seafood unless effective sustainable management plans are put in place.

Government's responses

The Government, through its policy initiatives and institutional measures, has shown its commitment to the conservation and protection of the local environments (e.g. Lands, Surveys and Environment Act, Fisheries Act, World Conventions and Treaties).

The Fisheries Act allows some village regulations to be made into by-laws. It gives government recognition to these laws and enables the village to prosecute and punish offenders accordingly. Many of the laws set by the Government are hard to enforce and monitor. By-laws, on the other hand, are created by people with a real interest in the management and conservation of fishery resources. The village will therefore be more inclined to act on breaches of these laws.

The Village Fisheries Extension Programme, developed by the Department of Agriculture, Forest and Fisheries, assists village communities to carefully examine their situation, and to plan actions that will allow lagoons and reefs to recover, and eventually fish catches to improve. It seeks to establish community fishing practices which result in the maximum productivity and sustainability of marine resources. This programme is different in that it acknowledges that the real solution to the problem lies in the hands of village people and their Fonos (Village councils).

The village decides what its major concerns are, and what action needs to be taken. The Fisheries Division assists the village to assess its marine environment, and to decide on practical ways to make improvements. It provides technical support for the village to draw up its own 'Village Fisheries Management Plan'.

Education helps create awareness of mismanagement. An integrated approach is used to teach relevant environmental issues at various age levels. Schools are encouraged to participate in various national awareness campaigns. A multi-sectoral approach is often used in organising and co-ordinating such activities. A UNESCO project in marine science curriculum materials for South Pacific Schools through support from AIDAB produced six student text books and their teachers' guides. Inservice training workshops were run in 1997 for about 40 teachers from various secondary schools and a set of books were supplied to each secondary school. These books were well received by the teachers.

Conclusion

'Sustainable development – everyone talks about it with authority, yet no one can provide a clear way of achieving it. It has become a "pie in the sky" which everyone strives for. It is clear that for Pacific Island countries to achieve sustainable development, cultural aspects and traditional practices must be woven into the approach and planning of relevant activities' (Vili A. Fuivao, Director, South Pacific Regional Environment Programme). One of the greatest challenges the Pacific island nations have to face, at the approach of the twenty-first century is to ensure that the limited natural resources on which they depend continue to be available in acceptable quantities.

CREOLE WORDS AND WAYS: COASTAL RESOURCE USE AND LOCAL RESOURCE KNOWLEDGE IN HAITI

J. Wiener, Fondation pour la Protection de la Biodiversité Marine, Port au Prince, Haiti.

The Haitian coastal and marine resource user, be she/he a fisher, a charcoal producer (cutting mangroves), a hotelier or a sports fisher is very aware of resource degradation and loss. Although there are usually more than adequate laws concerning the use and management of coastal and marine resources, these laws and regulations are pretty much ignored. The lead governmental agency responsible for enforcement, the Ministry of Agriculture, has an extremely limited staff (2–3 agents for 1,771 km of coast), and virtually no resources to perform its enforcement role. These problems have led to an attitude where there is virtually a free-for-all concerning resource use, and no one is willing to speak up against 'renegade' resource users because they will not find any legal support. Attitudes of 'I can't stop someone else from making a living', 'the sea is for everyone', and 'if I don't take it someone else will', are common and pose major problems in terms of resource management. There is such rampant poverty that it is difficult, if not impossible to tell a fisher, for example, to throw back a short lobster, or a lobster caught out of season, when he has a family to feed today. It is difficult to think of tomorrow when you are hungry today.

There is, on the part of most users, an awareness of pollution, overfishing, and sedimentation problems affecting the coastal and marine environment. Although there is this awareness, it is usually basic, and there is little local knowledge in terms of 'true' science, biology, and ecological causes and effects.

The fishers have the basic knowledge handed down from generation to generation by others (family, friends) which allows them to fish; basically in the same way as the generation which preceded them. This knowledge may include fishing zones, how to make traps, when to fish, etc.

Work on naming and classification of fish and other marine resources has shown there are differences among names given to different fishes even by members of the same fishing community. The differences in general, almost disappear with the size and thus the commercial value of the fish. So, while small 'useless' fish such as squirelfish, damselfish, and hamlets may be classified as *rébéka*, *bouki*, *pé*, *sélinet*, or simply *réjet* (rejects) as a group, larger more commercially attractive fishes have a more distinctive and uniform classification; such as *dorad* (dolphin), *tiara* (wahoo), *sad* (snapper) or *nëg* (grouper).

They are also classified by location such as *fliet* (in the water column), *zèb* (in sea grasses), or *roch* (in rocky areas or coral reefs). The fish are also classified commercially as *pwason rouge*, *pwason blanc*, by most users, or *pwason nwa* (*réjet*). *Pwason rouge* (red fish) would include the larger more commercially attractive fishes such as tuna, wahoo, or snapper. *Pwason blanc* (white fish) includes triggerfish, larger parrotfish, surgeonfish, and some of the smaller snappers. *Pwason nwa* (black fish) includes tangs, hamlets, sergeant majors, and the other smaller fish usually classified as *réjet*.

Pwason rouge is usually sold to higher class markets, hotels, and private citizens. *Pwason blanc* is sold to a more middle class market, and *pwason nwa* is usually eaten by the fishers themselves, or sold to the poorer sector of the market.

It is important to note that various sizes of the same fish may be classified differently according to this system. Different life stages of the same fish may also cause a change in the classification. An example is the Scaridae (parrotfish) in which the initial phase may be classified as *flérin*, *pé*, *rébeka* (*pwason nwa*). As it grows it may eventually climb the classification scale to *pwason blanc*, and depending on the species and size, even up to *pwason rouge*.

Conclusion

To limit resource over-exploitation, education is needed that combines, in an integrated way, traditional (empirical) and scientific knowledge, in particular by putting in writing oral traditions. Fishers often have an intimate understanding of fish behaviour. However, some of the knowledge is transmitted only to a few selected persons.

Summary of discussion

The relationship between poverty and environmental exploitation was further discussed. In Nigeria for example, fish rejects are transformed into poultry feed and very little is therefore wasted.

In societal terms, it was pointed out that at extreme levels of poverty, the value system must be challenged and possibly adjusted or changed through a sort of ethnic/social engineering. It is particularly important to change people's attitudes of 'laissez-faire' towards environmental damage and depletion of resources, because otherwise the situation will only get worse. This requires education of fishers and communities to help improve their own understanding of resource management.

Since industrial and social parameters are the driving factors of change maybe these indicators of change should be considered before we look at bio-indicators.

GETTING THE PEOPLE INVOLVED: COMMUNITY PARTICIPATION IN SUSTAINABLE COASTAL DEVELOPMENT

COMMUNITY PARTICIPATION: INDIAN OCEAN EXAMPLES

A. Boina, Commission de l'océan Indien, Centre national de documentation et recherche scientifique, Comoros

INTRODUCTION

Participation or shared development is a process that allows populations, communities or countries to express their views and increase their autonomy. Through negotiation, their role is no longer passive or servile, indeed they become active contributors. Participation is part and parcel of the process of sustainable integrated management of coastal areas. It involves training populations in order to perpetuate and sustain certain actions.

TACTICS FOR SHARED DEVELOPMENT

A judicious process of consultation combined with prolonged observation and analysis should precede the definition of projects. Beforehand it is also necessary to consider the following:

- Problems
- Priorities
- Objectives of different participants and target groups
- Conflicts of interests
- Cultural aspects
- Other aspects

The planning and organization of a project should remain flexible so as to give people a genuine opportunity to participate in the different phases of the project. Experimentation and research should strongly influence the direction to be taken and continual changes may have to be made throughout the duration of the project. Those responsible for the project should avoid adopting a pedantic/patronizing attitude.

GOVERNANCE

At all stages of the process of integrated management of coastal areas, legality and legitimacy should be a main objective. This may be achieved through the combined framework of local governance, which constitutes the body of institutional arrangements including governmental and non-governmental structures, the legal framework and traditions and social standards of the local population.

MOBILIZING POPULATIONS

- Improve communication and arrange contacts between concerned parties whilst adapting material means and utilizing mediators according to the specific situation.
- Clarify and interpret data.
- Identify key problems.
- Understand hidden agendas in order to discover obvious problems that have not been discussed during the workshops.
- Identify common aims, so as to avoid non-sustainable compromises.

STRATEGIC THOUGHT FOR ENVIRONMENTAL ACTION

- Elucidate problems by determining those responsible.
- Clarify objectives that lead to integrated actions.
- Single out the people to be mobilized.
- Pinpoint the means to be put into action.
- Identify the necessary tools.

An example of strategic thought was given by the author concerning the management of domestic waste and the maintenance of beaches in the Itsandra Bay area (Comoros). In reference to both these objectives, he described the problems, actions, means, contributors and tools involved. He pointed out that successful management is achieved with the help of the collaborative committee and through the action of members of the villages of the bay.

Conclusion

In order to allow populations to participate it is necessary to:

- Consider all points of view so as to act wisely.
- Consider every possible dimension: environmental, social, cultural, economic.
- Offer support to principal participants: for example, women, young people and all militants.
- Adopt collaboration and persuasion as a means of dealing with dissension: hence the need for mediators.
- Develop new technologies and inventions.
- Reinforce contacts with various partners: ministries, institutions, projects, communities and NGOs.
- Develop local environmental projects in concert with communities.

This list is non-exhaustive since universal concepts to encourage the participation of populations do not yet exist.

Experimental, community-based approaches in artisanal coastal fisheries in Latin America

O. Defeo, Departamento de Recursos del Mar, CINVESTAV, Unidad Mérida, Yucatán, Mexico

Coastal systems in Latin America are affected by increasing land- and ocean-based activities: tourism, recreation, fishing, mariculture, domestic and industrial waste disposal, military activities, transportation, mining and energy industries. When unplanned, these activities impact on and threaten biodiversity, including economically important species. Small-scale, artisanal fisheries constitute an important socio-economic component of the Latin American and Caribbean fisheries. These fisheries provide an important source of employment and represent a key source of high quality food, generating important direct incomes to artisanal communities and elevated export revenues to the countries of Latin America. These fisheries could be characterized by six contrasting phases which describe the long-term landing and export value patterns:

1. development
2. expansion
3. over-exploitation
4. closure
5. stabilization
6. institutionalization/ consolidation

In the majority of the cases, only the first three phases occurred and several coastal fisheries are, at present, dramatically overexploited and have collapsed. One of the main causes for these collapses is that fishers have not been included in the discussions about management. Here two cases are presented in which experimental and co-management practices were used.

The yellow clam *Mesodesma mactroides* of Uruguay

The yellow clam *Mesodesma mactroides* is a sedentary bivalve distributed along the warm

temperate intertidal zone of the Atlantic coast of South America. This species is artisanally harvested (shovels and hand-picking) on sandy beaches of Brazil, Argentina and Uruguay. In Uruguay, the historical phases of the yellow clam fishery closely resemble those described earlier. Landings of yellow clam catches presented low levels before the decade of the 80's, in which statistical coverage of the activity did not exist. The expansion phase began in the 80's, when landings increased up to 3.5 times in five years (from 62 tonnes in 1981 to 219 tonnes in 1985). Catches decreased more than 100% from 1985 to 1986, and in the first quarter of 1987 only 11 tonnes were caught (overexploitation phase). Then the fishery was closed for 32 consecutive months, from April 1987 to November 1989. This idea was promoted by resource biologists, as a management experiment to investigate the effects of fishing activities on the demography of the yellow clam. During the closure of the fishery, the interaction between resource users, coastal marine authorities and fishery biologists during the experimental process was identified as a wise practice. The small and well-defined group of local fishers was specially involved in enforcing regulations in order to set up an accurate control of the experiment. The National Institute of Fisheries approved and encouraged the scientific initiative (i.e. a good political climate was in place).

The experiment provided significant information from an ecological point of view. The long term study has shown that fishing can influence the demography and abundance of shellfishes, beyond the effects of exploitation, thus highlighting the ecological implications of humans as top predators in the system, and also as a source of physical disturbance associated with harvesting. Experimental manipulation of the fishery allowed identification of the positive and negative effects of fishing, with meaningful management implications. The fishery was reopened from December 1989 onwards, and two additional operational management strategies were implemented:

a. a minimum catch volume per fisher, priority was given to those fishers with longer activity in the fishery;
b. a spatial management scheme, considering habitat heterogeneity, which accounts for spatial and temporal variations in resource abundance and in the fishing effort exerted.

The strong and rapid resource recovery was reflected in the high catch per unit effort achieved by the fishers when the fishery was reopened during the summer of 1990. Allocation of property rights to each fisherman resulted in a useful mechanism to avoid 'the tragedy of the commons', to maintain the stock at desirable levels and to improve the quality of life of fishers (these last two elements are two quantitative indicators). Thus, the stabilization phase occurred after the fishery was closed. In this period, the catch per unit of effort was two times higher than in preclosure years.

Following a decision of the management body, the fishery was left as an open access system since 1992, which determined another collapse a year after. Thus, the 6th fishery phase, the 'consolidation' period, was not completed because of an unwise decision by the government authority.

Coastal artisanal shell fisheries in Chile

The Chilean benthic fauna is diverse. Over sixty species of invertebrates generate annual landings of about 150,000 tons, with an export value exceeding 100 million dollars. Harvesting is restricted to artisanal divers and coastal subsistence food gatherers. In the past 15 years, a number of shellfishes have been overexploited and in some cases, the fishery has collapsed. Fishery closures were unsuccessful, and thus extensive illegal activities occurred along the coastline. In 1991, the Chilean Fishing and Aquaculture Law was approved. It incorporates main fishery and ecological knowledge developed by local scientists, such as the implementation

of marine reserves and Marine Exploitation Areas (MEAs). Access to these MEAs, defined over small coastal segments (i.e. < 100 ha of sea bottom), was granted only to organized artisanal communities, and for 2 years on the basis of management and exploitation plans previously agreed by the fishers, the maritime authorities and the scientists.

Community involvement improved the effectiveness of shellfish management programmes and constitutes an effective tool by which fishers, scientists and managers could interact to improve the quality of the regulatory process. Co-management of small coastal MEAs resulted in larger catches, catch per unit of effort and net economic revenues perceived by the fishers as a result of higher quality of the product (individual sizes) when compared with open access fishing grounds. Promising results on natural re-stocking of shellfishes in coves or 'caletas' with organized fisher communities offer hopes for the future sustainable use of benthic resources. Co-management provides fishers the possibility to share in the decision-making. Indeed, the perception of ownership by the fishers is one of the most important focal points that determined the success of this wise management practice developed in Chile.

These cases represent successful co-management pilot experiments. But there is a problem of scale that precludes the extent of generalization to other cultures and regions. Each region has its own way of achieving their respective wise co-management objective.

SUMMARY OF DISCUSSION

The question was raised as to whether the project in the Comoros would be sustainable once outside funding ceased. It was felt that self-financing efforts such as ecotourism and craftsmanship development might assist in making this a reality.

As regards the South American fisheries co-management projects, the importance of political will for project success was emphasized. The success and acceptance of fishery closures may also depend on whether fishers have alternative sources of income.

The two speakers in this session addressed the theme from different standpoints depending on personal backgrounds, the social sciences and the natural sciences, and it was interesting to see the areas of similarities and differences in the presentations.

Following discussion on the presentations several participants saw the need to develop some clear perspective from this meeting especially in view of all the divergent and thought-provoking input.

SECTION II

NETWORKING PILOT PROJECTS

THE NORDIC-BALTIC NETWORK ON SUSTAINABLE COASTAL DEVELOPMENT

OVERVIEW OF NETWORK GOALS

A. Sandberg, Tromso University, Norway

Allow me one provocative observation before I address the Nordic-Baltic Network. As seen from north of the Arctic Circle, people are not always degrading the environment. In fact, in many instances, people are enhancing the environment. We have what is called the coastal cultural landscapes which very often hold a larger biodiversity than the coastal wilderness.

An unwise practice for northern countries is to allow or promote rural depopulation of the coast. This leads sometimes to a loss of coastal diversity. For instance, the degradation of habitat of the Eider duck, which is a human-enhanced environment, leads to fewer ducks. Even salmon stock enhancement suffers when people disappear. So people are necessary when we discuss ecology.

The Nordic-Baltic Network is a long-term project because co-operation between countries has to build upon trust and confidence. This develops slowly. Our experience is that when you discuss the sustainable management of resources, this affects national constitutional issues, i.e. how a particular country is structured. That means people have to trust each other in order to discuss the constitutional dilemmas relating to their respective countries. I am sure you are familiar with these discussions.

The network today consists of five Nordic and three Baltic countries and we expect expansion in the Baltic area, including Russia (i.e. St Petersburg and Kaliningrad), Poland and Germany. It consists of scientists and trainers in CZM, local level managers and planners and central policy-makers, both facilitating, but also sometimes making CZM more difficult.

We have had two meetings so far, one in 1997 in Oslo where we agreed on items that should be brought to fruition in 1998, and one in 1998, in Jurmala, Latvia. A third meeting is planned in Frederikstad in May 1999. We started a process of synthesizing country experiences in coastal development in 1997.

There are so many coastal development projects in the region, in particular at the municipal level, some being implemented, some not. In western and northern Europe, there are 38 EU demonstration projects, which are to be summed up in the Spring of 1999. We even have provincial coastal plans which try to go beyond the level of municipalities. One of the pressing issues in planning and management along the Atlantic and Baltic coasts is the growth of aquaculture which is stressing ecosystems and, to a certain extent, coastal societies.

It is time to start work synthesizing experiences from different countries, their legal foundation and institutional set-up. It is a step beyond a case study approach. These comparisons bring further analytical depth to scientists. Other countries' experiences place a different perspective on individual problems. They also provide a chance for policy-makers to develop more effective policies (i.e. more transparency and less transaction costs) and may allow devolution and empowerment of coastal communities if successful.

This example of eight small countries co-operating among themselves and exchanging experiences in coastal zone planning and management, may be copied and applied elsewhere.

INTER-MUNICIPAL CO-OPERATION INVOLVING INTERDISCIPLINARY RESEARCH AND INTERACTIVE TRAINING FOR SUSTAINABLE COASTAL DEVELOPMENT IN LATVIA

R. Ernsteins, Centre for Environmental Sciences and Management Studies, University of Latvia, Riga, Latvia

INTRODUCTION

Latvian Government plans envisage the provision of long-term sustainability through balanced agricultural, industrial and traditionally based development, while simultaneously involving such new elements as green tourism, maximal environmental pollution prevention, further promotion of traditional local culture (devoting special concern to the national minorities), and the introduction of environmentally sound technologies into major domains of local production activities.

Generally speaking, the situation is fragile because of the former Soviet Union border zone regime (about 30 km from the Baltic Sea coast). This has resulted in specific conditions for the local regions where their closed character and limited entrance possibilities, on the one hand; and their protected nature and rare species, on the other hand, created obstacles for development. Nowadays, the authorities have all the responsibilities but not enough experience, skills or knowledge. In many cases they must start their planning from the 'zero' point, as they have insufficient infrastructure, few finances and not enough industrial or agricultural production capacities in their territories. Therefore, present conditions are limiting them in the flexible use of market economy advantages.

GOVERNMENTAL POLICY AND PRACTICE FOR SUSTAINABLE COASTAL DEVELOPMENT

The National Environmental Policy Plan (NEPP) for Latvia was approved by the government in 1995. A set of priorities was identified for investments in the environmental sector; these included water, air, waste and nature protection fields, as well as sustainable development projects. The National Programme for the Protection of the Baltic Sea Environment has launched an integrated coastal zone management investment programme. These programmes are co-financed from different national and international sources; local municipalities contribute 10%. The decisions of the international funding institutions are more and more based on an investment programme approach and not on single projects.

The following is a short overview of ongoing integrated coastal zone management projects by/under the Ministry of Environmental Protection and Regional Development of Latvia (VARAM) financed mainly by PHARE and the World Bank. The main emphasis is placed on the development of the nature management project for the potential protected coastal territories, e.g. Slitere National Park, Kemeri National Park, Engure Nature, as well as development of ecotourism and GIS applications.

The Integrated Coastal Zone Management Project (financed by EU PHARE) for Latvia and Lithuania, finished this year. The whole project has been selected as the European Coastal Zone demonstration project and has raised municipal interest.

In order to facilitate realization of the municipal project VARAM is planning to sign a 'Memorandum of Understanding' identifying responsibilities and obligations of all parties. The distribution of information and the involvement of the municipalities in the complete project cycle, including supervision and public awareness, should be ensured. There is obviously a growing demand for interdisciplinary research and interactive training. The Centre for Environmental Science and Management Studies (CESAMS) is playing a prominent role in these innovative approaches.

Interdisciplinary research and development for sustainable coastal development (SCD)

In the CESAMS, a multidisciplinary unit at the University of Latvia, there are ongoing cross-sectoral socio-environmental research and development projects in environmental awareness and public participation. These include environmental problem-solving and development of Local Agenda 21 implementation at the different government levels: rural municipalities, groups/partnerships of rural municipalities, towns and districts.

Interactive education and training for SCD

The interactive self-training seminar 'Sustainable Development and Democracy in Latvian Municipalities' in 1996/97, was conducted for different municipal levels and different target groups (teachers, NGOs, politicians, entrepreneurs, farmers, etc.).

Education and environmental management for coastal areas have been mutually integrated through the Master's degree study programme and other postgraduate training programmes and courses. Postgraduate students coming from municipalities and environmental authorities are doing their field studies and M.Sc. theses in coastal areas. The data obtained through the research activities has been applied to develop guidelines for the wise management of selected coastal area ecosystems.

Inter-municipal co-operation for SCD

Research and training experience from developmental projects in Latvian municipalities, particularly coastal territories, provides some general conclusions relating to the transfer and application of environmental knowledge to local authorities.

We can conclude that local municipalities are not prepared and are being overloaded by everyday practicalities. They are seldom able to require, receive, discuss and include environmental knowledge for development activities in their territories. Unfortunately, the research community and environmental authorities have not enough experience or motivation to transfer and communicate even existing knowledge to local municipalities, both the decision makers and the public.

The local public rarely have sufficient representation by NGOs, and are not satisfactorily informed. Subsequently, the existing gap between understanding and co-operation, by all actors, is leading towards 'learning by doing' management.

It is also recognized that regional development programmes and projects, as well as laws and administrative changes in the Republic of Latvia, are only at the very beginning of their implementation. A certain degree of confusion and instability exists.

In practice the current urgent interests of municipalities may contradict the long-term interests of environmental protection specialists, often leading to a top-down approach for local environmental management without real dialogue. Recently a small number of regional and local NGOs, professional associations (bio-dynamic agriculture, tourism, etc.), mass media and other new actors have emerged and might have important roles to play.

Development of wise practices for SCD

Elaboration of positive pilot case studies as 'success stories' or 'wise practices', to be disseminated in both printed form and during seminars, is of high value.

Regular training programmes, for local leadership and for other representatives of local municipalities, are of great value and crucial for success. These programmes are for active, young and modern leaders of local municipalities, groups of employees and interested persons, grass-root NGOs, and local mass media.

Some local projects are listed below:

- Project 'Cranberry' in Rucava: an alternative agriculture project;
- Project on thatched roofs in Rucava: using reeds from Lake Pape;
- Environmental education project involving municipalities in the River Bartava catchment;
- Bartava Watermill: co-operative project for power generation using turbines;
- Territorial planning in Bartava and related projects involving nine local municipalities;
- Bartava – Ange – PHARE Project: public participation project.

THE CIRCUMPOLAR COPING PROCESS PROJECT (CCPP)

J. Baerenholdt, Geography Department, Roskilde University, Denmark

The presentation outlined some general ideas from the UNESCO (MOST) CCPP, which is an international, comparative social science project focusing on localities in the circumpolar north (Canada, Greenland, Iceland, Faroe Islands, Denmark, Norway, Sweden, Finland and Russia). The project is about social changes, which are related to the challenges of integration of a non-local character. In other words: the threat of marginalization in 'globalization'.

Of specific interest to CSI, MOST case studies include North Atlantic fisheries, where resources, stakeholders and markets are often non-local, due to the mobility and change of fish stocks, fish quotas (especially in the case of 'Individually Transferable Quotas') and fish companies. Competition exists between countries and localities as they partly depend on the same resources, resource management systems, companies and markets.

In a recent book, we have defined 'coping strategies' as guiding principles. Coping strategies are:

1. Innovative (responses to global restructuring)
2. Collective, with a face-to-face basis
3. Active and meaningful, forming identity

The main research question is: how are local linkages (between firms, authorities, voluntary organizations etc.) empowering local people to master non-local markets, state/regional authorities and organizations?

These definitions and this research question should be seen in the context of the specific problems we are facing in the Circumpolar North, which are marginalization and depopulation of resource-based regions. Therefore the approach focuses on how to restructure local economies in relation to non-local resources, non-local stakeholders and non-local markets.

At the CCPP users strategy conference in Isafjordur in Iceland, March 1998, there were local municipal practitioners and researchers from 12 different localities in Canada, Greenland, Iceland, the Faroe Islands, Norway, Sweden, Finland and Russia. A common experience seems to be that success of locality development has to do with local control of four different forms of 'capital':

- Social capital (co-operation, associations and networks)
- Economic capital (local control of industries and finance through savings banks, local banks and other financial arrangements committed to locality development)
- Cultural capital (educational and technological standards)
- Natural capital (control with access to vital natural resources)

We have some good Nordic cases but we also have localities hidden by crises due to lack of economic and especially social capital (in Russia) and lack of natural capital (fish closure in Labrador and Newfoundland). In this context, special emphasis can be put on the CCPP case study on Teriberka on the Murman coast of the Murmansk region of Russia as this locality could also be interesting for CSI.

From the CCPP, the following results can be expected:

- ***Firstly***, development of knowledge (not blueprints) in the form of structured reports of cases of coping strategies, which will make it possible for 'users' of this knowledge to learn about the concrete experience of others in similar situations, and to transmit ideas. In addition, we could try to influence regional policies.
- ***Secondly***, there is the possibility of networking between the localities, where the networks of research can facilitate direct co-operation between municipal authorities, associations and firms, including exchange of personnel. And there could be possibilities for co-operative action in economic, political and cultural domains, but this has to be controlled by local people themselves.

SMALL HISTORICAL COASTAL CITIES: AN INTER-REGIONAL NETWORK OF SUPPORT IN THE MEDITERRANEAN

LESSONS LEARNT FROM THE ESSAOUIRA CASE: RESTORATION OF THE RAMPARTS OF THE WEST BASTION

A. EL Mouatez, City Councillor for Essaouira, Morocco

DESCRIPTION OF THE PROJECT FOR RESTORING THE WALL (RAMPARTS)

On the terrestrial side, the project is co-sponsored by the Municipality and the Office of the Secretary of State for Cultural Affairs. The objective of the project is to renew the plaster of the wall of the city of Essaouira. The plaster on the wall has begun to crumble away because the lime has been poorly slaked, and the plaster, which should have contained lime paste, was made of whitewash. Consequently the plaster dries too rapidly and does not adhere to the wall.

The normal procedure to follow during such works consists of the establishment of a 'CPS' (in French, Cahier de Prescriptions Spécifiques – architect's work-site plan containing detailed specific instructions, measurements etc.). The Heritage Directorate receives open bids for the selection of a company, and of a private architect to oversee the project in collaboration with the historical monuments inspector of Essaouira.

The cause of the problems mentioned above are:

1. The CPS listed the composition of the plaster, i.e. the elements and materials to be mixed as well as their quantities. But the CPS did not explain the method for obtaining an essential element, the lime paste.
2. The CPS also did not provide a methodology for achieving the desired result, in this case a series of fine layers, spaced out time-wise to permit proper drying and adherence.
3. The joint commission (of the municipality, province, public works and historical monument inspection) responsible for follow-up requested that the contractor redo the work at his own expense. The work was done again, but according to the experts, Alain Charles Perrot (chief architect of historical monuments in Paris) and Claude Monteil (director of the 'compagnons du devoir' – an order of skilled craftsmen in France), who have seen the work redone, the situation is still unsatisfactory because the work was done hastily, not sufficiently respecting the above-mentioned steps.

From this experience, two conclusions can be drawn regarding 'poor practices'. First, there was an attempt to associate two directly opposing logics: restoration which requires strict adherence to proper techniques, and fine detailed and time-consuming work; and the employment of a private company, whose motivation is to finish the work as quickly as possible for financial reasons. The second conclusion is that the workers involved did not have the proper training for the restoration of historical monuments. In reality, the 'culture of restoration' has not yet become ingrained. Therefore one must closely supervise the workers, at least during the initial 'pilot' phase on site.

On the seaward side of the ramparts, the crumbling wall gave rise to deep cracks and cavities in the underlying foundation rocks, caused by waves and the chemical corrosive action of waste water and acid dumped into the sea.

Consolidation efforts using cement have had a negative effect (the cement breaks away, taking with it parts of the wall).

Expert missions have examined the problem. They agree on the need to provide long-term protection for the wall. This can be accomplished by putting in place a structure which would fill in the empty space between the rocky reefs located about 300 m from the wall.

However, more urgently, they emphasize the need for a common methodology. Thus consultations are called for amongst the different specialists to propose a method for the provisional protection of the work site, a method which is both effective and which takes into account tidal movements. Their first conclusion was that the work at the base of the wall and on the seaward side of the wall should wait until spring. In the meantime, a plan should be worked out to continue the work on the parapet-walkway and the battlements.

Between now and springtime, the plaster and lime materials should be tested on the accessible parts of the wall to see how these materials react to exposure on the seaward side during the winter. Next spring, several approaches should be tested on small parts.

For such a complex work site, an experimental approach is the only possibility. In order to rapidly define a methodology which can be applied to the whole wall, one must increase the types of experiments using various methods and materials.

The West Bastion

This restoration project is being carried out by the Municipality in collaboration with the Province, Agenda 21, the French Embassy, ADEFRAM and the 'compagnons du devoir'. The work began at the end of February and should be completed by the end of December.

The originality of this activity is that it is conceived as a 'learners site'. The apprentices are supervised continuously by the representatives of the different partners mentioned earlier and by the 'compagnons du devoir'. All observers agreed on the quality of the work. The restoration is being carried out strictly according to the rules of the trade.

The methodology adopted has facilitated, on the one hand, a daily checking by professionals and, on the other hand, training for apprentices who thus will be able to perform more professionally at other work sites. It also means a new source of earnings for the youth of the city. At this point, it would be better to help young people to set up their own companies.

Through these examples, I have tried to demonstrate that in every experience there are 'good practices' and 'bad practices'. The former are important in that they will serve as models for the other cities of Morocco or for the ones selected from the network of coastal cities co-ordinated by UNESCO; I think the 'bad practices' have more value, since at local level they allow us to realign our sights and to remove the factors that have caused failure. This could help our partners save time and not be victims of the same mistakes. One hopes that during the coming workshop we will be able to learn about the experiences of the network's cities.

Finally, it seems that the restoration of historical monuments is a complex operation – very expensive, requiring professional qualifications and, above all, the time for implementation. This 'culture of restoration' in Essaouira is still in the embryonic stage. The goal appears to be attainable, given the awareness of the authorities and of the local population as to the importance of the preservation of monuments for the promotion and economic development of the city.

THE SMALL HISTORIC COASTAL TOWN OF OMISALJ, CROATIA

G. Campeol, Istituto Universitario di Architettura di Venezia, Venice, Italy.

This case study on Omisalj on the North Adriatic Sea was developed with the co-operation of the University of Venice, the Faculty of Agronomy of Gemble (Belgium) and the Faculty of Architecture of Zagreb (Croatia). The sites that have been studied and which we are presently using to define the final project, are very interesting examples relevant to the theme of 'Small historic coastal towns'.

The case of Omisalj is geographically representative of other towns in Italy, such as Venice, Syracuse, Augusta, Notto, Otranto, Brindisi and Tarento. A case study is planned for the town of Kotor in Montenegro. This project will result in a partnership between the University of Genoa, the Faculty of Architecture of Florence and the Polytechnic of Milan. The main objective is to encourage a transdisciplinary approach in order to create integrated projects with the municipality, the regional government and the population.

Omisalj, in Croatia, is situated in the north of the Adriatic. The site allows us to define the general geographic characteristics which categorise, as far as the environmental situation is concerned, homogenous and heterogeneous zones.

The Omisalj case demonstrates the existence of Mediterranean historic towns that have managed to maintain their symbolic value. However, there is no connection between the development of tourism and the historical heritage. Indeed, the development of the petro-chemical and steel industry in the urban zones has led to pollution problems and risks of explosion. Although historic sites are enclaves in these industrial zones, they remain extraordinary marine landscapes. However, these conditions are not specific to Omisalj.

Examination of a map of the site shows the town, situated on the island of Kerke, the biggest in Croatia. The town centre is medieval, with Venitian style architecture. Tourism has recently been developed in the area and the population has left the town centre to be housed in a new residential zone. Then there is the industrial zone and the Fulsinum archeological enclave, which is a very important example of the ancient Roman regime, and finally, the nature reserves with its lake and marshes.

These characteristics are also apparent in Venice, Syracuse etc. and are typical of the development of Adriatic coastal towns and generally in the Mediterranean area.

What can one do? In the first phase it is necessary to develop green belts in the industrial zones, shift dangerous industrial zones to more appropriate areas, relocate the population to historic zones and develop tourism and ecotourism in nature reserves.

The Omisalj case allows us to make the following general proposals:

- Develop a positive fiscal policy with flexible terms and jurisdiction;
- Develop industrial technological innovations;
- Create networks between archeological sites and physically participate in the defense of the archeological heritage;
- Elaborate urban planning and the restoration of historic town centres;
- Bring about the necessary legal modifications to give foreigners the opportunity to buy houses in the historic town centre – the current legal system governing private property in Croatia causes problems;
- Establish a green belt in industrial zones and prepare lists of local environmental collaborators.

Wise practices concern defining geographical homogenous zones and then establishing geographical categories such as:

1. Diversified urban coastal zones with great environmental problems – one can only envisage practical methodology and interventions in these zones;

2. Vast coastal zones of high environmental interest, for example, coastal towns where marshes and lagoons are still well preserved;
3. Totally urbanized coastal towns, which have no environmental value.

The definition of homogenous zones allows us to set environmental guidelines through transdisciplinary methodology, identify local collaborators, undertake impact studies and also involve the participation of the population.

SUMMARY OF DISCUSSION

These presentations illustrate two different approaches: on the one hand a local project, which is also part of a global integrated activity enacted by a local government and, on the other hand, a scientific approach based on studies from a number of small historic coastal cities. In both approaches, the inhabitants' perception of the projects were important components.

Further clarification was sought regarding coastal towns; three categories were proposed: mixed zones where historic and industrial landscapes are present, linear urban zones (e.g. between Venice and Bari) and coastal towns with high quality natural resources.

It was further pointed out that building restoration in small historic towns in the Mediterranean served a dual purpose, firstly preserving the cultural heritage, and secondly improving the living conditions of people residing in these small historic towns through the provision of employment and shelter – some of the poorest people live close to the towns' walls.

FISHER ASSOCIATIONS EXCHANGE BETWEEN JAMAICA AND HAITI

HAITIAN FISHERS LOOK OUTWARDS: THE HAITI-JAMAICA FISHERS EXCHANGE

J. Wiener, Fondation pour la protection de la biodiversité marine, Port au Prince, Haïti

BACKGROUND

In December 1996, UNESCO, through its unit on Coastal Regions and Small Islands (CSI), organized a seminar in Haiti with the goal of gathering local information and support for promoting the protection and sustainable use of Haiti's coastal and marine resources. One of the recommendations at the end of this meeting was that there be an exchange of ideas among Haitian and Jamaican fishers in order to share thoughts on 'wise-practices' being developed in each country.

Two counterpart organizations helped to execute this programme: the Caribbean Coastal Area Management Foundation (CCAM) in Jamaica, and the Fondation pour la Protection de la Biodiversité Marine (FoProBiM) in Haiti.

With the technical and financial support of UNESCO, the marine transportation provided by the Jamaican Coast Guard, fuel provided by Jamaican fuel companies, and the unflagging efforts of CCAM and FoProBiM, the exchange was scheduled for 25 August to 5 September 1998.

The UNESCO Office (Haiti) as well as the Haitian National Commission to UNESCO aided in channelling the request to obtain official government approval from the relevant ministries for the entry of a foreign military vessel into Haitian territorial waters. Arrangements were made with Haitian immigration officials and the Port Authority to meet the Coast Guard vessel upon arrival at its destination, Wahoo Bay Beach Hotel, a few kilometres north of the village of Luly, as well as for its departure from Haiti, and the return of the Haitians one week later. The Jamaican consul helped with the speedy preparation of visas.

Participating Haitian villages were located in the Gulf of la Gonave and included: Grand Gonave, Léogane and Janti along the southern coast, and Mitan, Cont and Luly on the northern coast. Each of these villages is represented in COOPECHE, the departmental fishing federation, and each provided at least one participant. The Directors of Fisheries and the Natural Resources Division of the Ministry of Agriculture were invited, but were unable to participate due to prior engagements.

OBJECTIVE OF THE EXCHANGE

The exchange was organized to provide an opportunity, for the fishers and those engaged in activities directly related to fishing, to exchange ideas on practices which may be of value to their island neighbours, and to help stem continued resource destruction and degradation. Hence, the basic function was an exchange of 'wise practices'.

HAITIAN REACTION TO THE EXCHANGE

The Haitians who participated in the exchange were of the universal opinion that this type of activity was extremely valuable in terms of the exchange of ideas, methods, and the formation of friendships. They felt that they had much to learn from the Jamaicans in terms of the management of coastal and marine resources, and improving fishing methods.

Discussion centred around the differences in government involvement in resource management and protection. In Jamaica it was noted that there is active participation by a large variety of private and public sector institutions including the National Resource Conservation

Authority (NRCA) and the Jamaica Co-operative Union. The NRCA has taken its role in regulation and management of marine resources seriously. On the other hand, most Haitian institutions, be they public or private (especially in the public sector), have, as some of the Haitian fishers put it, 'resigned their role as functioning bodies'. In other words, the Haitian fisher feels that she/he has been abandoned by the government bodies which should be at the forefront of coastal and marine management activities. Therefore the Haitian fishers feel that it is up to them to organize themselves into bodies which will look out for their own needs and play the regulatory role neglected by the government.

The Jamaicans found many of the Haitian fishing methods archaic, including the fact that most Haitians still have to row (scull) or sail to fishing spots whereas almost every Jamaican fisher has access to at least one outboard engine. One technique which almost brought out anger on the part of the Jamaicans was the fact that sometimes nets are laid out for up to three days in Haiti, this was thought to be almost criminal by the Jamaicans; who usually lay out their nets for no more than three hours. The waste caused by the Haitian method is often significant whereas with the Jamaican method it is reduced to a minimum. The Haitians were very impressed with the size of the Jamaican mangrove areas visited. They began to understand the true impact of Haitian pollution on other countries with the discovery of Haitian trash on several beaches in Jamaica.

The fishpots observed were quite similar to those made in Haiti except that the traps in Haiti are made almost entirely of bamboo, while those in Jamaica are structured in wood but are covered with chicken wire.

One factor that particularly interested the Haitians was the NRCA's choice of fishers themselves to be game wardens; to manage and protect the fisheries. The Haitians were very interested in having this type of activity in Haiti; but with serious institutional weaknesses in both the Fisheries Division of the Ministry of Agriculture, and in the Ministry of Environment, engaging in this type of activity in Haiti will remain a remote possibility for the foreseeable future. The Haitian fishers did comment on such things as having all fishers registered with the Ministry of Agriculture. This is already required by law but has never been enforced.

The Haitians were impressed by the style and capabilities of the Jamaican fishing boats, and are interested in acquiring one for trials in Haiti.

Many of the co-operatives or associations in Haiti participate in several different types of activities in their local communities, i.e. in schools, in churches, and providing loans. The Jamaican co-operatives do not get involved in the marketing of fish; they concentrate on the sale of fishing materials. The Haitians took note of the possibility of having the Haitian co-operatives concentrate their efforts more on one activity (fishing).

A Jamaican fishers insurance programme was discussed at the meeting, held in the Portland Bight Fisheries Management Council (PBFMC). Considerable interest was shown by the Haitian fishers regarding the possibility of having a similar type of programme designed in Haiti. However, this programme is still in the stage of having 'its bugs worked out' in Jamaica. Hence, it is believed to be wiser to wait until a properly functioning programme is developed in Jamaica, which the Haitians may then modify to their own needs.

RECOMMENDATIONS/FOLLOW-UP ACTIONS

- Notes taken by participants are to be distributed at the next meeting of their respective associations;
- Fishers were interested in seeing a continuation of this type of activity with the help of UNESCO (CSI);
- Preparation of a plan in order to increase enforcement of fishing regulations by the MARNDR (Ministry of Agriculture – Haiti);
- Follow-up on the possibilities of a bi-national programme with UNEP.

Inquiries should be made into the possibilities of:

- an insurance programme for the Haitian fishers;
- modifications of the Haitian fishers co-operative or association structure for a more targeted approach aimed specifically at fisheries-related issues;
- having Jamaican fishers come to Haiti again in order to help improve certain fishing techniques;
- increasing the participation of women in fishing-related activities, especially marketing;
- obtaining a Jamaican fishing boat for trials in Haiti.

SECTION III

GETTING THE MESSAGE OUT: THE ROLE OF COMMUNICATION AND EDUCATION

ONWARDS FROM THE PACSICOM CONFERENCE, MAPUTO (JULY 1998)

GETTING THE MESSAGE ACROSS, A CASE STUDY OF THE MASS MEDIA IN KENYA

W. Kiai, School of Journalism, Nairobi, Kenya

INTRODUCTION

In this presentation, the focus is on the need for change in human behaviour and attitude as this relates to the environment and specifically sustainable coastal development. Human attitude and consequently behaviour is complex because it has been learned over long periods of time, sometimes centuries. In addition, human beings are affected by many factors at any given time; it is difficult to prescribe any formula for behaviour change. The context of the situation is critical.

It is gratifying that there is recognition of the vital role of mass media although the precise influence is difficult to qualify.

WHAT FACTORS ARE IMPORTANT FOR EFFECTIVE COMMUNICATION?

It would be beneficial to borrow from the lessons learned in the health and population sectors. The term 'behaviour change communication' has been developed and it has grown to be a concept. At this juncture, we should be careful to distinguish between disseminating, informing and communication. The latter concept is two-way, cyclical, dynamic with an emphasis on feedback and participation. The former terms represent a sender transmitting a message.

The basic principle of behaviour change features the following: a thorough understanding of the audience, utilization of multimedia channels, development of effective and meaningful messages, and an integral monitoring and evaluation system.

A FRAMEWORK FOR ACTION

In our particular case we chose the mass media because of its crucial role at the policy and decision-making level. The mass media can set and sustain a topic or theme in the public forum as long as possible, thereby encouraging discussion on the topic and, if well done, generating public pressure.

However, one should be conscious of the constraints in environmental journalism which include: lack of an overall communication agenda in Kenya and other African countries; the absence of consensus on who should be an environmental journalist (those with a formal training in environment or general journalists); the lack of specialization in environmental journalism; the suspicion of the media by environmental specialists; the media process which has serious time constraints and the lack of standardization in training opportunities on environmental journalism.

The African Council for Communication Education (ACCE) – Kenya Chapter opted for a different approach in the training of environmental journalism. Instead of the common manner of presenting papers on environment, practical training with a focus on exposing journalists to the basic concepts of environment was undertaken. This included practical sessions focusing on the environmental content. It is expected that this approach will assist journalists in explaining environmental phenomena; provide vital linkages between all of the stakeholders by encouraging and motivating public participation; and promoting the idea of a powerful environmental lobby group.

Additional strategies include strengthening networking between environmental experts and journalists; the production of training material for the media; and the integration of environment into communication/media training curricula. One such publication is a resource book on environmental concepts for the media, which was funded by the British Council and will be published by the end of December.

This is relevant also to media organizations involved in the informal training of environmental journalists. An outline should be developed and agreed upon by representatives of media training institutions and media organizations to synchronize training, to avoid duplication and contradiction and to have a systemized approach to training.

SUMMARY OF DISCUSSION

The issue was raised of the paper ownership and possible censorship on environmental issues either by owners or governments. However, when causes of failure become so obvious it is difficult for editors to elude dealing with an issue despite government pressure to do so. A key issue is therefore to help local communities report on their own cases. However, at this level, written impact has little impact compared to radio (often in the hands of governments). A way round these constraints is the use of vernacular media (inter-personal exchange can help news travel fast), or to use peripheral information to highlight a more specific issue. Finally, readers and interest groups have more power than they are aware.

FIELD PROJECT – UNIVERSITY INTERACTION: COUPLING UNESCO CHAIRS WITH PILOT PROJECTS

PILOT PROJECTS WITH CHAIRS AS CAPACITY-BUILDING TOOLS: YEUMBEUL/YOFF PILOT PROJECTS AND THE UNESCO CHAIR IN DAKAR, SENEGAL

S. Diop et M. Sall, Université Cheikh Anta Diop, Dakar, Sénégal

THE PHILOSOPHY OF THE DAKAR CHAIR

The Dakar Chair has been developed from a transdisciplinary point of view with lectures and seminars relating not only to natural sciences but also to social and human sciences, law, economics and anthropology. Equal in importance are modules devoted to practical work (satellite imagery, the development of digital models) as well as field-work.

THE CHAIR'S ACTIVITIES

With the collaboration of numerous partners, lectures, seminars and conferences have been held with different themes. Integrated management and sustainable development of coastal zones in tropical island states and societies has been discussed. As far as the management and conservation of marine and coastal resources are concerned, natural sciences and social sciences have been combined as much from a technical and scientific point of view as from a political, contractual and legislative viewpoint.

Coastal development is also one of our priorities, in particular the management of development linked to great dams, the study of the quality of untreated coastal ground water in urban environments, and problems linked to coastal erosion.

In the social-economic domain our work covers adjustment policies and the study of poverty in coastal regions as well as the socio-economic impacts of tourist development in Senegalese coastal regions.

In the framework of the study of coastal societies, the concepts, rules and cultural organizations of societies are the object of study as well as the problems of coastal towns and their sustainable development in West Africa.

Organizations, bodies and institutes involved:

- ESP: Ecole Supérieure Polytechnique, UCAD de Dakar
- FASEG: Faculté des Sciences Economiques et Gestion, UCAD
- FLSH: Faculté des Lettres et Sciences Humaines, UCAD
- FST: Faculté des Sciences et Techniques, UCAD
- FSJP: Faculté des Sciences Juridiques et Politiques, UCAD
- FMPOS: Faculté de Médecine, de Pharmacie et d'Odonto-Stomatologie, UCAD
- CRODT: Centre de Recherches Océanographiques de Dakar-Thiaroye/ISRA
- SENAGROSOL: Société de Consulting en aménagement des sols
- CSE: Centre de Suivi Ecologique et des Milieux Naturels
- Other bodies involved: ENDA, INFAN, OCEANIUM, ORSTOM (now IRD).

Practical laboratory work is organized by all of the Chair's students, including techniques related to the use of satellite imagery and cartography. Follow-up discussion between tutors and students further develops issues and problems, which then become the focus of field days. The most productive field days become the subject of a publication.

INTER-ACTION BETWEEN PILOT PROJECTS THAT ARE ATTEMPTING TO DEVELOP WISE PRACTICES AND THE UNESCO CHAIR IN DAKAR.

Considering the results that have been obtained for the first year, this experience appears to be very conclusive. Indeed, out of

the 15 students enrolled at Chair level who have all worked in strict collaboration with the pilot projects developed on the Senegalese coast, 12 have managed to back up their DEA thesis in a thorough manner.This constitutes a good success rate, and is considered quite high compared to the average level attained by most students at the Cheikh Anta Diop, University of Dakar.

Conclusions and recommendations

In terms of capacity building, experience seems to be the most valuable tool. The best students are able to continue their research in the framework of a doctoral thesis (doctorat de 3ème cycle). Recommendations are:

- to reinforce connections between pilot projects and the Dakar Chair in order to render the student training as effective as possible;
- to develop greater interaction and co-operation among Chairs (for example between Dakar and Las Palmas), in particular in fields that are considered to be priorities: tourism and sustainable development, water quality and integrated management of coastal regions, sustainable management of cultural and archaeological heritage in coastal regions.

How scientific knowledge can be linked directly to management: the Ulugan Bay pilot project and the UNESCO Chair in Manila, Philippines

M. Fortes, University of the Philippines, Quezon City, Philippines

The most crucial features of Southeast Asia's global environmental concern are its rapid rates of population growth and industrial development. This is reflected in the similarity in the patterns of problems and issues faced by coastal and marine managers of both developed and developing countries in the region, namely environmental degradation, marine pollution, fishery depletion, and loss of marine habitat. There is a need for integrated coastal management (ICM) in order to manage the apparently conflicting activities and uses of the region's coastal zone and its marine environment. Science has a defined role in this respect. But the greatest problem is how to optimize the benefits of science and link these directly to management. In Southeast Asia, no appropriate model or 'language' yet exists linking natural and human sciences and further linking these to environment and development.

In ICM, a primary concern is the management of ecological systems in the face of uncertainty. To deal with this uncertainty in ecological prediction, we must first identify its sources and consequences, this information is often the most useful that an ecologist can give an environmental manager. Indeed, ecology is a key to the sustainable use of the environment and its resources, since it involves the nature of the linkages inherent in, or resulting from, the use of these resources by humans, thereby defining limits (carrying capacity).

But is ecology being used in ICM? Ecological theory as described in standard textbooks on ecology is seldom applied directly to ICM in Southeast Asia. There are indications of poor quality, unreliable ecological information in the region's ICM approaches. We know less than we need. This is the reason why we lack broadly applicable marine ecological theory that rationalizes the structure and functions of systems, the results of which are fundamental to informed decision-making. This lack of knowledge prevents coastal managers from using a simple set of standards to guide all their decisions. How can decision-makers rule when there is insufficient knowledge is a central question in coastal zone management.

But ecology alone is not sufficient to effectively address coastal zone management issues. No matter how much biologists know about the population dynamics of the dugong (sea cow) or the ecosystem dynamics of seagrass beds, it will not be possible to protect or use them sustainably unless we understand the human causes and consequences of their increasing rarity. In addition, scientific knowledge must help people link the importance of nature and a healthy natural environment to human welfare and fully reflect this in economic planning and decision-making.

But where are the links between science and management? In this paper, two new UNESCO projects in the Philippines are used to demonstrate an attempt to integrate science into management within a broader framework of interdisciplinarity. These projects are the CSI Ulugan Bay Project entitled 'Coastal Resources Management and Sustainable Tourism' and the 'UNESCO Chair Project in Integrated Coastal Management (UNESCO Coastal Chair)'. In these initiatives, the effort to link science and management is seen in the nature and commitment of the consultants who are themselves the chairholders and who form an interdisciplinary team comprising a marine ecologist, a sociologist, an anthropologist, a resource economist, and a legal expert. They teach and translate into advocacy and action the products of their research in the bay in order to help people manage the coastal resources and their uses. This 'wise practice' is envisioned to enhance the Environmental Science Programme in the university – the primary thrust of the UNESCO Coastal Chair. The basics of ecological thinking are thus infused into the human, economic and legal dimensions of environmental change as these relate to future development efforts in Ulugan Bay. This infusion is foreseeable at all stages of the ICM process:

- *Stage 1*: Issue identification and assessment, where science provides technical data that characterize the bay's significant habitats and their components; living and non-living resources and their interrelationships, identifying trends in the condition and use of resources and amenities; estimating short- and long-term implications of such changes for the environment and human communities, interpreting these in as direct a manner as possible; and helping prioritize the concerns.
- *Stage 2*: Programme preparation, where science explains and expands on the findings in Stage 1 and assists in defining and planning studies to fill important gaps in information, helping prepare the scientific project based around questions posed by management.
- *Stage 3*: Formal adoption and funding, where science provides advice useful in arguments concerning cost benefit and decision analysis, responding rapidly to questions from management with information that is pertinent to the time and space scales required.
- *Stage 4*: Implementation, where the scientist consults with management on the nature of research and monitoring required to provide valid information.
- *Stage 5*: Monitoring and evaluation, where the scientist helps evaluate the relevance, reliability and cost effectiveness of scientific information generated by research and monitoring, providing advice on the suitability of control data, and on the effectiveness of new measures.

The coastal and marine environments of Southeast Asia are at risk because the people who affect it do not understand their values and vulnerabilities. Ecologists have crucial roles to play in the ICM effort in the region. Ecologists and social scientists have the pivotal role of conducting and interpreting studies on which the public and decision-makers depend. They need to undertake research and monitoring to gain deeper and more comprehensive understanding of patterns and processes affecting coastal and marine environments. They need to seriously co-operate in finding effective ways of getting research results to the people who badly need them. Without the knowledge, decision-makers depend on intuition, or on chance.

SECTION IV

DEFINING THE ROLE OF ENVIRONMENTAL/ ECOLOGICAL ECONOMICS

THEORETICAL PRINCIPLES

REVIEW OF THEORIES IN ENVIRONMENTAL ECONOMICS

C. Sanchez-Milani, UNESCO

Various environmental economic theories were reviewed particularly in terms of their support to public decision-making and their limits and constraints.

SPECIFIC INFORMATION CONCERNING ENVIRONMENTAL PROPERTY

- Products on the market that are exceptions;
- Multiple laws governing property, e.g. who owns the water, wood, mining resources; each society offers an answer which differs according to its location.

COMMON PROPERTY

- Determine the optimum level of the use of resources (the tragedy of the commons);
- No guarantee: problem of the respect of standards;
- The internationalization of external elements: the well-being/benefit of an action may affect another action without there being an intervention in the market.

The environmental economy should pinpoint external elements (both positive and negative), evaluate their value and their effects on the society in question so that those responsible may pay the costs of these effects.

TWO MAJOR SCHOOLS OF THOUGHT

1. Environmental resource economics: founded in the USA (1975), based on American experiences, fits in with the neo-classic concept of economy, resources have many characteristics, e.g. renewable and exhaustible resources.
2. Ecological economics: gives value to the environment as an instrument for its protection; a new discipline (outside of the neo-classic economy); the idea is to build a programme of action, e.g. the European Union's VALSE programme, the creation in 1998 of ISEE and in 1996 of the newspaper *Ecological Economics*.

CONCLUSION

The instruments are important as they offer:

1. A means to come to a decision for well-being;
2. Tools to guarantee an equilibrium between the individual's and the community's objectives;
3. A solution for ways to integrate irreversible actions.

How economic analysis can be useful for coastal management – the EU VALSE Project

M. O'Connor, European Society for Ecological Economics, Versailles, France

Introduction

This presentation discussed the possible role of economic analysis in relation to problems dealt with by experts present in the meeting. Examples of practices are taken from the EU–funded VALSE project, which the author co-ordinated.

People think that environmental economics deal with market and money and that both are dangerous because they are associated with strong ideological currents. Free-market proposals are hard to justify with conventional neo-classical economic analysis.

Costs and benefits

Everybody is in one way or another concerned with identifying where benefits lie, e.g. in the context of a programme of research, a programme of management or ways that resources are used. Textbooks define economy as an analysis of available means in order to decide the best uses of resources for possible objectives. The question then arises of who decides on the best possible resource uses.

All questions of resource uses involve conflict resolution. The answer over the last hundred years or so is that economics are concerned with identifying rules for optimal uses of resources but the distribution question belongs to politics. This is something which any honourable, intellectually competent economist should never say because almost all questions about choosing resource uses cannot be solved in terms of optimal use: almost all of them involve conflict resolution.

Thus the role of economics should be to quantify costs and benefits associated with certain types of choices and provide some insight to the question of who benefits, who loses, who pays the costs, what sort of costs, how to assist in the distribution of these costs and benefits against relevant political, cultural, institutional and social agendas. This is the fundamental agenda of ordinary political economy.

We are not in a utopian world where we believe there is a solidarity of interests among different economic classes and social groups or institutional forces. Most of us are working in a situation of high stress and conflict with little level of confidence. However, it remains important to still link the analytical work of economics trying to quantify costs and benefits with attention to institutional and social processes of negotiation. The example of *participatory approach* will illustrate this point as this is currently very popular in Europe, as it once was in the 70s in the development context.

Participatory approach

The participatory approach offers two technical advantages:

1. it helps you get better information via public participation for your scientific analysis, i.e. the public is at the service of experts;
2. it uses technical skills, modelling, knowledge and communication of results to better advise the public as to their rational behavior to help solve problems according to what experts and models decide. This is actually the opposite way round from (1), but it achieves the same purpose. Both approaches are, however, one-way types of participation, i.e. co-option.

Another philosophy is that participation explains and spreads the knowledge of experts. By training, economists have great difficulty with this other concept. In their view, either the public goes along with economic rationality or they are idiots and economists are fighting to get that common

sense understood. Ecological economics tries to break down that oversimplification and the VALSE project gives examples of the approach based on the valuation analysis for sustainable environments.

The example of *valuation* of water resources in the Canaries will illustrate this approach in a coastal context. The problem at stake here is the quantitative and qualitative degradation of aquifers (groundwater resources replenished by rain), i.e. the over-exploitation of a renewable resource.

The story goes like this: in the good old days when people lived in harmony with nature (they never did, at least not in the Canaries context), they exploited water in a more or less sustainable way. Then along came people with a more predatory attitude who decided that they could make a profit and exploited water faster and faster until exploitation became non-sustainable. This is partly true, a bit too romantic, but today in the Canaries there is a real political battle between people who express quite different moral sentiments and who are linked to quite contrasting and conflicting economic interests. Some people have little access to water or have to pay more for the water they get than others. There is inefficient use of water because people pay different prices and the price paid is not necessarily linked to the value of the use that it is being made.

A **first solution**, as an orthodox economist would put it, is to recommend the use of a transparent water market where everybody could pay the same price and a competitive process would ensure best use of water. The problem is that this best use of water under current market conditions is almost certainly associated with what the environmental and resources economics school call *optimal depletion of resources*, i.e. water resources are entirely used up. This is not a bad thing for all economic interests: it benefits experts in high-tech solutions to water supply (e.g. the French multinationals) involved in desalination, purification and offshore supply services. It may be partly good for some economic interests in the Canaries, i.e. just make tourists pay a little bit more per cubic meter of water. It is, however, very bad for agriculture and people living in the local economy because water is very expensive. Optimal use of water resources, therefore, cannot be solved by appealing to simple market economics principles. To leave it to market forces is to guarantee social problems and non-sustainability of some parts of the local economy and evidently of the ecosystem.

A **second solution** is that of sustainable use. People agree on it because they can foresee short-term benefits. But if a regime of constraints on water use were to be announced and if people must respect collectively a limit on the total exploitation process (to renew aquifer), agreement is jeopardized. This is because the question of *sustainability for what and for whom* arises. This is another issue that the present participants are faced with on a daily basis: sustainability of what cultural tradition, what archaeological heritage, what ecosystem properties and for which social class or group? This cannot be solved in terms of quantification of costs and benefits in money terms and by asking the rhetorical question of what is the highest benefit or what is the most advantageous use of the resource in monetary terms.

Then one is left with two choices:

- Choice 1: link quantification of alternative uses and for whom;
- Choice 2: engage in a reconciliation process.

Failure in the reconciliation process leads to permanent conflict: military domination situation, war, civil breakdown or permanent stress. A participative, deliberative or negotiating process can generate new evaluation, new meaning, new ability of different stakeholders to accept a new compromise that they would not otherwise have accepted.

The VALSE project has demonstrated some positive results from the negotiation approach. Here are two examples.

In the case of the Wetfin study in the UK, based on *contingent valuation*, the project was to demonstrate that you can use a survey

technique employed by economists to obtain numbers to understand people's motivations. The latter may be more important for decisive support. In parallel to that study a citizen jury process was conducted, with 12–16 people selected from the region and which were presented with different options from different experts. Unexpectedly, the jury actually made up another option.

In the case of water management in Sicily, the main difficulty was that people did not know what their problem was. The project was based on a multi-criteria framework which was designed as an interactive and iterative process via institutional analysis, surveys, interviews, discussions. The experience conveyed solutions that analytical results would not have obtained. Surprisingly, the municipality reacted with a first priority – to publicize the alternative options for water uses, i.e. stakeholders could decide. The process was internalized and the multi-criteria analysis put to the service of a social process for permanent dialogue. Expert backup is still needed for internal coherence, scientific respectability to defend reliability of figures and information, but it is not enough.

Conclusion

In the VALSE project, we tried to communicate this philosophy of practice, bring attention to the high scientific quality of the analysis, use quantification when that is possible and useful, quantify sometimes in money terms. Even so, not all costs and benefits can be *monetized* but some can be *socialized.*

The issue is to search for compromise and understand why people abandoned a key interest for the common good because they found it necessary or desirable to co-exist with people even if they don't agree with them. It is a political and social perspective. It does not come out in economic textbooks. Orthodox market economists wanted to pretend that this co-existence could be magically solved by everybody acting as shoppers on the market place: buy the thing you need with the income you get. This is too simple a formula and the compromise process must be reworked in a political sense and the role of economic analysis must be reinvented in those terms. Choices are not objective, there is value judgement involved.

PRACTICAL EXAMPLES

ENVIRONMENTAL EVALUATION OF NATURAL RESOURCES

P. Espeut, Caribbean Coastal Area Management Foundation, Kingston, Jamaica

The Portland Bight area in Jamaica is at present not managed, the bay is overfished and the forest is over-exploited for charcoal. We take it that if the area is managed it will be more valuable than if it is not managed.

But we needed some economic analysis to evaluate its current state, and its potential value under a managed state, so as to be able to argue the case with government and others that good environmental and natural resources management is better than no management.

An environmental economist from the World Bank, who had carried out an environmental valuation of coral reefs in Indonesia, was invited to Jamaica to do an evaluation of coral reefs, mangroves and forests. CIDA sponsored his visit and that of another expert from the University of Stockholm. They spent several weeks in Jamaica but the results are not available yet. So in this presentation, the results from the Indonesian study are used to illustrate their approach. They did not use the contingency valuation method, i.e. how much fishers are willing to pay to have fisheries properly managed. This was because people will give you values but when it comes to actually paying, that is another story.

The method used is a 'with/without' scenario, i.e. without management this is what the resources might be worth, with management this is what the resources might be worth. Or since we don't know what absolute value is, we can speak about the additional value that would be created with management or the value that is forgone if there is no management.

Data from the Indonesian paper compares the scenario regarding the impact of poison fishing. Basically, poison fishing at present has a value of US$33,000/km^2 to individuals. Individuals do earn money from this destructive practice but there is a net loss at US$40,000 to society resulting from damages to the surrounding environment. If tourism is taken into account in the area, the net loss is valued at US$436,000/km^2. If no tourism takes place in the area the net loss is much less. Valuation techniques cannot yet value the loss to biodiversity. In all cases, loss by destructive practices outweighs gains.

Such an argument demonstrates to government that it makes sense to get rid of poison fishing. Even though the practice brings tangible benefits to poor Indonesians, it is causing substantial damages to the environment. This applies also to coral mining and deforestation practices with the associated siltation of coasts.

Other data referring to cyanide fishing shows the advantage of replacing it with a more sustainable fishing practice, e.g. line and hooks. Cyanide fishing earns US$475 million/year to Indonesia. Line and hook fishing earns more, with US$688 million/year. This is a strong enough argument to move away from cyanide fishing. Labor costs are, however, higher with the sustainable approach (US$360 million against US$241 million). So direct costs would favour the destructive practice but indirect costs would favour the sustainable practice. Cyanide fishing would jeopardize the tourism income of US$280 million; that is a net loss on national accounts of about US$40 million. But with sustainable fishing there is a net gain of US$341 million/year.

This type of economic analysis should convince ministers of finance and industrial developers of the benefits of sustainable fishing practices. So we are waiting for the results of our own study for Jamaica and we will make them available to you.

MANGROVE RESOURCE VALUATION: A CASE STUDY IN PAGBILAO BAY AND ULUGAN BAY, PHILIPPINES

M. Fortes, University of the Philippines, Quezon City, Philippines

INTRODUCTION

Human dependence on natural functions and components is most strongly reflected in planning and decision-making processes. It is necessary to bring economic development more in harmony with the capacity of nature to sustain the needs of rapidly growing human populations. Over a 20-year accounting period, 1970–1989, Philippine mangrove forests decreased by an average of 5,276 ha annually. This paper presents a method and an example of ways to assign socio-economic and monetary values to the functions and components of mangrove ecosystems. This mangrove valuation project compares a pristine area (Ulugan Bay) to damaged areas elsewhere in the Philippines.

BACKGROUND TO THE PROJECT

Mangrove resources are under strong competing interests between uses, i.e. clearance/cutting for fishponds, building material, marina development; and conservation and biodiversity.

The motivation to go into mangrove resource valuation stems from three policy issues:

1. the need to determine the optimal use of a mangrove area;
2. the formulation of proper access and pricing schemes for various current uses that would eventually lead to the optimal pattern of use;
3. the forthcoming investment decisions on degraded mangrove forests and abandoned fishponds, specifically in the form of reforestation.

Both on-site and off-site market and non-market values of mangrove products and services were investigated in the Philippine Mangrove Resource Valuation Project (PMRVP). This paper focuses only on activities undertaken at two of four bays in the Philippines: Pagbilao Bay (Quezon Province) and Ulugan Bay (Palawan). The PMRVP was implemented to:

1. investigate the soundness of raising the fish pond lease fees from PHP50 to PHP1,000 (US$1.25 to US$25) per hectare per year;
2. develop a methodology for assessing various options in managing the country's mangrove resources.

SPECIFIC OBJECTIVES

- To apply various methods for valuing environmental uses of mangrove resources;
- To derive insights that would assist policy-makers to formulate pricing schemes for access rights to mangrove areas in general, and the licensing schemes for fishponds in particular;
- To generate information that would serve as a basis for environmental accounting of mangrove resources.

METHODOLOGY AND STUDY RESULTS

Both on-site and off-site market and non-market values of products and services for mangroves (including fisheries) were investigated. Mangrove forests in Pagbilao Bay were studied for residual and secondary growth and, in Ulugan Bay, for both residual and primary or old growth. On-site products and services were measured by formal market values, i.e. growth and yield, using linear regression. Results are given according to two forest management regimes, i.e. clear-cutting and seed tree. Cost-benefit analyses to define best economic cutting cycles (both clear-cutting and seed tree methods) were made using net present value.

Non-market values consist of services such as spawning and nursery grounds, and the value of litter fall as fertilizer. *Mugil cephalus* (mullet) was collected and its gut content examined to determine the use of mangrove litter fall as food.

The moral value of natural areas

Diversity in nature is of instrumental value in advancing human interests and well-being. Hence, we have a *prima facie* reason not to destroy natural areas wantonly. But here, utility becomes the main argument, so that becomes the argument of technocrats.

Natural areas and their biodiversity have intrinsic value, one does not need to refer to any other functions or values in a justifying sense, thus, it is an object of immediate moral concern. There are many reasons for the preservation of nature and hardly any to defend its large-scale destruction.

Conclusion

The results indicate that the timber values of mangroves are highest for the old-growth. On the average, fishpond operations could afford to pay the proposed increase in annual lease fees from PHP50 (US$1.25) per ha to PHP1,000 (US$25) per ha. The higher land rental is warranted on three counts:

- Government should appropriate economic rent to generate the funds for public investments;
- The social value of coastal land resources, whether for mangroves or for other land uses, is high under Philippine conditions of increasing lowland scarcity;
- The higher lease fee would encourage more efficient use of the land for aquaculture.

Non-market values exist depending on the prevalence of informal household use of mangrove wood, fuel wood, extracts, and fishery products in the area. In places where spawning occurs and the mangroves serve as nursery grounds, the non-market value could be much higher.

This present effort at mangrove resource valuation is far from complete. The under-valuation of mangrove goods and services arises from the difficulty of measuring buffer function, soil accretion, erosion control, mangrove natural products, contribution to nearshore and offshore productivity, sanctuary for wildlife, outdoor recreation, eco-tourism, aesthetics.

There is another, perhaps more important value – the moral aspect of the resources. This value should be considered in future valuation of natural areas and their resources.

Summary of discussion

Several participants appreciated these presentations as they could see direct application in their own contexts. It was pointed that before economic tools could be used, the theory behind them must be known and understood and that it would be appropriate to teach environmental economics at undergraduate level.

It was agreed also that illustrative quantitative indicators were necessary, especially multi-criteria economic and ecological indicators. However, caution was raised as to how to accommodate 'beautiful science' with basic village/community understanding. Indeed, quantification should be used when relevant but one should build a language to justify it.

Regarding the contingency valuation technique, the value of the environment depends on whom you ask: millionaires would give a higher value than poor people, i.e. it is relative to people's income. One should not value the resource itself but how it will increase if it is properly managed. Referring to the 'Tragedy of the Commons' the valuation approach was criticized as a potential 'license to kill'.

The key lies in the types of practices involved. The role of environmental economics is to help understand by providing information. There is a need to improve networking of expertise, as organising information is essential to good economics and good practice.

SECTION V

DISCUSSIONS

DISCUSSIONS ON PRELIMINARY 'WISE PRACTICES'

INTRODUCTION

On several occasions during the workshop, plenary discussions were held on the theme 'wise practices' for the sustainable development of coastal regions and small islands. To facilitate these exchanges, discussion papers were prepared prior to the workshop and distributed during the meetings. These papers: 'Indicators to identify wise practices' and 'Example wise practices' were based on the Wise Practice Papers received from meeting participants as well as the results of the electronic discussion group held in September – October 1998, and appear in Sections below for easy reference.

A third discussion paper on 'Implementing wise practices' was also prepared and distributed. However, due to the intensity of discussion on the first two papers, the meeting did not find time to address the implementation theme in detail, nevertheless because of its relevance to this report, this discussion paper has been included in Annex III.

In order to capture the ideas and commentaries generated by the presentations and debates, the participants also prepared overheads during the meeting and these were presented at various times during the plenary sessions. These overheads captured important thoughts and also served to stimulate further discussion. They are included in Annex II.

DISCUSSION PAPER ON INDICATORS TO IDENTIFY 'WISE PRACTICES'

based upon Wise Practice Papers and electronic discussions

TOWARDS AN INITIAL UNDERSTANDING OF THE TERM 'WISE PRACTICE'

Admittedly, we cannot identify 'wise practices' nor designate indicators for 'wise practices', if we do not know what we mean by the term. At the same time, we must accept that our definition of the term will evolve and be refined through experiences in the field and discussions during this Workshop and beyond. So as a point of departure, perhaps we can agree upon a general concept of 'wise practice' which is (for the time being) a bit vague and thus, flexible.

M. Fortes has described 'wise practices' as *emerging* from a set of experiences. He points out that time is a factor, and notes that in some cases, 'wise practices' may emerge unexpectedly, falling out from nowhere, their presence revealed by the cumulative beneficial effect they have upon people and environment (or cumulative negative effect for unwise practices). A simple step-wise process can be described:

1. It begins with a set of experiences/actions in coastal development;
2. From these experiences, preliminary '[un]wise practices' emerge that are identified with the help of indicators;
3. 'preliminary wise practices' are then analyzed and generalized to broaden their application, raising them to the level of tentative 'wise practice' principles;
4. 'Wise practice' principles are then tested by applying them in other contexts and at other sites, and the results allow for their refinement and finalization.

TENTATIVE DEFINITION OF 'WISE PRACTICE':

Actions, processes, principles or decisions that contribute significantly to the achievement of socially equitable, culturally appropriate, economically sound and environmentally sustainable development of coastal regions and small islands.

INDICATORS TO IDENTIFY WISE PRACTICES

How are we to know when we are in the presence of a 'wise practice'?

Or as reformulated by J. Calvo:

What kind of quantitative and qualitative indicators should we use to identify wise practices and to rationalize why they are such?

BUT WHAT IS AN INDICATOR?

It might be defined as a key variable, measurable with relative ease, which indicates the state of a larger set of variables (a system) which is much more difficult to monitor on a regular basis, e.g. infant mortality provides an indication of the quality of health services; measures of heavy metals in mussels may indicate water quality.

ACCORDING TO THIS DEFINITION, ARE THE ITEMS LISTED BELOW INDICATORS?

Or are they the beginning of a list of fundamental 'wise practice' issues and their associated goals? By evaluating whether we advance towards or regress from these goals, we may judge a practice 'wise' or 'unwise'. In this view, indicators are practical tools which provide measures (qualitative or quantitative) of our advancement towards goals, such as those listed above, that are a fundamental part of wise practice.

SOME 'INDICATORS' PROPOSED BY G. CAMBERS:

- **Long term benefit**:
  Will the benefits of the activity still be evident 'x' years from now, bearing in mind that benefits may be quantitative, e.g. improved fish stocks, or qualitative, e.g. increased perception and awareness?
- **Institutional strengthening**:
  Has the activity provided for improved management capabilities among the individuals/groups involved?
- **Sustainability**:
  Does the activity enshrine the principles of sustainability?
- **Transferability**:
  Can the activity be applied to other sites in the country/region?
- **Majority benefit**:
  Did the activity benefit a majority of the stakeholders?
- **Awareness**:
  Do a majority of persons from the general public in the area affected by the activity know about it?
- **Documentation**:
  Has the activity been fully documented?

SOME OTHER POSSIBLE 'INDICATORS' SUGGESTED BY PRE-WORKSHOP CONTRIBUTIONS:

- **Governance:**
  Does this practice give due recognition to the political dimension of coastal management – in particular, the essential importance of the governance process? (A. Boina)
- **Empowerment of users:**
  Are resource users – especially those from the lower strata of society – empowered by this management practice? (P. Espeut)
- **Minority benefit:**
  Does the practice benefit (a) minority stakeholder group(s), that is (are) disadvantaged vis-a-vis the majority of the population (i.e. indigenous, ethnic or other culturally-distinct group); economically impoverished minority; etc? (N. Hinshiranan)
- **Gender issues:**
  Have the many, dimensions of gender been accounted for in the elaboration of this practice? (W. Kiai)
- **Inter-institutional/interdisciplinary dialogue:**
  Has inter-institutional/interdisciplinary conflict been resolved and dialogue facilitated by this practice? (J. Calvo)

DISCUSSION PAPER ON EXAMPLE 'WISE PRACTICES'

based on Wise Practice Papers and electronic discussions

SOURCES OF EXAMPLE 'WISE PRACTICES'

Pilot project activities carried out on the 'coasts and small islands platform' represent one direct source of example wise practices. We must bear in mind, however, that these projects are not carried out in a vacuum. On the one hand, as project leaders, you design activities based upon your own broad experience and your knowledge of local ecological and social realities. As a result, the emerging example wise practices benefit from your long experience and insight.

On the other hand, relevant ideas and experiences for the development of example 'wise practices' are available from other projects in sustainable coastal development. These other sources should not be ignored. Consequently, a 'wise practice' inventory should be based upon both CSI and non-CSI inputs.

Beyond the context of formal projects in coastal development, G. Cambers also reminds us of the wealth of information that is available informally – 'in peoples' heads'. Referring specifically to local practitioners who do not have a tradition of writing things down, she points out that their knowledge and experience need also to be recorded as they represent another valuable source of example 'wise practices'.

Finally, H. Gaudi, N. Hinshiranan and P. Varghese drew our attention to another important source of example 'wise practices': traditional/indigenous practices relating to coastal resource use and management, and the knowledge systems and worldviews of which they are a subset. While the ecological and cultural value of many of these practices is clear, a major challenge today is how to integrate traditional practices into contemporary contexts that are rapidly-evolving.

EXAMPLE 'WISE PRACTICES'

S. Diop cautions against re-inventing the wheel and encourages the group to move forward by considering the following question:

> *From all pilot projects and other research projects developed in coastal areas around the world, what concrete cases can we present that serve to illustrate our concept of wise practices?*

As an example wise practice for the Senegalese coastal area, S. Diop puts forward the 'Integrated Management Plan of the Saloum Mangroves Delta' which has been achieved through an interdisciplinary exercise, involving local populations in their own language (village committees), and setting into place well-defined mechanisms for capacity-building and follow-up. In this view, an example 'wise practice' is portrayed as an exemplary case study.

Others have represented example 'wise practices' as an inter-related series of actions/decisions. For example, P. Espeut presents a number of 'wise practices' that focus upon the empowerment of local resource users. His nested series of 'wise practices' for the Jamaican context include:

1. Coastal management through protected areas,
2. which are managed by local NGOs,
3. through a co-management process,
4. whereby local resource-users are empowered
5. to enforce regulations that they themselves have drafted.

M. Fortes provides a list of 12 'wise practices' and then analyses in tabular form the extent to which these have been adopted at a number of ICAM sites in the Philippines:

LIST OF 'WISE PRACTICES'

1. Addresses well-defined issues
2. Directs research at questions of direct relevance to resource management (scientific advice to management)
3. Multisectoral, multi-agency and inter-disciplinary
4. Creates opportunities to link planning to implementation
5. Involves those affected by management schemes in all phases of the ICAM process
6. Promotes sharing of experience among resource managers
7. Integrates all uses of the coastal zone, including actual and potential
8. Has functional co-ordination among stakeholders (team spirit)
9. Has defined boundaries
10. Has identity
11. Is culturally and spiritually responsive
12. Is gender sensitive

SOME 'SUCCESSFUL' ICAM SITES IN THE PHILIPPINES

Numbers correspond to 'wise practice' features above (++ more intense; + less intense application)

	WISE PRACTICES											
Sites	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Cape Bolinao	++	++	++	+				++	++	++	+	+
Ulugan Bay	+	++	++	+		+	++	++	++	++		+
Tubbataha	+	++	++	++	+	+	+	++	+	++		++
El Nido	+	++	++	+	+	+	+	+	+	+	+	+
Batangas Bay	++	++	++	+	++	++		+	++	+		
Anilao	++		++		+	++	++	+		++		
San Miguel Bay	++	++	++	+	+	+	+	+	+	+		
San Salvador	+	+	++		+	+	+	+	++	+	+	
Puerto Galera	+	++	++	+				+		+	+	

Still others have made reference to specific 'wise practices' as follows:

A common language should be developed that is, comprehensible to all social actors: natural and social scientists, local community members, decision-makers, resource managers, etc. (S. Diop)

For artisanal fisheries, one should replace centralized, top-down management of coastal resources with participative arrangements that ensure effective community involvement in the management process. (O. Defeo)

In the context of conserving the cultural heritage of Essaouira (Morocco), Abdelazziz El Mouatez provides us with a structured and exacting evaluation of 'what went wrong' and 'why'. He concludes that 'unwise practices' are of equal, if not greater importance, than 'wise practices', as the former provide an opportunity to understand why an activity has failed and how similar failures can be avoided in the future.

What is an 'example wise practice'? What should we include and exclude from this category? The proposed 'wise practices' are very diverse.

- They range across a broad **scale**: proposed wise practices extend from the micro-scale (e.g. meticulous, but critical, technical details relating to architectural restoration – El Mouatez) through to entire case studies/projects as wise practices (Diop).
- They cover a large number of **domains**: Individual wise practices provide guidance with respect to the bio-physical environment, others relate to the built environment,

and still others concern socio-economic or cultural domains. Some wise practices are concerned with public information/ communication, others deal with community participation in the management process and still others focus on interagency co-operation.

- They pertain to several different **phases** of an intervention: from the planning/ conception phase through to implementation, and including aspects of policy-making, institutional reform and public awareness.
- Proposed 'wise practices' can therefore be ordered, categorized by scale, domain, discipline. While this may be a necessary first step, we must guard against 're-packing' these elements into our conventional boxes and losing sight of the more integrated and intersectoral perspective that we are trying to attain.

PLENARY DISCUSSION

INDICATORS: QUANTITATIVE AND QUALITATIVE

The point was made that indicators for sustainable coastal development, despite their specific geographic focus, were unlikely to differ from general sustainable development indicators that have been the focus of extensive work since the Rio Conference, e.g. the development of tools that combine resource management and poverty reduction strategies – sound resource management as a source of income. Accordingly, these discussions and conclusions should be taken into consideration in furthering the work on coastal indicators. It was emphasized that indicators must be easily comprehended by local actors, measurable by simple and straightforward means, and conducive to long-term monitoring. In this spirit the acronym SMARTER[4] was proposed showing that indicators should be Simple; Measurable; Actual; Replicable; Timeless – Transferable; Equitable; Reliable. It must be recognized, however, that indicators vary in resolution. Care should be taken to select indicators of the appropriate precision depending upon the context.

Several persons disputed the concept of measurement. How can one measure sustainability, long-term benefit or empowerment? Quantification was attacked as a positivist natural science approach, that should give way to more stochastic and less determinist models. Even more fundamental is the issue of *who* is to decide on the indicators and *who* is to measure them. It was pointed out that indicators can only be refined with respect to certain predetermined goals, and that these goals are unavoidably value laden, e.g. indicators for empowerment or governance. One is quickly drawn into the realm of ethics and politics. It was further suggested that the notion of indicators was static and thus it would be better to focus on process and procedures.

Finally the issue was raised as to whether it was correct to consider the items discussed in the first Discussion Paper (page 65) as indicators, or as queried at the end of the paper. Is this rather a list of issues, goals or characteristics of wise practices?

4. SMARTER: Simple, Measurable, Actual, Replicable, Timeless-Transferable, Equitable, Reliable

On goals and definitions

In order to assist the debate a short document was drafted (see below).

Several participants discussed the definition of coastal management, the proper terms to use, and the need for a clear distinction between methods and goals. Some thought there was no need to discuss definitions but rather to identify a common approach. However, it was pointed out that in order to achieve this goal there was a prior need for a satisfactory information repository, a clearing house mechanism and a protocol for information sharing.

Following a proposal for the use of the 'ecosystem concept', Step 1 in the 'Proposed Procedure' paper was modified as follows: 'The goal of integrated coastal management is to improve the quality of life of human communities dependent upon these resources without jeopardising the basic diversity and productivity of the ecosystems'.

Some persons were in favour of remaining within general statements while others warned of too much simplification when the issues remain complex. Caution was raised concerning rigid guidelines and a dogmatic approach which might result in an idealized (wishful thinking) vision of ICM.

Is the objective of ICM 'sustainable development' or 'management of change'?

While the use of the term 'wise' practices (rather than the more commonly encountered term 'best') met with general agreement, discussion arose as to whether the overall objective was wise 'management' practice as in integrated coastal management (ICM) or wise practice for 'sustainable development'. Some felt management was the broader term that encompasses development and conservation, others understood management as a subset within the broader goal of sustainable development, and still others viewed the terms as closely interrelated and largely interchangeable.

PROPOSED PROCEDURE

Step 1. Overall goal

Integrated coastal management (ICM) is a dynamic process where the government and community, scientists and managers, and private and public sectors formulate and implement an integrated plan to protect and develop the coastal ecosystems, its resources and uses. Its goal is to improve the quality of life of human communities dependent upon those resources without jeopardising the basic diversity and productivity of the ecosystems.

Step 2. Definition of a wise coastal practice

Actions, processes, principles or decisions that contribute significantly to the achievement of environmentally sustainable, socially equitable, culturally appropriate, and economically sound development of coastal regions and small islands.

Step 3. What do we include as example wise practices?

Examine criteria/issues for designating 'example wise practices'.

Step 4. Try to organize our set of wise practices

- by matching issue and content;
- by determining levels of wise practice (e.g. primary wise practices with broad application, secondary wise practices with narrower application etc).

To resolve these different points of view, it was suggested, based on a series of debates in the Indonesian context, that a more appropriate term could be 'management of change'. This more modest expression was presented as anchored in real world contexts where in most cases, the possibilities for moving towards improved conditions (as suggested by 'development') were at best limited. Recognising that most change escapes the control of the state or corporate sector, not to mention local communities, 'management' of that change is already an ambitious undertaking. It was therefore proposed that our objective could be stated as 'the management of change to sustain quality of life'. The term 'management of change' allows for a dialogue that will link local communities with local governments and other actors while also recognising that their actions are influenced by outside factors. It was felt that any attempt to find an exhaustive definition for 'quality of life' was doomed. While this proposal met with general support, it was nonetheless noted that the term 'management' perpetuates economic overtones and emphasizes manipulation of both people and the environment.

From 'the role of scientists' to 'the role of CSI'

Participants were urged to think critically about the conventional model whereby scientists first provide information, the politicians convert this information into guidelines and finally these guidelines are communicated to people who do as informed. Reality is quite otherwise. It was felt that some conventional thinking was still present in the paper on Indicators (page 65) and that it might be more appropriate to portray scientists as offering different scenarios or alternatives. Furthermore local people can acquire information about themselves and their situation by being confronted with other sets of knowledge and experience directly, with or without the mediation of scientists.

But it is not sufficient to speak of alternatives, as if some ultimate environmental or social logic will prevail. One must recognize the existence of different interests and, as in the Alang case, consider the interests of certain stakeholders who may not be local. We must also recognize the practices and experiences (knowledge) that already exists. In our pursuit of 'wise practices' we must develop a more critical and self-evaluating approach.

Transferability of wise practices

Much discussion arose on the issue of transferability of wise practices. Certain participants emphasized the specificity of local situations, referring to the strength of cultural factors and the unique local circumstances under which a 'wise practice' may evolve. Accordingly, they expressed grave doubts whether a practice judged 'wise' at one location, might also be 'wise' at another. While not denying the importance of the forementioned, others found this position somewhat exaggerated as it assumes there is little possibility of learning from experience. A proposed solution was to distinguish between 'general' practices or 'methods' which would be universally applicable, and thus be highly transferable (e.g. to make a social analysis), and specific 'solutions' which would be context/site specific, and thus less transferable (e.g. local resource user councils for management).

A proposal was made based on the 'Small Coastal Cities' project, to take the lessons learnt from each example/context, e.g. Essaouira and Saida, and to transfer the lessons learnt from each case to a new context, in this case a third city. The transfer of the lessons learnt will require adaptations which may themselves be the wise practices.

On the effectiveness of education and public awareness

While the need for environmental education and public awareness was emphasized on

several occasions, a number of participants also expressed scepticism about such measures. In their view, many of the social and environmental problems being discussed were not caused and are not perpetuated by a lack of information. Other issues such as a lack of confidence in the existing political system, or the weakness of social control mechanisms, were seen as more fundamental concerns. In sum, education remains a valuable tool in the process of change, but it is only one part of the solution.'... education is not everything ... development of policy and structures that go beyond just making people aware should be encouraged'.

On the importance of international policies

Management regimes need to be adapted to complex institutional and international situations. We also need to support management regimes that maintain the integrity of ecological systems, e.g. the entire island approach with insular systems. Furthermore management regimes need to be translated into mainstream ecological processes and economic policies so as to avoid having two different worlds working side by side in a non-productive manner. For instance, we need to understand how major urban core regions are linked to transnational economic processes. The fruits of the CSI initiative should feed into these agendas.

On sharing experiences and integrated systems

Many participants felt that the workshop provided an opportunity for sharing experiences and lessons learnt from the different pilot projects. In a similar light, sharing experiences from other situations where integrated management is required might be useful, e.g. integrated transport systems.

During one late night session, the preceding discussions together with the overheads prepared by the participants (Annex II) were used to compile a list of wise practice criteria/characteristics and qualifiers. This list is presented opposite, and was discussed in detail in parallel group sessions (see pages 74–77).

List of criteria for wise practices

- **Long-term benefit:**
  Will the benefits of the activity still be evident 'x' years from now?
- **Institutional strengthening:**
  Has the activity provided for improved management activities among the individuals or groups involved?
- **Capacity building:**
  Has the activity provided for training, on-the-job training, education etc?
- **Sustainability:**
  Does the activity enshrine the principles of sustainability?
- **Transferability:**
  Can the activity be applied to other sites in the country or region?
- **Awareness:**
  Do a majority of persons from the general public in the area affected by the activity know about it?
- **Consensus building:**
  Has mutual understanding through improved communication been achieved?
- **Culturally acceptable:**
  Is the activity acceptable within the local traditional and cultural frame-work of the area?
- **Participatory process:**
  Has the activity ensured participation of all the players, have all the players or stakeholder groups participated in the decision-making process?
- **Community self-reliance:**
  Has the activity provided for community self-reliance?
- **Strengthening of ethnic identity:**
  Has the activity strengthened ethnic identity?
- **Majority benefit:**
  Did the activity benefit a majority of stakeholders?
- **Minority benefit:**
  Did the practice benefit a minority stakeholder group that is disadvantaged?
- **Documentation:**
  Has the activity been fully documented?
- **Governance:**
  Does the practice give due recognition to the political dimension of coastal management, in particular the essential importance of the governance process?
- **Empowerment of users:**
  Are resource users, especially those from the lower strata of society, empowered by this management process?
- **Gender issues:**
  Have the many dimensions of gender been accounted for in the elaboration of this wise practice?
- **Improved dialogue:**
  Has dialogue between different groups, e.g. social scientists and natural scientists, NGOs and politicians, been improved by this practice?
- **Political and cultural dimensions:**
  Has the activity enlarged the political and cultural space for local social management protocols, practices, entities?
- **Human rights:**
  Has the activity provided for fundamental human rights, e.g. freedom of speech?

List of qualifiers to the criteria

Qualifiers are an attempt to render the criteria for wise practices more useful, since some of the criteria are rather simplistic. Some proposed qualifiers are as follows:

- Whether or not a practice is wise depends on population density and extraction levels, as well as the context or domain of the problem or issue.
- Wise practices may be value-laden, even cultural practices evolve over time.
- At a primary level a wise practice may be transferable, but at a secondary or implementation level it may not be transferable because of cultural perceptions, legal framework, political climate.
- Wise practices: wise from whose point of view?
- Who needs the wise practice, wise practice for whom?

Methods

Before we can identify an activity as a wise practice we should:

- Look at the knowledge that is already there in existing wise practices.
- Define the specific problem and its context.

PARALLEL GROUP DISCUSSIONS: DISCUSSIONS OF CHARACTERISTICS AND IDENTIFIERS

FROM THE VIEWPOINT OF URBAN AND INDUSTRIALIZED SITES – REPORT ON DISCUSSIONS

Participants: J. Calvo, G. Campeol, S. Diop, H. Dube, A. El Mouatez, S. Fazi, R. Folorunsho, S. Riad, M. Sall, H. Sangkoyo

Whereas industrialization of the productive processes and urban expansion seems to apply to all coastal regions, uneven geography and pace of economic and environmental change mediate the configuration, types and magnitude of stressors to coastal/island ecosystems. The dynamics of the current international division of labour also teaches us that we increasingly are dealing with non-linear, sometimes two-way directions of change. On the developed end, we are witnessing the presence of the trans-territorial production, de-industrialization of former core industrial coastal areas; ex-urbanization of the Maquiladoras and the Guang-Zhou economic zone, and the African post-independent urbanization without economic transformation.

On the other hand, local coastal communities are constantly dealing with exclusionary urban policies and unresponsive delivery of services and infrastructure, while having, to cope with the loss of accessible fishing grounds and coastal arable land. To add to the complexity, the last four decades have seen the declining efficacy of locally accountable financing and political institutions in the urban regions, which has endorsed the growth of portfolio investment that tends to disregard long-term environmental costs. The exposé of problems, resource use and coastal zone management over the last three days forces us to broaden, rather than narrow, the contexts of each of our undertakings. What we need is a sufficiently inclusive problematic for the urban-industrial coastal region and small islands.

METHODOLOGICAL APPROACH FOR WISE PRACTICES IN URBAN/INDUSTRIALIZED SITES

All the range of coastal resources use and exploitation is present in urban/industrialized coastal sites, this gives a particular importance to the need for identification of criteria and wise practices for sustainable development.

THE DISCUSSION OF THE WORKING GROUP FOCUSED ON:

- Defining some geographic categories in the urban-industrial relationship;
- Selecting and ordering, in a hierarchical way, the list of criteria for wise practices;
- Simulating the application of some of these wise practices in a particular geographic category, such as an area with relevant risk of pollution and explosion (i.e. petrochemical industrial site);
- Defining a 'compatibility factor' as an indicator of the level of urban-environmental conflict to be used as a guideline to solution identification.

Worldwide, it is possible to select some significant geographical categories of the relationship between urban-industrial coastal sites that range from megacities to small coastal cities:

- Coastal megacities having a large number of industries with a high environmental risk (Jakarta Bay);
- Small coastal cities surrounded by a big industrial pole (Omisalj);
- Small coastal cities with a patch distribution of small and different industries (Essaouira).

All the criteria identified by the plenary section are valid and important. In particular, for all the geographical categories the list can be prioritized as follows:

1. *Local community level:*
   awareness (i.e. sanitation); community self-reliance; capacity building/institutional strengthening; consensus building; industrial impact reduction;
2. *Community/industry relationship:*
   participatory process; documentation, improved dialogue, culturally appropriate;
3. *Long-term criteria:*
   sustainability; empowerment of users;
4. *Legislation and normative.*

In order to show the applicability of the wise practices, the case of a 'high environmental risk in the north Mediterranean area' (pollution and explosion) has been discussed. Applying the criteria (following the hierarchy a–c), it is possible to indicate some actions of wise practices as:

1. Sanitary security of the population:
- Basic training, information (i.e. self security and protection),
- Evacuation plan,
- Protection of residential area at risk.

2. Improvement of production cycles:
- Closing obsolete production lines,
- Introduction of high technology for reduction of pollution and incident risk,
- Modification of the industrial 'transport-hubs'.

3. 'Requalification' of urban areas:
- 'Bonification' (improvement of the quality) of abandoned soil from the industry,
- Water purification,
- Green belt,
- Recreation of buffer zones.

The same methodological approach can be used in the other geographical categories taking into account local characteristics, local environmental problems and the economic situation.

FROM THE VIEWPOINT OF LOCAL COMMUNITIES COPING WITH GLOBAL FORCES – REPORT ON DISCUSSIONS

Participants: J. Baerenholdt, O. Defeo, R. Ernsteins, M. Fortes, N. Hinshiranan, W. Kiai

In this group, the terms of reference were discussed and the decision taken that the list of criteria would be examined to see if they are relevant to the above topic. Members of the group reviewed the list, with the following results.

- **Long-term benefit**:
  this criterion should be retained as is.
- **Local institutional strengthening and capacity building:**
  No comments
- **Sustainability:**
  This term was removed. What are the principles of sustainability? It is more of a vision.
- **Transferability:**
  This was not thought to be essential (although desirable).
- **Effective communication process:**
  This means that dialogue and consensus-building will be used to attain awareness. Implies a two-way or multidirectional process.
- **Culturally respectful:**
  Does the activity respect local tradition and the cultural framework of the area? Does it encourage/ challenge the people to evaluate their cultural framework to be more environmentally sound?
- **Self-reliance:**
  The term 'community' confuses this criteria, implies some solution.
- **Strengthening local identities:**
  (Not ethnic) to give a sense of belonging at various levels.

- **Maximum (consensus) benefit:**
  Combines the idea of majority benefit but with special care not to leave out the under-privileged, and a special concern here was women.
- **Description:**
  Have the lessons learnt been recorded?
- **Participatory process:**
  The term 'players' was changed to 'stakeholder groups' with the rule that individuals should have the opportunity of participation or representation. The principles of good governance and empowerment should be integral to this process, as well as respect for human rights.
- **Political and cultural dimensions:**
  This is catered for in other criteria.

FROM THE VIEWPOINT OF SMALL ISLAND DEVELOPING STATES – REPORT ON DISCUSSIONS

Participants: A. Boina, G. Cambers, P. Espeut, H. Gaudi, P. Varghese, J. Wiener

The group agreed to go through the items listed, rewording and clarifying, if necessary, and characterising the items if possible as universal or of specific importance. In some cases, the entire group did not agree on whether an item was universal or selective, in which case the word consensus was added.

- **Long-term benefit:**
  Will the benefits of the activity be evident/observable 'x' years from now? Universal, the group agreed to use term 'benefit' rather than 'long-term benefit' because of ambiguity.
- **Capacity building and institutional strengthening:**
  Has the activity provided for improved management capabilities (including community self-reliance and decison making), on-the-job training, and education for the stakeholder groups? Universal, majority consensus; the group agreed to combine institutional strengthening and capacity building since they are so closely related and indeed intertwined. In addition, the characteristics for community self-reliance and empowerment of users were included here.
- **Sustainability:**
  Does the activity adhere to the principle of sustainability? Universal, the group agreed to replace the word 'enshrine' with 'adhere to'.
- **Transferability:**
  Can aspects of the activity be applied to other sites in the country or region? Universal, majority consensus; the word 'aspects' was added because the group took into account the qualifier and recognized that a wise practice could be transferable at some levels, but not the more detailed (implementation) level.
- **Awareness:**
  Universal, stay as it is.
- **Consensus building:**
  Has mutual understanding been achieved by all stakeholders through full participation, consultation, discussion and communication? Universal, majority consensus. There was considerable debate about the meaning of consultation and discussion in different languages (e.g. French and English). The participatory process characterized was combined into this category.
- **Culturally acceptable:**
  It was agreed to delete this characteristic since it was already included in 'Consensus building'.
- **Participatory process:**
  See 'Consensus building'.
- **Community self-reliance:**
  See 'Capacity building and institutional strengthening'.
- **Strengthening of ethnic identity:**
  The group agreed to delete this because it

could lead to conflicts in some instances.

- **Majority benefit:**
  Did the activity try to benefit a majority of the stakeholders? No category – group undecided.
- **Minority benefit:**
  Delete. Most of the group felt that minority groups were already covered sufficiently in 'Capacity-building' and 'Consensus-building' characteristics.
- **Documentation:**
  Has the activity been well documented? Universal. 'Fully' was replaced with 'well' because it is not always possible to fully document every practice.
- **National policy:**
  Does the practice adhere to current government environmental policies? Universal, selective. Delete 'governance' and replace with 'national policy' to remove ambiguity. The group was undecided as to whether this characteristic was universal or selective.
- **Empowerment of users:**
  Included in 'Capacity building'.
- **Gender issues:**
  Have the many dimensions of gender been accounted for in this practice? Universal. Word 'elaboration' deleted.
- **Improved dialogue:**
  Delete because it is covered in 'Consensus building'.
- **Political and cultural dimension:**
  The group felt that this characteristic required further explanation and discussion, so no decision was made whether to include it or not.
- **Human rights:**
  Has the activity provided freedom to exercise fundamental human rights? Universal.

PARALLEL GROUP DISCUSSIONS: REGIONAL AND INTER-REGIONAL ACTIONS FOR 1999-2001

CARIBBEAN AND LATIN AMERICA – TOPICS DISCUSSED

Participants: J. Calvo, G. Cambers, O. Defeo, P. Espeut, J. Wiener

- Identify region(s) of action, there are two principle regions: Latin America and the Caribbean.
- Recommendations to enact 'joint ventures' in the area – develop linkages between the various programmes.
- Questions about time involved in e-mailing and other forms of communication (time/ cost allocation for work).
- Will CSI provide funding, or leverage, or both?
- Need to have concrete actions in the field. How much will the stakeholders benefit from our e-mailing?
- Can we move UNESCO from more 'upper-stratum' activities down to more concrete actions at the implementation level?
- Provisional schedule for tentative 1999 actions does not appear productive or realistic to the group.
- Can CSI help with the exchange of information between regions (e.g. Latin America/Caribbean, Pacific/SE Asia, Indian Ocean/Africa) through meetings, discussions, actions, exchange of people e.g. scientists, politicians, stakeholders?
- Need clarification of what exactly is a UNESCO Chair. Can it be established outside of universities? Can it be beneficial or harmful in terms of looking for funding?
- Group felt that UNESCO's intentions are good – but questioned approach.
- Proposal: promote two 'wise practices'– co-management in artisanal fisheries and coastal erosion mitigation – not only through the mechanism of a UNESCO Chair but also through other mechanisms to facilitate 'communication' within the region(s) and provide for the testing of how wise the practices are. Promote exchange of information (via face-to-face meetings) in these two specific topics.

MEDITERRANEAN AND BALTIC – ACTIVITY TIME-TABLE

Participants: J. Baerenholdt, G. Campeol, A. El Mouatez, R. Ernsteins, S. Fazi, S. Riad

	1999	2000-2001
1. CSI website: clearing house for	x	on-going
- interactive communication		
- newsletter		
- case studies		
2. More and regular meetings	x	x
2.1 Mahdia, Tunisia – networking start	March 99	
- Additional 1-2 from Baltic region (especially on Agenda 21 etc.)		
- Presentation of projects/sites assessments		
2.2 Assessments	June 99	x
- Methodologies (+ cases)		
- Meeting in Paris		
2.3 Workshops in several countries		
for case studies	x	on-going
- Methodologies		
- Case design and		
a) printing		
b) electronic		
3. UNESCO Chair developments	x	
3.1 Finishing Chair in Latvia		
3.2 Developing Chair in Mediterranean Field offices		
(Cairo, Venice) – Partner regions	August 99	
3.3 Summer university		
On interdisciplinary research and education: SCD projects/sites		
4. Visits/exchanges		
- Projects, professors, students		

Participants: A. Boina, S. Diop, H. Dube, R. Folorunsho, W. Kiai, M. Sall

REGIONAL AND INTERREGIONAL ACTIONS FOR 1999 AND 2000–2001

To start with, in 1999 we should prepare an inventory of on-going projects in the area (sub-Saharan Africa and the Indian Ocean) financed by CSI or non-CSI sources and list the work going on at different places. The areas which are found under-represented can be prioritized for developing new projects. Regions which have not been covered in the two geographical areas can be given priority for starting the projects.

In 2000–2001, the pilot projects generated in 1999 could be implemented. Projects along similar lines could be inter-linked. UNESCO (CSI) and other agencies can be approached for funds.

TO IDENTIFY WISE PRACTICES AND IMPLEMENTING WISE PRACTICES

Criteria for wise practices should be identified for different types of projects and in different geographical areas. The indispensable criteria would be based on awareness generation and participatory practices.

The socio-economic conditions of the people of the area should be studied to assess the impact of any new industry started. The effect of the new activity on the life-style of the people, and on the environment should be studied so as to examine the pollution and harmful changes in fauna, flora and other useful resources. So, the criteria should be identified on the basis of extensive research in socio-economic, cultural, and environmental aspects.

The 'wise practices' can be developed for individual projects depending on case studies. This will include importing awareness through organization of workshops, seminars and other methods for the benefit of stakeholders. These awareness programmes can be planned according to the concern, interest and intellectual level of the stakeholders. Different categories have to be approached by different methods. The villagers, for example, have to be approached in their own language for providing information and awareness.

POOLING IDEAS FROM REGIONAL AND INTERREGIONAL CSI AND NON-CSI PROJECTS

The various projects should work in a co-operative, complementary and synergistic manner. For this, efficient communication and networking is essential. Free exchange of experts to different projects would benefit the transfer of wise practices.

UNESCO can provide more financial assistance in terms of pilot projects, travel expenses and chairs to promote pooling of ideas.

SOUTHEAST ASIA AND PACIFIC – OUTLINE OF DISCUSSIONS

Participants: M. Fortes, N. Hinshiranan, H. Sangkoyo, H. Gaudi, P. Varghese

ISSUES AFFECTING COASTAL MARINE PATTERNS

- Environmental degradation,
- Marine pollution,
- Fisheries depletion,
- Loss of marine habitat,
- Growing threat against minorities – i.e. sea nomads (Moken people) and vulnerable communities.

APPROACH

- Endemic or people-driven initiatives.

ROOT CAUSES

- Overpopulation,
- Use of inappropriate technology,
- Insensitivity to cultural aspects of life.

ACTION 1 – STRATEGY

- Collaborative sharing and exchange of experience in the region (maybe like the Haiti-Jamaica example),
- Institutionalization of Chairs for longer term initiatives,
- Advocacy role of CSI,
- Develop region-specific policy framework with relevant authorities.

ACTION 2

- Networking to consolidate UNESCO efforts more effectively.

ACTION 3

- Publication of workshop proceedings,
- Establishment of an Asia-Pacific information network responsive to regional and local needs,
- Co-publication of findings in pilot projects by practitioners and research scientists within the region in international refereed journals,
- Regional and global inventories of similar/related concerns, i.e. for pilot projects/sites in fisheries, mangroves, coral and oceanographic areas,
- Production of information for the benefit of practitioners in wise practices.

VIDEO CONFERENCE WITH COUNTERPARTS IN JAMAICA

On 3 December 1998, a live video conference was conducted between eight workshop participants (the other participants watched the exchange on a video set) and counterparts from Jamaica including fishers participating in the Portland Bight Protected Area project, representatives of the Natural Resources Management Authority and the University of the West Indies. Since direct links could not be established between Paris and Jamaica, a 'bridge' was established ('Frontier Video Conference') in the USA allowing Paris to communicate with Jamaica. The conference lasted one hour.

After an introduction there was an interesting exchange on the benefits of co-management. The Jamaican fishers felt that this was the best approach to fisheries management recognising that the government had a role to play, e.g. making laws, and they, the fishers, were the protectors of the local area. This view was reinforced by the representatives from the Natural Resources Management Authority who pointed out that their co-management policy for parks and protected areas involved a range of mechanisms and arrangements so that communities and all stakeholders were fully involved.

Another issue discussed related to the role of Jamaican fishers as wardens, and whether this caused social conflicts, e.g. having to regulate/report on friends and family members. The fishers acknowledged that this did sometimes cause problems, but that enforcement of the law was always a difficult matter, especially with Jamaican fishers who are often prepared to resist enforcement officers. The fishers stated that if enforcement of the regulations had been in place previously then the fisheries would be in a better state today.

In answer to the question 'What is the biggest problem facing the fisheries?' there were a variety of responses. These included the import of fish from overseas which were sold at a cheaper rate than locally caught fish; the high cost of engines and gear; the problem of overfishing; the need for enforcement of regulations; too many fishers; poor fishing practices such as dynamiting and dragnets; and illegal fishing by foreigners.

The sale of local fishing beaches to outside investors was another issue discussed. The fishers expressed a desire to have the Natural Resources Management Authority purchase the fishing beaches, which could then be leased to the local fishing associations for management.

Responding to questions about the role of women in the industry, the fishers stated that women had a key role to play. They owned about 40% of the fishing boats as well as being responsible for all the fish marketing, some women also went to sea.

The role of scientific research, including the work of the University of the West Indies and the Fisheries Division, in the fishing industry was also discussed. Some fishers felt that the information gathered was useful but others were more sceptical.

The Jamaican fishers were very enthusiastic about their visit with counterparts in Haiti and felt they had learnt a lot from the exchange. They were impressed by the way the Haitian fishers could organize themselves in the absence of a stable government and in the face of environmental degradation, e.g. the severe deforestation in Haiti.

In closing, the importance and benefits of continual communication within and among the regions, e.g. Haiti/Jamaica, Caribbean/Pacific, was noted. The video conference was hailed as a success; it illustrated to participants in both countries the potential benefits of this means of communication.

PLENARY DISCUSSIONS ON PROPOSALS FOR 1999 AND BEYOND

HOW WE REACHED THIS STAGE (CSI)

Earlier in 1998, at the University of Dakar, we initiated a debate with some students there on wise practices. That was the start of the process. We have also had face-to-face exchanges between the Haitian and Jamaican fishers. Following that we had the electronic discussion group (EDG) on wise practices. In moving forward we have to examine the scope and capacity of such EDGs, e.g. the language capacity – we opted for one language in our EDG experiment, but we have to be culturally respectful of other languages. We have to consider connecting the unconnected and moving from literate to oral traditions; illiterate people also need to be involved in this wise practice discussion.

Our ideas for 1999 and beyond include a dedicated web site to generate cross-sectoral wise practices (both CSI and non-CSI projects). This is in addition to our normal activities of consolidating and networking the pilot projects and UNESCO Chairs; the latter are dependent on the pilot projects, and we wish to develop the interaction between academia and field activities. We also hope to use regional meetings, such as the one scheduled for Fredrikstadt in May 1999, to further our wise practice networking activities.

We would like to receive your comments on these ideas. One group this morning mentioned the benefits of the EDG while another group found it less rewarding. Obviously approaches are going to vary according to the regions and their characteristics; it is this diversity we cherish. Our work on wise practices has not finished this week, it was only supposed to make a start.

THE ELECTRONIC DISCUSSION GROUP (EDG) CONDUCTED BETWEEN SEPTEMBER AND OCTOBER 1998

Those who took part is this discussion agreed that it was a useful exercise and that it was a good medium through which to communicate and, for some, participation became reflexive. The language used (English) created difficulties for some persons. Even with only eight persons participating, there was a need for ordering and coding the interventions and it was recognized that taking part in the EDG involved a considerable time commitment on the part of the participants. It was also felt that the results of the EDG could have been improved if the discussants had been provided with shared reference material. The participants felt that the role of the chairperson was important in running the EDG, although the title 'facilitator' which implies more of a supporting function (whereas 'chairperson' implies a top/down approach) was preferred. The EDG had also opened up the possibility for individuals to better communicate on their own within the regional context.

THE VIDEO CONFERENCE BETWEEN JAMAICA AND PARIS, 3 DECEMBER 1998

It was generally felt that this had been an interesting and useful experience, although more might have been achieved if both parties had had an agreed agenda beforehand. It was also suggested that in the future, more inexpensive forms of video conferencing using the internet structure may become available, so that a group in Indonesia could talk to a group in Jamaica almost as easily as we now send e-mails.

FUTURE ELECTRONIC DISCUSSIONS

There was considerable discussion about how to move ahead and organize future electronic discussions on aspects of wise practices. One suggestion was for UNESCO (CSI) to act as a clearinghouse for input, but this might pose difficulties because with UNESCO becoming increasingly decentralized, the clearinghouse function would need to be undertaken by its Headquarters and its 65 field offices. Also a suggestion for UNESCO to act as a 'nerve centre' did not fit into the decentralization policy, and the preferred course of action would be for the people around the table to take a lead role.

Questions were raised as to how to include the 31 persons around the table in an electronic discussion, since experience from elsewhere, as well as the September–October 1998 EDG, had shown that 7–8 persons is the maximum number for an EDG.

There was concern by some that the EDG was an elitist process limited to those with access to the internet. However, it was pointed out that EDG is just one part of the communication protocols that will eventually support the neediest actors in the field.

FUTURE ELECTRONIC DISCUSSION ON THE WISE PRACTICE CHARACTERISTICS, QUALIFIERS AND INDICATORS

A suggestion was made to use the existing lists on wise practice characteristics, qualifiers and indicators, as well as the input from the group sessions, to prepare one comprehensive list through the mechanism of a global EDG.

A further suggestion was to carry out a similar activity at a regional level. Thus there would be a series of regional EDGs on the wise practice characteristics, qualifiers and indicators. It is likely that the output from the regions would vary, and the differences between the regions might help to better understand and refine the list of parameters. In this way there would be regional discussions (EDGs) which would then lead to an inter-regional (global) discussion.

During this discussion the issue of transferability of wise practices was again raised. While there are levels of transferability, it was reiterated that it is an important characteristic of wise practices.

FUTURE ELECTRONIC DISCUSSION ON EXAMPLE WISE PRACTICES

Based on actual field experiences and case studies, a suggestion was made to develop example wise practices in a structured format. Regardless of the stage of a particular project, it is likely that some example wise practices can be developed. Many of the papers presented in this workshop already provide examples of wise practices. It was proposed that an EDG be conducted to exchange these example wise practices and that this discussion be separate to the one on wise practice characteristics, qualifiers and indicators, although each discussion should inform the other.

FUTURE ELECTRONIC DISCUSSION ON THE WORLD CONFERENCE ON SCIENCE

A preliminary paper had been prepared on the World Conference on Science (Annex V) and due to the shortage of time it was suggested that an EDG be convened to contribute to a responsive research agenda for that conference. The themes for this workshop, e.g. 'integrating natural and social science', could provide initial ideas for this discussion group.

THE IMPLEMENTATION OF WISE PRACTICES

The roles of scientists and managers were discussed in depth. Some people felt that too much emphasis was being placed on the scientific agenda in this present discussion on future action and not enough attention was being paid to implementation at the pilot project level. A discussion paper had been prepared on the implementation of wise practices (Annex III), but unfortunately time had run out before it could be discussed.

However, it was recognized that implementation has to be carried out at a very local level and that many other factors, e.g. the cost of the wise practice and whether it can be afforded, also need to be considered.

Most participants felt that the focus should be on co-operation between scientists and managers, and between government agencies and NGOs. Furthermore, it was generally agreed that the participants would now be able to use the results of the workshop discussions and brainstorming so that when they return to their countries they would be better able to organize and implement their pilot projects.

On the role of research, it was also recognized that research can be done by any person: scientist, manager, resource user etc. Thus it was important not to confuse the nature of research, nor to belittle the role of the scientist.

Most participants agreed that it was necessary to make management adaptive and that time is not available to conduct all the necessary research before taking action. Thus it is necessary to use the precautionary principle and act now on the best available information.

A WAY FORWARD BEYOND THIS WORKSHOP

It was felt by most participants that much had been achieved in the five days of discussion, especially in terms of understanding and supporting each other's, pilot projects and for future networking to continue the activity. For instance on Monday, there had been much talk of the need for a common language, but by Friday it was becoming apparent that the wise practices themselves are the common language we are in search of, and that the development of this common language is a long term process.

However, some participants were concerned that they did not have anything concrete to take back to their regions from this meeting. Some people felt that mangroves are still being cut and fish are still being dynamited, and they were concerned about how to deal with this reality. It was pointed out that these problems have been going on for a very long time, and if there was an easy solution, these unwise practices would have been stopped long ago. This workshop is the beginning of a process to try and understand the complexities of these challenges and to try and link the very specific activities of the pilot projects at the local level with the regional and global perspectives.

It was suggested that participants needed to make a commitment to continue the process and that perhaps a preliminary team or task force should be formed.

A WIDER PERSPECTIVE ON WISE PRACTICES

It was suggested that the framework of wise practices be expanded to include an integrated framework for multi-level policy reform e.g. in the long run the exchange between the Haitian and Jamaican fishers will have to be viewed in the context of the North American Free Trade Agreement (NAFTA). However, this would also involve consideration of UNESCO's overall goals as an institution. In this context, a reference made by the Director-General on the World Culture Report was relevant: 'In the words of the World Commission on Culture and Development, the report should be seen as a contribution to discussion and debate, as a way to influence national and public opinion, and as a testing ground for new policy and ideas'.

Further ideas for widening the framework of discussion included the need for social learning processes of key on-site sectors, e.g. local government agencies that had no leverage to talk to their superiors, NGOs who are afraid to talk about coastal problems because of violent threats directed at them, etc.; and a responsive research agenda. (This latter issue was also discussed under the heading 'On a future electronic discussion on the World Conference on Science'). In relation to this suggestion, reference was made to UNESCO's major foci for the 2000–2001 biennium:

1. The impact of globalization processes on societies and individuals;
2. Poverty alleviation and efforts to counter exclusion;
3. The challenges of the world information society.

The participants were also reminded of the timeliness of the meeting, for in the next few weeks, input would have to be finalized for the 2000–2001 biennium. The importance of UNESCO's National Commissions – who together with the Organization's Executive Board determine policy – was emphasized, as well as the role of the UNESCO regional offices.

SECTION VI

CLOSING SESSION

CLOSING ADDRESS

When **Mr M. Iaccarino, Assistant Director-General for Natural Sciences** arrived, the participants were still discussing issues and he expressed his concern to interrupt the discussions, but he hoped that these would continue by mail, e-mail, phone or face-to-face meetings. In closing, he underlined that the coastal zones are very important because they are so productive and people have concentrated there for a long time, and unique cultures have developed. The interaction of humans and nature is changing the coastal zones and success or failure in coastal management is rooted in our culture and our economic activities. There needs to be a new social contract between science and society and this will be an issue at the World Conference on Science next year. The complexity of the problems of coastal zones and small islands needs a multi-sectoral approach such as that being developed by the coastal regions and small islands projects of UNESCO. He noted that gender equality had been identified as an issue at this meeting. It is his belief that the participation of women in coastal management and in all development issues is essential, and that furthermore our future challenge is to ensure the participation of all of society.

Mr H. Crespo-Toral, Acting Assistant Director-General for Culture, regretted his absence at the opening of the workshop as he was participating in a seminar on conservation of historical cities in Latin America and Caribbean Islands, in Equador. He said that Havana's experience has shown us that we cannot separate culture from nature. In spite of the technological development, we have not yet harmonized development and natural preservation. Culture is fundamental in this problematic. He invited the participants to think in a 'cosmo-vision' framework, to see the world from others' viewpoints. Cosmo-vision constitutes a frame-work for harmonious development.

This meeting allows us to have a global vision, so what remains to do is to point out the cultural dimension in our future projects. Coastal zones and small islands have a particular vision of the relation of their inhabitants towards nature. We have to take into consideration the old traditions which explain human behaviour. Modernization depends on the balance that can be found between the old traditions and modern development.

Mme F. Fournier, Assistant Director-General for Social and Human Sciences, concluded that the meeting has raised concern for the need for a new formulation of the social contract between science and society in coastal zone management, for two reasons:

1. the implication of human beings in coastal zones must be taken into account as the cause of degradation – not only the natural phenomena but also the interaction between nature and human activities that are changing coastal zones;
2. the rapid globalization also consists of standardization and inter-penetration of ecological, social, cultural and economic areas.

Wise coastal management practice needs the commitment of the different social actors and scientists, women's participation and the whole society in coastal management and development. Another challenge is to develop joint research programmes in natural and social sciences, environment and sustainable development, food security, eradication and alleviation of extreme poverty. This meeting has allowed the different specialists in coastal zone management, coming from different regions of the world that are facing similar problems, to meet and to compare their varying points of view That is where UNESCO can be helpful. We all can learn from this confrontation of experiences.

Mr D. Troost, Environment and Development in Coastal Regions and in Small Islands, thanked the participants who were developing and thinking on wise coastal development practices, his colleagues who were so active in providing background information, and the interpreters.

PART B

UPDATE PAPER: 'WORK IN PROGRESS'

WISE COASTAL PRACTICES FOR SUSTAINABLE HUMAN DEVELOPMENT: WORK IN PROGRESS - JANUARY 2000

THE COASTAL REGIONS AND SMALL ISLANDS (CSI) PLATFORM

CSI is a relatively new initiative within UNESCO. It was launched in 1996, and seeks to assist UNESCO Member States towards environmentally sound, socially equitable and culturally appropriate development of their coastal regions. The focus of CSI has been on intersectoral approaches utilising UNESCO's sectors in natural and social sciences, culture, communication and education, along with their networks of counterparts in over 180 countries.

CSI's intersectoral theme has utilised three main approaches:

- pilot projects;
- UNESCO Chairs in Sustainable Coastal Development;
- formulation of wise coastal practices for sustainable human development.

PILOT PROJECTS

Twenty-three intersectoral pilot projects have been established or co-sponsored involving some 60 countries. These projects cover topics ranging from the various dimensions of a ship-breaking industry in India, to sustainable fishing activities in Haiti, to underwater archaeology in Egypt (see List 1: Pilot Projects). Details can be obtained from:

http://www.unesco.org/csi
http://mirror-us.unesco.org/csi
http://mirror-japan.unesco.org/csi

These field-based activities, some of which have been in progress for several years, provide frameworks for collaborative action bringing together decision-makers, local communities, cultural heritage experts and scientists from all disciplines. They provide a hands-on approach to ICM, and the lessons learnt from their successes and failures provide a tangible means of assessing progress.

UNESCO CHAIRS

A second and related approach has been to establish UNESCO Chairs in Sustainable Coastal Development which link the field-based actions (pilot projects) to global networks of scientific reflection and research and which also provide innovative training and capacity building in sustainable coastal development. So far two UNESCO Chairs have been established, but others are in the process of being set up (see List 2: UNESCO Chairs).

WISE COASTAL PRACTICES FOR SUSTAINABLE HUMAN DEVELOPMENT

This activity takes the lessons already learnt (and those still being learnt) from the pilot projects and the UNESCO Chairs and tries to establish areas of commonality, divergence and new foci. The outcome will then provide input back to the pilot projects and UNESCO Chairs so as to improve these activities at a grassroots level.

This activity has included various processes, including two separate electronic fora and a workshop. One of the first actions was to define 'wise practices':

> *Wise practices are actions, processes, principles or decisions that contribute significantly to the achievement of environmentally sustainable, socially equitable, culturally appropriate, and economically sound development in coastal areas.*

The overall goal of this activity is to improve the practice of ICM at the level of the pilot projects and the UNESCO Chairs, as well as providing useful general guidelines at both the conceptual and the implementation level for coastal practitioners. Figure 1 shows a schematic representation of the process – which at the time of writing is ongoing.

The activities are described below:

- Preliminary ideas for wise practices were formulated during an electronic discussion group (WP EDG) amongst seven pilot project leaders/UNESCO Chair holders between September and October, 1998.
- These concepts were then discussed during a pilot project leaders' workshop, 'Towards Wise Coastal Development Practice', held in Paris in December, 1998. This workshop succeeded in preparing a first stage list of *characteristics of wise practices* (see p. 100).
- During the period January–March 1999, the wise practice formulation was advanced by a second electronic discussion using e-mail, during which the list of wise practice characteristics developed at the 1998 Workshop was refined (see List 3).
- Between April and September 1999, a dedicated website was established for example wise practices. Participants included all the pilot project leaders, UNESCO Chair holders and other persons experienced in various aspects of ICM. They were invited to describe one or more example wise practice(s) with which they were familiar.
- Discuss the example wise practice in the context of the wise practice characteristics. Participants in this forum were also invited to comment on, and respond to the example wise practices posted by others. Some 48 example wise practices have been submitted, from all over the globe and covering a range of topics and approaches. While the list of example wise practices is too long to include in this paper, the main topics and approaches contained in the example wise practices are enumerated in List 4.
- During October–November 1999, the website (www://csiwisepractices.org) was re-designed and the example wise practices were indexed. The website has been re-opened so as to allow for further discussion of the example wise practices and of the reactions and responses. The website has also been opened to a wider audience.

To date, progress results have been compiled and the usefulness of the wise practice characteristics assessed. This information will be used to (re-)evaluate, (re-)focus and advance the activities of the pilot projects and the UNESCO Chairs. The experiences derived from the global wise practices forum will be further refined and discussed at regional and national levels through face-to-face and electronic fora. Ultimately, it is envisaged that the process will lead to the formulation of concepts and guidelines for ICM practitioners.

Through this activity, CSI is seeking to place the experiences learnt from the individual, site-specific pilot projects and UNESCO Chairs in a global generic context in an effort to improve our understanding and *practice* of sustainable coastal development.

Since the electronic discussion forum is still ongoing, it would be premature to discuss results at this time. The following discussion represents a series of observations or 'snapshots' gained after indexing and editing the contributions.

WISE PRACTICES THAT FAILED PROVIDE MANY VALUABLE LESSONS

There are many different ways to classify all the example wise practices submitted to the discussion forum. One way of looking at the contributions is to divide them into:

- unwise practices;
- wise practices that are conceptual or in the very preliminary stages of implementation;
- wise practices that have stood the test of time and worked;
- wise practices that failed.

The unwise practices are very informative and useful and tell us what not to do. They may also tell us how things could have been improved. However, it is believed that encouraging people to think constructively in terms of wise (as opposed to unwise) practices and especially on **ways to implement them**, is a pro-active way to further the practice of ICM.

Most of the items submitted to the discussion forum described wise practices that were either still being conceptualised or were in the very early stages of implementation – usually in the first few years. Most of the authors wrote in an optimistic light about the likely success of these wise practices. However, there were very few objective evaluations of progress/success.

There were very few examples that fell into the third category of wise practices that had stood the test of time and had worked.

However, the few items that fell into the last category – wise practices that had failed – were perhaps the most informative and bear further detailed analysis. This group included a failed attempt at co-management in fisheries, and a failed attempt to change people's attitude to beach sand mining. They provided examples, where for varying reasons, something went wrong. This does not necessarily mean that the wise practice was unwise, rather that unforeseen circumstances or activities resulted in the failure of the wise practice.

TEMPORAL ASPECTS OF WISE PRACTICES

Many authors addressed the concept of time in relation to wise practices. Several persons indicated that it may take several generations for the results of wise practices to be fully realised, and certainly this may well be the case when trying to change people's attitudes. This obviously creates problems in a world where people are increasingly being conditioned to expect instant results.

Furthermore this concept has major implications for ICM practitioners, coastal communities and even funding agencies – the idea to stay with a concept, idea, approach, project beyond the normal project cycle of 3–5 years. And related to this is the idea of wise practice sustainability beyond the life of a particular project.

USE OF WISE PRACTICE CHARACTERISTICS FOR PROJECT EVALUATION

One contributor suggested that defining a particular project in terms of the wise practice characteristics proved to be a valuable tool for monitoring and evaluating a project or activity. The process of evaluating a project against each characteristic helped to identify strengths and weaknesses such that future implementation of similar projects could be improved.

Use of wise practice characteristics as international instruments

One contributor suggested using the wise practice characteristics for evaluating ongoing or proposed development and developing international standards, e.g. a logging company, if complying with the characteristics, could use the 'seal of wise practices' to market their products.

Paying for wise practice implementation

Of particular interest were discussions relating to ways to pay for wise practice implementation against a background of poverty. Contributions from benefiting communities/populations ranged from payments in kind to direct cash payments.

Traditional versus modern practices

Several people discussed the use of traditional practices and areas where they diverged with modern practices. Some of the most useful discussions dealt with ways to combine the traditional and modern. In some cases this led on to ethical considerations, the 'need versus greed concept' and ideas regarding the continuity of humanity.

The discussion forum brought out the realities of ICM

Many people felt free to discuss ideas and difficulties that might not be voiced in other more formal settings, and many of these ideas and difficulties represent the reality – the 'nuts and bolts' of life for ICM practitioners.

For instance in a discussion of environmental impact assessment, the disadvantages of using outsiders or foreigners to conduct the studies were clearly illustrated. As were the unrealistic goals of major lending agencies who expect such major studies (as environmental impact assessments) to be conducted in 3–6 months, when often the baseline data still needs to be collected.

Similarly in a discussion of consensus building and using the participatory approach, one contributor wrote very clearly illustrating the reality of ICM in the field, '... the intensity of participation is always linked to the degree of awareness and of personal gain that the population hopes to acquire from the project. People cannot always be counted on to participate – it is necessary to mobilise them incessantly without ever being discouraged.'

Another contributor, discussing how villagers were being empowered to manage their own subsistence fisheries, stated that some communities were just not ready to manage their own resources and that these villages had been dropped from the project.

Wise practice success

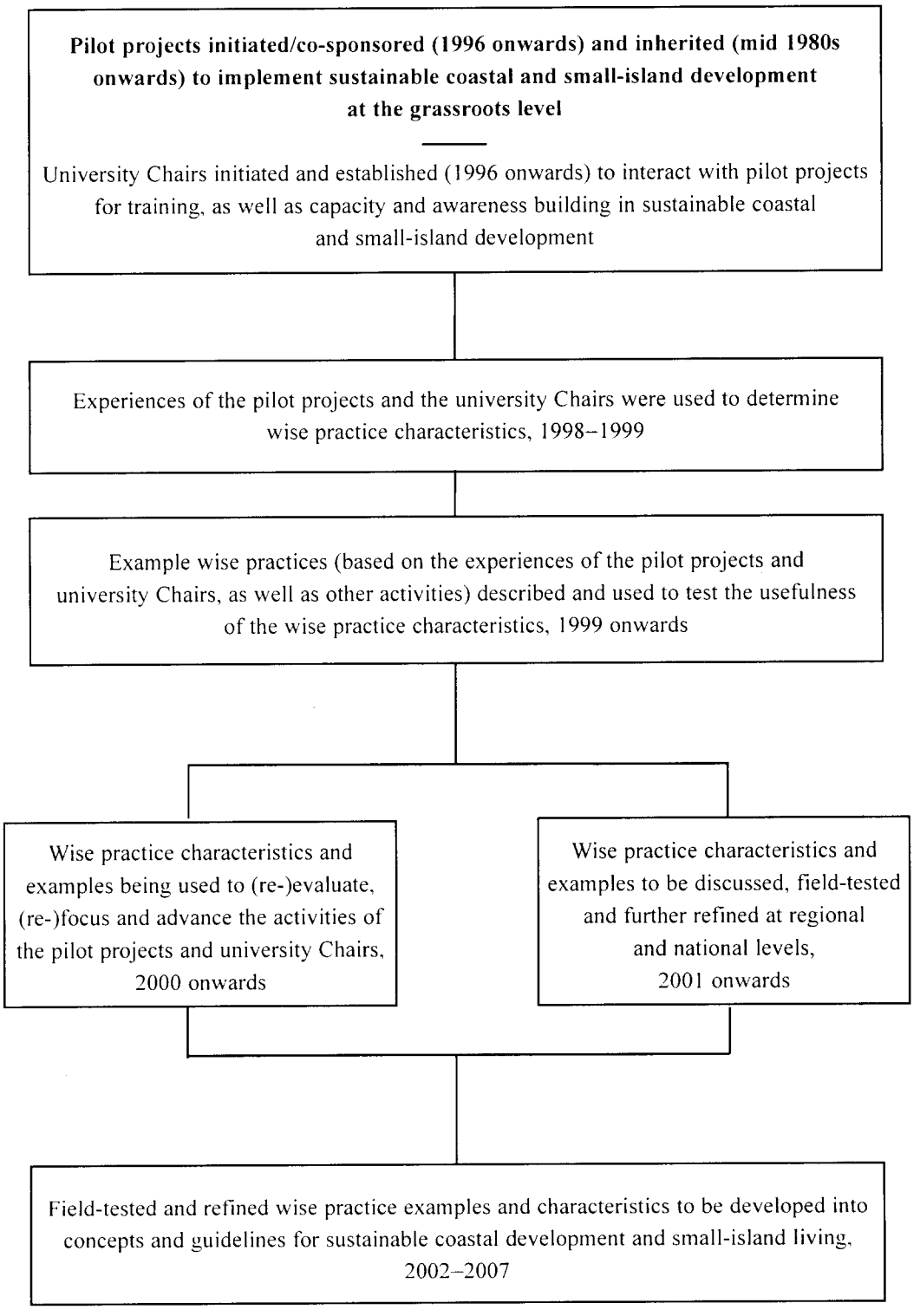
Since so many of the example wise practices were in the very preliminary stages, most contributors only talked about success in general terms and with a good degree of optimism. Some writers did, however, provide figures, e.g. a 25% rate of success among communities managing their fisheries effectively. Such figures, where available, are very useful to other practitioners in trying to evaluate progress and success.

Concluding remarks

The above discussion in no way represents the results of the electronic discussion forum on 'Wise Coastal Practices for Sustainable Human Development.' A detailed analysis of the contributions to the discussion forum has not yet been done and must of course await the ending of the discussion forum. However, the discussion does highlight just a few of the ideas that are emerging from the forum and may serve as pointers for the present discussion phase.

In addition, many lessons have been learnt about how to conduct such a web-based discussion which, when documented, may also assist others who plan to use the Web as a medium for regional/global discussion and collaboration.

FIGURE 1. FURTHERING WISE SUSTAINABLE DEVELOPMENT PRACTICE IN COASTAL REGIONS AND IN SMALL ISLANDS



List 1: Pilot Projects

AFRICA – EAST/SOUTHERN
- Development-conservation strategies for integrated coastal management in Maputaland (South Africa, Mozambique)
- Communication and education for sustainable coastal development (Sub-Saharan Africa and Indian Ocean Islands)

AFRICA – NORTH/EASTERN MEDITERRANEAN
- Underwater archaeology and sustainable coastal development (Alexandria, Egypt)
- Urban development and freshwater resources in small historic coastal cities (Mediterranean)

AFRICA – WEST/CENTRAL
- Sustaining human and environmental health in peri-urban coastal communities (Dakar, Senegal)
- Urban flood control (Lagos, Nigeria)
- Communication and education for sustainable coastal development (Sub-Saharan Africa and Indian Ocean Islands)

AMERICA – SOUTH/CENTRAL
- An interdisciplinary coastal research programme at the mouth of the Amazon (Belem, Brazil)
- The Río de la Plata estuary and sustainable development (Uruguay, Argentina)

ASIA – SOUTH
- Integrated coastal management (Gujarat, India):
  - -The environmental, social and cultural dimensions of a ship-breaking industry (Alang)
  - -Mitigating land and water salinity in the Gujarat coastal region

ASIA – SOUTHEAST
- Sustainable living on the margins of a mega - city (Jakarta Bay, Indonesia)
- Community-based approaches to coastal resources management (Ulugan Bay, Philippines)
- A place for people in protected areas – the indigenous Moken and park authorities along the Andaman Sea coast (Surin Islands, Thailand)

CARIBBEAN (SMALL) ISLANDS
- Beach management and planning for coastline change (eastern Caribbean islands)
- Coastal biodiversity benefits and ecosystem services (CARICOMP network)
- 'Fishing' for sustainable life-ways around the Gulf of Gonâve (Haiti)
- People and protected areas – the Portland Bight Sustainable Development Area (Jamaica)
- Socio-economic and environmental management along the south coast of La Habana Province (Cuba)

EUROPE
- Urban development and freshwater resources in small historic coastal cities (Mediterranean)
- Nordic-Baltic network for sustainable coastal development
- Circumpolar coping processes project (Canada and northern European countries)

INDIAN OCEAN (SMALL) ISLANDS
- Communication and education for sustainable coastal development (Sub-Saharan Africa and Indian Ocean Islands)

PACIFIC (SMALL) ISLANDS
- Motu Koitabu coastal urban villages in the National Capital District (Papua New Guinea)
- Wise use of swamps and riverine resources in the Moripi cultural area (Gulf Province, Papua New Guinea)
- Freshwater security in small islands (South Pacific)
- Sustainable village living in a small-island setting (Sanapau-Sataoa, Samoa)

List 2: UNESCO Chairs in sustainable coastal development

Chairs established

University Cheikh Anta Diop, Dakar, Senegal
University of the Philippines, Quezon City, Philippines

Chair projects initiated

University of Alexandria, Alexandria, Egypt
University of Bhavnagar, Bhavnagar (Gujarat), India
Universidade Eduardo Mondlane, Maputo, Mozambique (IOC)
Université de l'océan Indien, la Réunion
University of Papua New Guinea, Port Moresby, Papua New Guinea
Universidad de la República, Montevideo, Uruguay
University of Latvia, Riga, Latvia

LIST 3: CHARACTERISTICS FOR WISE PRACTICES

Long-term benefit:
The benefits of the activity are still evident 'x' years from now and they improve environmental quality.

Capacity building and institutional strengthening:
The activity provides improved management capabilities and education for the stakeholder groups as well as knowledge and efforts to protect the local coastal/marine environment.

Sustainability:
The activity adheres to the principles of sustainability (the extent to which the results will last and development will continue once the project/programme has ended).

Transferability:
Aspects of the activity can be applied to other sites, in or outside of the country.

Consensus building:
The activity should benefit a majority of the stakeholder groups, whilst bearing in mind that in some cases certain underprivileged groups may need to be treated as special cases.

Participatory process:
Transparent participation of all the stakeholder groups, as well as the involvement of individuals, is intrinsic to the process.

Effective and efficient communication process:
A multidirectional communication process involving dialogue, consultation and discussion is needed to attain awareness.

Culturally respectful:
The process values local traditional and cultural frameworks while also challenging their environmental validity.

Gender and/or sensitivity issues:
The process accounts for the many aspects of gender and/or other sensitive issues.

Strengthening local identities:
The activity provided a sense of belonging and self-reliance at various levels.

Legal national policy:
The activity adheres to current government environmental, economic, legal and social policies.

Regional dimension:
The activity should embody the regional economic, social and environmental perspective.

Human rights:
The activity should provide freedom to exercise fundamental human rights.

Documentation:
The activity and the lessons learnt have been well documented.

Evaluation:
The activity has been tested to determine the extent to which ICM has been achieved and/or wise practice characteristics utilised.

LIST 4: TOPICS AND APPROACHES COVERED BY THE EXAMPLE WISE PRACTICES

Topics	Approaches
Coastal erosion	Co-management
Education	Community empowerment
Environmental journalism	Environmental impact assessment
Fisheries	Government intervention
Historical building preservation	Inter-disciplinary
Horticulture	Integrated coastal management
Infrastructure development	Integrated rural development
Integrated coastal management	Inter-agency cooperation
Land use planning	International instruments
Mangroves	Legislation and regulations
Mineral resource exploration	New technology
Pollution monitoring	Public-private partnerships
Potable water	Publication
Protected areas	Social change
Sand mining	Traditional practices
Tourism	
Turtles	
Waste management	
Water quality	
Worker well-being	

PART C

ANNEXES

ANNEX I

LIST OF PARTICIPANTS

Dr Jorgen Ole Baerenholdt,
Associate Professor,
Department of Geography and International Development Studies,
North Atlantic Regional Studies,
Roskilde University,
PO Box 260, DK-4000,
Roskilde, DENMARK.
Tel: +45 46 74 21 55
Fax: +45 46 74 30 31
E-mail: job@ruc.dk

Dr Aboubakari Boina,
Coordinator for Scientific Research,
Centre national de documentation et recherche scientifique (CNDRS),
BP 169,
Moroni, COMOROS.
Tel: +269 733 623
Fax: +269 732 971 / 733 980
E-mail: cndrs@snpt.km
precncom@snpt.km

Dr Juan José Calvo,
Faculdad de Ciencias Sociales,
Universidad de la República,
Calle Maciel N° 1388 / 4, CP 11.000,
Montevideo, URUGUAY.
Tel: +598 2 409 80 46 / 408 85 60
Fax: +598 2 400 08 71
E-mail: calvo@fcsbd.edu.uy

Dr (Mrs) Gillian Cambers,
Coordinator,
COSALC/Sea Grant College Program,
University of Puerto Rico,
PO Box 9011,
Mayagüez, PUERTO RICO 00681 9011.
Tel: +1 787 832 3585
Fax: +1 787 265 2880
E-mail: g_cambers@rumac.uprm.edu
g_cambers@hotmail.com

Prof. Giovanni Campeol,
Professor,
Istituto Universitario di Architettura di Venezia,
Dipartimento di Analisi Economica e Sociale del Territorio (IUAV-DAEST),
Santa Croce, 1957,
Venezia, ITALY.
Tel: +39 0 41 257 21 67
Fax: +39 0 41 524 04 03
E-mail: giocamp@brezza.iuav.unive.it

Dr Omar Defeo,
Departamento de Recursos del Mar,
CINVESTAV Unidad Mérida,
AP 73 Cordemex,
97310 Mérida, Yucatán, MEXICO.
Tel: +52 99 812 917
Fax: +52 99 812 973 / 910 / 960
E-mail: odefeo@kin.cieamer.conacyt.mx

Prof. Salif Diop,
Faculté des lettres et sciences humaines,
Université Cheikh Anta Diop (UCAD),
BP 5436,
Dakar, SENEGAL.

Presently: UNEP,
Division of Environmental Information,
Assessment and Early Warning,
PO Box 47074,
Nairobi, KENYA.
Tel: +254 2 622 015
Fax: +254 2 622 788
E-mail: salif.diop@unep.org

Prof. Harish Chandra Dube,
Head of Department,
Department of Life Sciences,
Bhavnagar University,
Bhavnagar 364002,
Gujarat, INDIA.
Tel: +91 278 519 824
Fax: +91 278 426 706
E-mail: vidyut@bhavuni.ren.nic.in

Mr Abdelhaziz El Mouatez,
City Counsellor,
Conseil municipal d'Essaouira,
22, boulevard El Maghreb Arabi, Lot 4
Essaouira, MOROCCO.
Tel: +212 4 47 64 69 / 78 47 59
Fax: +212 4 47 67 85
E-mail: ag21ess@marocnet.net.ma

Dr Raimonds Ernsteins,
Director,
Centre for Environmental Sciences and
Management Studies (CESAM),
University of Latvia,
Blvd Rainis 19,
LV-1598, Riga, LATVIA.
Tel: +371 7 224 398 / 229 356
Fax: +371 7 228 286 / 820 113
E-mail: cesam@lanet.lv

Mr Peter Espeut,
Executive Director,
Caribbean Coastal Area Management
Foundation (CCAM),
PO Box 33, Lionel Town,
Clarendon, JAMAICA.
Tel: +1876 986 3344 / 3327
Fax: +1876 986 3956
E-mail: pespeut@infochan.com

Dr Stefano Fazi,
UNESCO Jakarta Office,
UN Bldg. 2nd Fl, J.Thamrin 14,
Tromolpos 1273,
Jakarta, INDONESIA.
Tel: +622 13 14 13 08
fax: +622 13 15 03 82
E-mail: s.fazi@unesco.org

Ms Regina Folorunsho,
Senior Research Officer,
Nigerian Institute for Oceanography and
Marine Research,
Wilmot Point Road, Bar-Beach,
PMB. 1279, Lagos, NIGERIA.
Tel/Fax: +234 1 619 517 / 613 903
E-mail: niomr@linkserve.com.ng

Prof. Miguel Fortes,
College of Science,
Marine Science Institute,
Seagrass Ecosystem Analysis Laboratory
(SEALAB),
UP Diliman, 1101,
Quezon City, PHILIPPINES.
Tel: +632 922 3959 / 3958
Fax: +632 924 7678
E-mail: fortesm@msi01.cs.upd.edu.ph

Mr Haraka Gaudi,
Social Scientist,
PNG Institute of Public Administration,
PO Box 1216, Boroko,
PAPUA NEW GUINEA.
Tel: +675 326 0433 / 0017
Fax: +675 326 1654
E-mail: gaudichn@upng.ac.pg

Mrs Narumon Hinshiranan,
Consultant,
Social Research Institute,
Chulalongkorn University,
Phyathai Road, Pathumwan,
Bangkok 10330, THAILAND.
Tel: +66 2 218 7375
Fax: +66 2 255 2353
E-mail: hnarumon@chula.ac.th

Mrs Wambui Kiai,
School of Journalism,
PO Box 30197,
Nairobi, KENYA.
Tel: +254 2 448 904 / 5
Fax: +254 2 448 906
E-mail: wlea@form-net.com

Dr Martin O'Connor,
Professor of Economic Science,
Centre d'Economie et d'Ethique pour
l'Environnement et le Développement (C3ED),
Université de Versailles
Saint-Quentin-en-Yvelines,
47, Bd Vauban,
78047 Guyancourt Cedex, FRANCE.
Tel: +33 (0)1 39 25 53 75
Fax: +33 (0)1 39 25 53 00
E-mail: martin.Oconnor@c3ed.uvsq.fr

Dr Samir Riad,
Geology consultant,
3, Abdel Monem Riad St, Apt. 26,
El Mohandeseen, Dokky,
Cairo, EGYPT.
Tel: +20 2 348 55 86 / 354 55 99
Fax: +20 2 348 55 86 / 354 52 96

Prof. Mamadou Sall,
Doyen,
Faculté des lettres et sciences humaines,
Université Cheikh Anta Diop (UCAD),
Dakar, SENEGAL.
Tel: +221 8 25 29 60
Fax: +221 8 25 49 77

Dr Audun Sandberg,
Associate Professor,
Bodo Regional University,
N-8002 Bodo, NORWAY.
Tel: +47 7551 7310
Fax: +47 7551 7457
E-mail: audun.Sandberg@hibo.no

Dr Hendro Sangkoyo,
Visiting lecturer,
School of Social Science and Planning,
Faculty of Constructed Environment,
Royal Melbourne Institute of Technology,
Room 8.7.24, Building 8, City Campus,
Swanston St,
Melbourne, Vic 3000, AUSTRALIA.
Tel: +61 3 9925 3483
Fax: +61 3 9925 1855
E-mail: hendro.sangkoyo@rmit.edu.au
hsangkoyo@yahoo.com

Mr Peter Varghese,
Chief Education Officer,
Department of Education,
CEO, Curriculum Development Unit,
PO Box 1869, Apia, SAMOA.
Tel: +685 21911 / 24614
Fax: +685 20004 / 21917
E-mail: jjjdv@samoa.ws

Mr Jean Wiener,
Director,
Fondation pour la protection
de la biodiversité marine (FoProBiM),
PO Box 642, Port-au-Prince, HAITI.
Tel: +509 45 2335
Fax: +509 46 3327/45 2335
E-mail: jwiener@compa.net
jwwiener@aol.com

UNESCO Port-au-Prince office:
Tel: +509 257 9429 / 8040
Fax: +509 257 8233

UNESCO SECRETARIAT

The following UNESCO Sectors and Programmes participated:

- Culture Sector;
  World Heritage Centre (WHC);
- Social and Human Sciences Sector;
  Management of Social Transformation Programme (MOST);
- Communication, Information and Informatics Sector;
- Education Sector;
- Natural Sciences Sector;
  International Geological Correlation Programme (IGCP);
  International Hydrological Programme (IHP);
  Intergovernmental Oceanographic Commission (IOC);
  Man and the Biosphere Programme (MAB).

OBSERVERS

Mr Pierre Agius,
Deputy Permanent Delegate
of Malta to UNESCO,
Ambassade de Malte,
92, avenue des Champs-Elysées,
75008 Paris, FRANCE.
Tel: +33 (0)1 56 59 75 90
Fax: +33 (0)1 45 62 00 36

Mr Gonzague Babinet,
Chargé de Mission,
Union internationale des associations et organismes techniques,
Comité environnement – Gestion intégrée des zones côtières,
Maison de l'UNESCO,
1, rue Miollis,
F-75732 Paris Cedex 15, FRANCE.
Tel: +33 (0)1 45 68 27 70
Fax: +33 (0)1 43 06 29 27
E-mail: uati@unesco.org

Mr Hari Baral,
Vice-President,
Association internationale des urbanistes,
26, rue Hippolyte-Maindron,
75014 Paris, FRANCE.
Tel: +33 (0)1 48 14 88 00
Fax: +33 (0)1 48 67 25 25
E-mail: satte@aol.com

Ms Gloria Batista da Vega,
Director,
Proyecto Desarrollo Sostenible en la Entrada del Caribe en el Canal de Panamá,
Universidad de Panamá,
PO Box 6-7483,
El Dorado, PANAMA.
Tel: +507 223 7065 / 613 7844 (home)
+507 223 6397
Fax: +507 983 6421
E-mail: batistag@tivoli.si.edu

Ms Mariela Crosta,
Counsellor,
Permanent Delegation of Uruguay to UNESCO,
Maison de l'UNESCO,
1, rue Miollis,
75732 Paris Cedex 15, FRANCE.
Tel: +33 (0)1 45 68 34 72

Ms Sylvie Deraime,
Free-lance journalist,
Le Monde,
96, Avenue Foch,
94120 Fontenay-sous-Bois, FRANCE.
E-mail: oblaise@club-internet.fr

Mr Salah-Eddine El Honsali,
Assistant Permanent Delegate of Morocco to UNESCO,
Maison de l'UNESCO,
1, rue Miollis,
75732 Paris Cedex 15, FRANCE.
Tel: +33 (0)1 45 68 34 27
Fax: +33 (0)1 45 67 18 69

Mrs Chafica Haddad,
Permanent Delegation of Grenada to UNESCO,
21bis, avenue d'Iéna,
75116 Paris, FRANCE.
Tel: +33 (0)1 53 23 80 50
Fax: +33 (0)1 49 52 00 14

Dr Huib M.A. Jansen,
Research co-ordinator,
General Environmental Economics,
Institute for Environmental Studies, IVM,
Free University of Amsterdam,
De Boelelaan 1115,
NL-1081 HV Amsterdam, THE NETHERLANDS.
Tel: +31 20 444 9560
Fax: +31 20 444 9553
E-mail: huib.jansen@ivm.vu.nl

Mr Vijolite Mitulis,
Assistant to the Ambassador,
Permanent Delegation of Latvia to UNESCO,
Ambassade de Lettonie,
6, Villa Saïd,
75116 Paris, FRANCE.
Tel: +33 (0)1 53 64 58 18
Fax: +33 (0)1 53 64 58 19
E-mail: ambleton@easynet.fr

Mr Ravaomalala Rasoanaivo,
Assistant Permanent Delegate of Madagascar to UNESCO,
40, rue du Général Foy,
75008 Paris, FRANCE.
Tel: +33 (0)1 44 90 90 93 / 42 93 34 77
Fax: +33 (0)1 45 22 22 89

His Excellency Mr Thoueybat Saïd Omar,
Ambassador,
Permanent Delegate of Comoros to UNESCO,
20, rue Marbeau,
75116 Paris, FRANCE.
Tel: +33 (0)1 40 67 90 54
+33 (0)1 45 68 26 44

Mr Iman Santoso,
Deputy Permanent Delegate of Indonesia to UNESCO,
Maison de l'UNESCO,
1, rue Miollis,
75732, Paris Cedex 15, FRANCE.
Tel: +33 (0)1 45 68 30 73
Fax: +33 (0)1 45 66 02 37

His Excellency Mr Avi Shoket,
Ambassador,
Permanent Delegate of Israel to UNESCO,
Ambassade d'Israël,
3, rue Rabelais,
75008 Paris, FRANCE.
Tel: +33 (0)1 40 76 55 00
Fax: +33 (0)1 40 76 55 55

Ms Jacqueline Hantanirinarisoa Simon,
Councellor,
Permanent Delegate of Madagascar to UNESCO,
40, rue du Général Foy,
75008 Paris, FRANCE.
Tel: +33 (0)1 42 93 33 46
Fax: +33 (0)1 42 93 33 61

Dr Marc Steyaert,
Marine biologist,
c/o UNESCO (SC-CSI),
1, rue Miollis,
75732 Paris Cedex 15, FRANCE.
Tel: +33 (0)1 45 66 91 44 (home)

Dr Vitali Sytchev,
Associate Professor,
Russian State Hydrometeorological University,
98, Malookhtinsky ave,
195196 St Petersburg,
RUSSIAN FEDERATION.
Tel: +7 812 224 3061
Fax: +7 812 444 6090 / 164 0827
E-mail: eco@mail.dux.ru
sytchev@mail.sici.ru

Mr Kappa Yarka,
Permanent Delegate of Papua New Guinea to UNESCO,
Ambassade de Papouasie-Nouvelle-Guinée,
25, avenue George V,
75008 Paris, FRANCE.
Tel: +33 (0)1 53 23 96 00
Fax: +33 (0)1 53 23 96 09

ANNEX 2

OVERHEADS ON 'WISE PRACTICES' PREPARED BY THE PARTICIPANTS DURING THE WORKSHOP

BAERENHOLDT

Wise practices for researchers:

- Reveal the knowledge (tacit and coded) in existing practices.
- Clearly define the specific problem/issue and its context/domain.
- Ask who needs the wise practices (besides international scientific fora).

If the problem is marginalisation/exclusion, general wise practices could be:

- Innovative integration based on local control of relevant resources/ 'capitals'.
- Building (on) communities of local trust.
- Forming meaningful identities.

These are normative indicators

One example of 'wise practice' in Nordic countries could be:

- Non-local economic integration based on local ownership and local linkages.
- Municipal self-government of the local welfare state.
- Plurality of associations and networks.

BOINA

ANALYTICAL FORM, WISE PRACTICES – THE CASE OF POPULATION PARTICIPATION

First phase: before implementation of the pilot project

- Population participation is an unavoidable principle.
- Promote participation and dynamism.
- Listen, observe and strive to understand.
- Adopt common project philosophy and objectives.
- Establish a network of partners.
- Encourage and develop a multi-disciplinary approach.

Second phase: during implementation of the pilot project

- Simplify administrative procedures.
- Effective participation of population or representatives.
- Teaching and training of populations or representatives.
- Flexibility and possibility to modify according to experiences.
- Decentralisation and democratisation.
- Communication and awareness building on both positive and negative results.
- Sound exploitation of resources without ignoring rights of populations.
- Think and work in the perspective of sustainability and replicability.

Third phase: after implementation of the pilot project

- Good local governance: democracy, information, education, exploitation of resources, poverty alleviation.
- Cyclic assessment of participation (and of other wise practice dimensions).

CAMBERS

A PROPOSED PROCEDURE

First a title: wise practices for the management of change and improvement of the quality of life in coastal regions and small islands.
Second a definition of ICM (e.g. that proposed by M. Fortes).
Third a definition of wise practices: Wise practices are actions, processes, principles or decisions that contribute significantly to the achievement of environmentally sustainable, socially equitable, culturally appropriate, and economically sound development of coastal regions and small islands.
Fourth a critical point by point examination of the characteristics of wise practices.

DEFEO

STEPWISE PROCESS, I.E. LEARNING BY DOING

1. Identify the problem: microscale (local) pilot experiment.
2. Identify the person(s) who has/have problems.
3. Clear statement of management options: use of control variables, e.g. fishing effort, fish mortality.
4. Identify indicators of system performance: use of state variables, e.g. net revenues, stock biomass.
5. Monitor and learn about processes governing the system.
6. Evaluate system performance: multi-criteria approach: bio-socio-economic + quantitative indicators, e.g. risk/uncertainty.
7. Improve management decisions: precautionary, risk-averse approach.
8. The extent of generalisation: to broaden applications, must be tested in other contexts/sites, i.e. move to macro-scale experiments.

CO-MANAGEMENT AS A WISE MANAGEMENT PRACTICE EXAMPLE

- Co-management is transferable. However, its implementation is not transferable due to cultural perceptions, legal framework, political climate, development of basic/applied scientific knowledge.
- In fisheries, co-management is a synergistic mechanism in which the fishers' wisdom (traditional and factual knowledge) and basic and applied scientific research are used; the resource managers and the legislators have joined forces to achieve a better management product (e.g. Chile).
- Indicators of the wise practice: ecological, i.e. stock abundance, individual sizes and weights (short/long term); economic indicators, i.e. variable costs (short term), employment.
- As the fishery system (i.e. the resource, the environment, the resource users and the decision-making sub-systems) is highly dynamic, a monitoring scheme based on a robust methodological protocol must be performed.
- Trade-offs among conflicting quantitative indicators might be evaluated through multiple criteria optimisation procedures.
- Unwise practices: top-down approach and open access to resources.

DIOP ET SALL

Comments on list of criteria

- Long-term benefit and institutional strengthening are relevant criteria.
- Transferability: especially methodological aspects – to take into account the temporal dimension which implies necessary adaptations;
- Governance, minority benefits, empowerment of users seem to be important more from the political context than to be considered as effective indicators.

Wise practice management examples

- Integrated Management Plan conceived and implemented on a collaborative and participatory basis involving local population, scientists, decision-makers and NGOs, including institutional reinforcement and capacity-building.
- Within the same process, develop a common language as a communication tool, which is comprehensible to all actors: natural and social scientists, local community members, decision-makers, resource managers, etc.

DUBE

WISE PRACTICES FOR SUSTAINABLE DEVELOPMENT OF SHIP-BREAKING ACTIVITY AT ALANG IN INDIA

1. Organising workshops and seminars for the different stakeholders. The contents of the workshops will be prepared keeping in view the concern, interest and level of knowledge of the interest groups.
2. Involve local people's representatives in parliament, assembly, municipal corporation and environmental journalists to work for the goal of sustainable development or eco-friendly development.

Awareness package seminar for ship-owners/entrepreneurs on:

- Sustainable technology for ship breaking
- Disaster management
- Standards available for ship breaking

ERNSTEINS

A. Sustainable coastal development indicators

1. Indicators should be quantitative, involve public participation, easily understandable, locally measurable.
2. If such indicators are not available, then describe example wise practices and wise practice management options, both qualitative and quantitative.
3. Ideally combine 1 and 2, particularly not forgetting values and behavioural change.

B. Sustainable coastal development

1. This should include ecosystem management and socio-economic management, not separately but in direct and dynamic interaction as part of a comprehensive system.

ESPEUT

INDICATORS TO IDENTIFY WISE-USE PRACTICES IN COASTAL MANAGEMENT

The purpose of employing wise-use practices may be more ecological (to sustain coastal areas in a state of environmental health long-term) where:

- The full range of coastal ecosystems is present (ecosystem biodiversity)
- Where each ecosystem is performing all its functions efficiently
- Where species biodiversity is maintained
- Where resources are extracted sustainably.

Fundamentally, practices are wise if they achieve the above goals. Therefore, indicators which measure the above situations are indicators of wise-use practices (pre-test/post-test). Controls may or may not be available. Monitoring parameters of environmental health longitudinally should provide a sensitive indication of progress.

Wise-use practice applicable at low population and extraction levels may not be wise in heavily populated areas or when extraction levels are high.

The purpose of employing wise-use practices may be more developmental (to sustain human society in a state of economic and social health long-term) where:

- Sustainable prosperity is required.
- Social (including gender) equity is required.
- The population possesses enough information about its economy, culture and environment. Sustainable recreation is required.
- It is required that members of society have some direct control over their affairs (empowerment).

The question is whether, in a world of increasing population and prosperity, ecological sustainability can be attained without a development approach.

These development concepts are value-laden. Care must be taken that western democratic ideals are not imposed on the rest of the world. On the other hand, culture is not an independent variable, and societies must be encouraged to evaluate their social, economic and political culture, and to determine their developmental goals.

Those who would work for ecological sustainability must conduct social scientific assessments:

- Economic analysis
- Social analysis
- Power analysis
- Technology analysis

A set of indicators will be required to measure the achievement of development goals, and these will also need to be monitored longitudinally.

EL MOUATEZ

1. Determine scope of action

e.g. UNESCO project 'Urban development and water resources: small coastal cities'.

2. Define wise practice themes to be implemented

e.g. The city of Essaouira, as an example of a pilot project, benefits from a technical partnership in several areas (restoration of historical monuments, awareness building of the local population, solid and liquid waste management).

Practices that constrain sustainable development and impact on the environment are unwise practices.

3. Adapt wise practices to local context as they are transferred

e.g. The cities of Madia and Saida will benefit from previous experience and knowledge.

To decide whether a practice is wise or unwise will meet easy consensus. However, the problem lies with its implementation at the local level (tradition, culture, history).
This implementation is a long multistage process, each stage representing an unwise practice.
Education is a key element in awareness building of local population on wise practices and helps ensure the sustainability of the practice.

FORTES

On wise practices:

If defining wise practices, from whose point of view is this being considered.
For practical purposes, the definition is acceptable.

On indicators: simplistic

SMARTER

- **S** Simple
- **M** Measurable
- **A** Actual
- **R** Replicable
- **T** (Timeless) Transferable
- **E** Equitable
- **R** Reliable

Others:

1. Empowerment – confidence; reversal in learning
2. ICM = adaptive, not deterministic.

GAUDI

WISE PRACTICES FOR MOTU KOITA LANDOWNERS

DEFINITION: sustainable use of mangroves, gum trees, reef products and fish for daily living and improvement of quality of life

UNWISE PRACTICES:

- Depletion of mangroves
- Decimation of reef life forms
- Sewerage and waste deposits
- Major infrastructure, excavation work

CAUSE OF UNWISE PRACTICES:

- Urbanisation and limited space problems
- Paternalistic – arrogant attitude of government at local and national levels
- Developers/government conspiracy

STRATEGY – CRITERIA FOR WISE PRACTICES:

- Public awareness through village-based seminars
- Use of (mass) media
- CSI as an instrument for rallying support
- local lobby groups; NGOs, land owners

HINSHIRANAN

WISE	UNWISE
Quasi-nomadic	Settled/permanent structure; transient visitors
Renewable resources/bio-degradable waste	Non-renewable resources/non-degradable waste
Alternate foraging grounds	Tourists concentrate in small area (park facilities)
Sufficient economic/no rejects	Accumulation/stockpiling/lots of rejects

- Community self-reliance
- Ethnic identity/pride
- Local participation in decision-making

Core indicators,
Regional indicators,
Specific community-based indicators.

KIAI

1. Definition: appears to be all-encompassing. Idea of a process is good because it implies dynamism, changes and continuity.
2. Caution on awareness – Proposal: effective communication as primary process in institutional strengthening.
3. Incorporate minority as an emphasis or special reference of majority benefit (otherwise: no majority).
4. Empowerment: does capacity-building include aspects of empowerment?
5. Need more of a framework with guidelines.

RIAD

WISE PRACTICES FOR CSI DEVELOPMENT

Definition: Action on local or regional scale that satisfies the concept of sustainable development and contributes to all or any of the components of human development indicators or index.

In addition, the following may be considered:

- Activity within the framework of local traditions and cultural background
- Participation of all players is ensured
- Capacity building through training, on-the-job training, education or any other form is included
- Approaches followed could be considered a model transferable to similar areas within the same country or outside
- Consider a relative long-term applicability
- Flexible for adjustments and modifications

SANGKOYO

Information repository linked by
A demand driven clearing house mechanism consisting of inter regional and local interpretive efforts to
Smart protocols that support policy reform and social learning efforts of our network.

Making sense of our collaborative effort – action/organisational framework:
Cross-regional exchanges (taking into account history, and region specific processes) linked via
A bridging mechanism to
Local initiatives/social action in CSI resource management, and
Past/present trends in resource use/capital investment, and
Public policy framework (linked to CSI resource use and sustenance of the urban majority).

Making sense of our collaborative effort – urgent and strategic issues.
Urgent issues include cross-regional exchange, intra-regional exchange, cross-site exchange and on-site action.
Development of responsive fiscal and economic instruments and the sound spatial management of change lead to:
The next regime of capacity development and a regulatory/public policy framework, which in turn lead to:
Resource sharing and enlargement of the political and cultural space for local social management protocols, practices and entities.

SYTCHEV

DEFINITION

- Has the activity been fully documented and does it provide comprehensive materials for the regions of interest?

WIENER

DEFINITIONS

- Wise practice: integration of local community groups as much as possible into the activity to develop a sense of ownership.
- Unwise practice: bringing in individuals or groups from other areas causing distrust and no sense of ownership (local) of the activity.

VARGHESE

DEFINITION

- Any activity that helps conserve/protect any natural process or phenomenon at a sustainable level.

ANNEX 3

IMPLEMENTING WISE PRACTICES

PAPER FOR THEMATIC DISCUSSION III

based upon Wise Practice Papers and electronic discussions

Are we not compromising our efforts by focusing upon developing 'wise practices', but forgetting about their implementation (feasibility, costs and human resources)? (G. Cambers)

TAKE INTO ACCOUNT LOCAL CONTEXTS OF GOVERNANCE

The importance of national context is underlined by A. Boina, using the example of Indian Ocean SIDS: 'National contexts differ from country to country. These are not merely local variations, but fundamental differences in institutional frameworks upon which the relationship with local populations is founded and evolves. The nature of state authority ranges across a broad spectrum – from the centralised governments of Mauritius and the Seychelles, the opposite situation in the Comoros, to the fluid central government structure in Madagascar and the French inspired regional set up in Reunion. Furthermore, the capacity, indeed the determination, of civil society to organise itself outside of official political structures, as community associations, NGOs and grassroots organisation, illustrates the variety of possible styles of local government. They include (as in the Seychelles) subsequent approval by citizens of central government decisions and (in the Comoros) community actions that take the place of government measures. The very capital of partnership, the foundation and means of integrated coastal management, must be developed on the basis of these very distinct local realities.'

UTILISE EXISTING INSTITUTIONAL FRAMEWORKS

As G. Cambers indicates: 'Most institutional frameworks in the Caribbean islands are sectoral in nature and will likely remain so. (...) New broader based agencies are unlikely to come into existence in the short to medium term. One way around this constraint is to look for similar functions amongst agencies and try and coordinate these. Such wise practices can be worked out within existing institutional structures, they provide for increased efficiency by maximising the use of physical and human resources'.

CAREFULLY ASSESS THE INCREASED TIME REQUIRED FOR INTEGRATION AND COORDINATION

When implementing 'wise practices', G. Cambers reminds us that it is very important to carefully assess the human resource time commitment. In her view, the failure to cost the additional time required for coordination and integration is one of the reasons why the smaller Caribbean islands have had few success stories with ICAM.

TIMING IS EVERYTHING

G. Cambers notes: 'Another observation relating to implementation is timing. Post natural disasters often provide excellent windows in which to implement a wise practice. The public and politicians are often more receptive to changes in practice after a natural disaster such as a hurricane. However,

it pays to lay the groundwork, before the natural disaster, even if political support is weak or half hearted. Provided the groundwork has been laid, it is often possible to implement the wise practice in the post disaster window.'

Overcoming adverse political conditions

P. Espeut asks: How to overcome adverse political conditions to deepen the participation of civil society in decision-making for sustainable development? The question of 'political interest and will' is fundamental to any attempt at implementing 'wise practice'.

Finding an equilibrium between potentially conflicting priorities

N. Hinshiranan reminds us that implementation means finding the right balance between conflicting goals. She specifically raises the issue of balancing environmental or biodiversity conservation, with resource use by local communities.

ANNEX 4

PRESENTATION ON THE WORLD CONFERENCE ON SCIENCE

Susan Schneegans, UNESCO, on behalf of the Conference Secretary

Ladies and gentlemen,

You may be wondering why a presentation on the forthcoming World Conference on Science has been included in the programme of a workshop on wise coastal development practice. This is because the present workshop has been deemed an official associated meeting of the World Conference. As such, the workshop is invited to submit recommendations that will be circulated to participants during the six day Conference in Budapest next June. Your input will serve to stimulate debate and may influence final decisions. It will also be taken into account during the follow up to the Conference.

I am addressing you on behalf of the Secretary to the World Conference on Science, Howard Moore, who was unfortunately unable to be here today because he is attending another associated meeting on the other side of the world, in Sydney.

'Next year's World Conference on Science is a unique chance to reassess the dynamics of international scientific co-operation and address the challenges it currently faces'. It is not me who is making this claim, but rather the latest issue of a leading science journal *Nature*, but I share the author's sentiments.

Great hopes are riding on this Conference and we must not disappoint them. The World Conference on Science will be a golden opportunity for the scientific community, decision-makers and representatives of society at large, including industry and youth, to discuss what they expect of science in the 21st century and how society can give science the means to accomplish this task on a world scale. You will have gathered from the wide range of participants I have just listed that the World Conference on Science will be neither a scientific meeting nor an intergovernmental meeting but rather a combination of the two, a forum bringing together scientists and governments to discuss, on equal terms, where science should be heading in the next century. It was appropriate that UNESCO choose as its major partner in this undertaking the foremost non-governmental organization in the world representing the scientific community, the International Council of Scientific Unions (ICSU), which regroups some 25 international scientific unions and 95 scientific academies or research councils around the world. ICSU also happens to be one of UNESCO's most long standing partners.

The Conference will concentrate on strengthening the two-way commitment between the natural sciences and society by revising what I shall refer to hereafter as the science-society contract. Scientists are not islands, contrary to the caricature of the scientist cooped up for days at a time in his or her laboratory, oblivious to the outside world. This image may not have raised an eyebrow at the time Vannevar Bush was writing this famous report to President Harry Truman, entitled, 'Science – the endless frontier', which launched a linear reservoir model under the terms of which basic research led to applied research and ultimately to technological development.

But times have changed. The linear model has lost its relevance as the boundaries between basic and applied science have blurred. The end of the Cold War, coinciding with breakthroughs in information and communication technologies, has replaced

power-bloc politics by a global race for economic competitiveness. A casualty of this evolution has been North-South co-operation in science. Indeed, much of the technical assistance offered to developing nations during the Cold War had the tacit goal of encouraging these countries to embrace a particular political ideology. Today, the justification for science as a vehicle of defence and national prestige is less evident. At the same time, society has come to expect science to give priority to addressing societal problems and needs. It has been said that, 'The logic of the present social contract is backwards, because it starts with research and tries to prove it useful, rather than starting with national needs and proving that research addresses them.'

A major component of the World Conference on Science will be the drafting of a new science-society contract to ensure that science does take into account the needs and concerns of society and that society in return acknowledges the enormous benefits science can bring, by making a greater commitment to science in terms of political and financial support. This new science-society contract will take the concrete form of a *Declaration on Science* accompanied by a *Science Agenda – Framework for Action* detailing the practical implementation of the principles outlined in the Declaration. It is hoped that, after discussion, both documents will be adopted by the Conference.

The Conference will be divided into three principal forums:

Forum I – Science: Achievements, Shortcomings and Challenges

Forum II – Science in Society

Forum III – Towards a New Commitment to Science.

There is not time to go into detail here about all the Conference themes – these are outlined in the Programme circulated to you – but I would like to touch briefly on one or two that may have particular relevance to the present workshop.

Horgan gave his 1996 article the intriguing title, 'The End of Science: Facing the Limits in the Twilight of the Scientific Age'. His verdict is a little premature when so much still remains to be done! For if we can be proud of the scientific achievements of the past fifty years, there is no room for complacency. There are still shocking disparities between rich and poor: for example, there are more telephone lines in Manhattan, New York, than in the whole of sub-Saharan Africa. Science will have a key role to play in development next century; the Conference will underline the need for science to address such social issues as economic growth, employment, social equity, public health, poverty and food security. Also demanding urgent attention by developing and developed countries alike are such major environmental issues as global climate change, freshwater scarcity and quality, effective protection of the environment, prudent use of natural resources and the protection of biodiversity. These social and environmental issues are inextricably linked. By the very complexity of problems today, working towards the goal of sustainable development implies an integrated approach incorporating trans- and interdisciplinarity.

The contribution other forms of knowledge can make to problem-solving and the advancement of knowledge, particularly in the field of environment and medicine, will be explored by the Conference during an afternoon roundtable devoted to traditional knowledge, methods and tools.

Arguably the most far-reaching insight science has delivered in the last few decades is that human beings are a major environmental force on the planet: we are inflicting irreversible changes on the biosphere, biogeochemical cycles, the global climate system and the Earth's natural landscapes. The quality of life – and perhaps even the survival of life – on our planet next century will depend on the success with which science tackles the problems generated by this growing influence.

But science cannot succeed alone. Public support is essential if the increasingly complex social and environmental problems facing the world today are to be solved.

However, if science needs society, society would seem to harbour doubts as to whether it needs science. In the developed countries at least, confidence in science has declined in recent years. Now that the threats generated by the Cold War have dissipated, both governments and the general public are calling into question their past unqualified support for science. While improving scientific literacy worldwide is a desirable goal, mistrust of science should not be simply attributed to public ignorance. The human tragedies involved in non-natural disasters like the careless use of DDT, the toxic chemical spills from Bhopal or the nuclear reactor incident in Chernobyl provide a ready explanation for the current crisis in confidence. While risks cannot be completely eliminated, it is of utmost importance to improve transparency and risk control.

The move from producer-led science to user-led research implies monitoring by society and scientists alike of the ethical, social and economic consequences of discoveries and new technologies; in other words, it implies doting science with a conscience. Scientists who disassociate themselves from the practical applications of their research by assuming a neutral stance are denying the tight bond linking science to technology. If public confidence is to be restored, scientists must speak up about potentiel risks linked to the application of science and there must be public consensus on the acceptable levers of risk for different kinds of technology. But in concrete terms, how does one foster democratic debate while maintaining the autonomy of science? How does one ensure greater citizen participation in the decision-making process? The Swiss have come up with one option: the referendum. Some 67% of the Swiss electorate recently voted not to ban the production, acquisition and distribution of transgenic animals and the deliberate release of any genetically engineered organisms.

I should perhaps underline, in light of my earlier reference to the move from producer-led to user-led research, that this trend in no way implies that basic research has become less important for development. In fact, the reverse is true. Basic science is essential for development, not only because it creates the necessary new knowledge to solve today's increasingly complex problems and provides a sound basis for the technological capabilities that are indispensable to innovation, but also because science education, when it is made available to all without discrimination, produces a scientifically literate population and qualified workforce that are a nation's most precious resources.

Governments in both developing and developed countries have a key role to play in supporting basic research. Although private sector research is expanding rapidly, the private sector tends to prefer to invest in applied research, since long-term research is contrary to the economic law of a rapid return on investment and the very nature of basic research – its unpredictability – means that, be it curiosity-driven or problem-driven, basic research tends to offer benefits or find economic applications only years or decades even after a project's inception. Unfortunately, governments themselves tend to think in two- to three-year cycles. Yet what can only two years of monitoring tell us about global climate change, for example? Scientists attending the Conference will try to bring home to decision-makers that a short term approach to basic research is a short-sighted approach.

One consequence of globalization and the growth in private sector research is that science is coming under increasing pressure to move from being a 'public good' – or public property – to being a 'market good'. There is a very real danger of knowledge becoming just another commodity on the open market.

The World Conference on Science will examine ways of safeguarding and promoting

equity of access to information. Allowing science to become a 'market good' would have disastrous consequences for scientists in developing countries, who are the most vulnerable to the commercialization of scientific data because they often lack adequate resources to compete with colleagues in more affluent nations. The developing world is already marginalized within science by the dominance of the English language in the international scientific community and by a system of assessing scientific productivity that relies solely on citation analysis even though scientometric institutes index mainly leading international journals. Greater South-South co-operation is one strategy for addressing this problem.

The new information and communication technologies have helped reduce the costs of scientific research by making data collectively available – data which are often very expensive to gather or produce. Collective data sharing is leading to new institutional configurations such as 'virtual centres' and establishing electronic relations or 'collaboratories' between researchers around the globe. The increasing use of electronic media should facilitate information transfer and allow international research networks to develop.

But there are tensions. On the one hand, science needs unrestricted access to data worldwide. On the other, the private sector has a strong interest in protecting data in some areas. Although databases are not covered by copyright because they do not meet the criterion of creativity in the arrangement of data, some sectors of the information industry are calling for a new copyright clause to protect their investment in creating databases and to guard against piracy. Extending these rights could impose serious constraints on science and education, undermining the ability of researchers and educators to access and use scientific data. It would make it more difficult for scientists to compile global or regional databases, or to re-use and re-combine data for publication or instructional purposes. If we are not vigilant, these new information and communication technologies could have the perverse effect of widening even more the gap in knowledge between the developed and developing countries.

The need to revitalize international co-operation is self-evident, not only from the viewpoint of a more equitable sharing of information, but also in order to tackle major national, regional and global problems effectively at an affordable cost, through the sharing of facilities, equipment and human resources. In this regard, could not the resources freed up by the conversion of military-industrial complexes to civilian use be redirected to addressing major regional or global problems?

The World Conference on Science will examine all these questions and more. I should like to conclude by saying – at the risk of disappointing Horgan – that the end of the XXth century will no more mark the End of Science than it will the End of History. What it should mark – if next year's Conference attains its goal – is the beginning of a new commitment to science by developing and developed countries alike.

Thank you, ladies and gentlemen, for your attention.

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ANNEX 5

ACRONYMS

ACCE: African Council for Communication Education (p. 47)
ADEFRAM: Association for the development of exchanges between France and Morocco (p. 39)
AIDAB: Australian International Development Assistance Bureau (p. 24)
ASSBY: Alang and Sosia Ship-Breaking Yard (p. 20)
CARICOMP: Caribbean Coastal Marine Productivity (p. 98)
CCAM: The Caribbean Coastal Area Management Foundation (p. 42)
CCPP: The Circumpolar Coping Process Project (p. 37)
CESAMS: The Centre for Environmental Science and Management Studies (p. 34)
CIDA: Canadian International Development Agency (p. 59)
CINVESTAV: Centro de Investigaciones y Estudios Avançados (Mexico, p. 28)
COSALC: Coast and Beach Stability in the Caribbean (p. 12)
COOPECHE: Departmental fishing federation (Haiti, p. 42)
CPS: Cahier de Prescriptions Spécifiques (p. 38)
CRODT: Centre de Recherche Océanographiques de Dakar-Thiaroye (Sénégal, p. 49)
CSE: Centre de Suivi Ecologique et des Milieux Naturels, (p. 49)
CSI: Environment and Development in Coastal Regions and in Small Islands (UNESCO interdisciplinary/cross-sectoral platform) (p. 3)
CZM: Coastal Zone Management (p. 33)
DINAMA: National Administration for the Environment (Uruguay, p. 11)
EcoPlata: Towards Sustainable Development of the Río de la Plata Coastal Zone. (p. 9)
EDG: electronic discussion group (p. 3)
ENDA TM: Environment and Development in the Third World (p. 49)
ESP: Ecole Supérieure Polytechnique, UCAD de Dakar (p. 49)
EU: European Union (p. 33)
FASEG: Faculté des Sciences Economiques et Gestion, UCAD (p. 49)
FLSH: Faculté des Lettres et Sciences Humaines, UCAD (p. 49)
FMPOS: Faculté de Médecine, de Pharmacie et d'Odonto-Stomatologie, UCAD (p. 49)
FoProBiM: Fondation for the Protection of the Marine Biodiversity (p. 42)
FSJP: Faculté des Sciences Juridiques et Politiques, UCAD (p. 49)
FST: Faculté des Sciences et Techniques, UCAD (p. 49)
GIS: Geographic Information System (p. 34)
GTI: Inter-institutional Technical Group (p. 9)
ICAM: Integrated Coastal Area Management (p. 3)
ICM: Integrated Coastal Management (p. 3)
ICRD: International Center for Research on Development (Canada, p. 11)
ICSU: International Council of Scientific Unions (p. 121)
ICZM: Integrated Coastal Zone Management (p. 3)
IHP: UNESCO's International Hydrological Programme (p. 19)
INAPE: National Fishery Institute (Uruguay, p. 11)
ISEE: International Society for Environmental Ethics (p. 55)
ISRA: Institut Sénégalais de Recherches Agricoles (p. 49)
MARNDR: Ministry of Agriculture of Haiti (p. 43)
MEA: Marine Exploitation Areas (p. 30)
MERCOSUR: Southern Cone Common Economic Market (p. 9)
MOST Programme: Management of Social Transformations (p. 4)
NAFTA: The North American Free Trade Agreement (p. 85)
NEPP: The National Environmental Policy Plan for Latvia (p. 34)
NGO: non-governmental organizations (p. 16)
NRCA: National Resource Conservation Authority (p. 43)

OCEANIUM: Association pour l'exploitation et la protection des fonds sous-marins de la Presqu'île du Cap-Vert au Sénégal (p.49)

ORSTOM (now IRD): Institut français de Recherche Scientifique pour le développement en coopération (p. 49)

PACSICOM: Pan-African Congress on Sustainable Integrated Coastal Management (p. 4)

PBFMC: Portland Bight Fisheries Management Council (p. 43)

PHARE: Poland, Hungary: Aid for the Reconstruction of the Economy (p.34)

PMRVP: Philippine Mangrove Resource Valuation Project (p. 60)

SARCOM: Submarine Archaeology and Coastal Management (p. 19)

SCD: Sustainable Coastal Development (p. 35)

SENAGROSOL: Société de Consulting en Aménagement des Sols (p. 49)

SIDS: Small Island Developing States (p. 4)

SMARTER: Simple; Measurable; Actual; Replicable; Timeless–Transferable; Equitable; Reliable (p. 69)

SOHMA: Army Oceanography, Hydrography and Meteorology Service (Uruguay, p. 10)

UCAD: Université Cheikh Anta Diop, Dakar (Sénégal, p. 49)

UCO: UNESCO Cairo Office (p. 20)

UNDP: United Nations Development Programme (p. 11)

UNEP: United Nations Environment Programme (p. 43)

UNESCO: United Nations Educational, Scientific and Cultural Organization (p. 3)

VALSE: Valuation for sustainable development (EU programme) (p. 55)

VARAM: Ministry of Environmental Protection and Regional development of Latvia. (p. 34)

WMP: wise management practices (p. 12)