

ISME/cenTER Aarhus
Report on the South and Southeast Asia Regional Workshop
on
the Sustainable Management of Mangrove Forest Ecosystems



Asian Institute of Technology, Bangkok, 21-23 October 2002

Donald J. Macintosh and Elizabeth C. Ashton

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Participants in the World Bank Funded “Code of Conduct for Sustainable Mangrove Management” Workshop, Asian Institute of Technology, Thailand, 21-23 October 2002.



Back Row: Mr Murugadas Loganathan, Mr Rodolfo Ungson, Dr Elizabeth Ashton, Mr Vann Monyneath, Dr Neaz Siddiqi, Dr Sonjai Havanond, Dr Mai Sy Tuan

Front row: Mr Thai See Kiam, Prof. Sanit Aksornkoae, Dr Marta Vannucci, Prof. Don Macintosh, Dr Jurgenne Primavera

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WORKSHOP AGENDA

A Code of Conduct for Sustainable Management of Mangrove Forest Ecosystems

Sunday 20th October

Participants arrive in Bangkok and transfer from airport to AIT Conference Centre by taxi. Informal dinner at AIT from 7 pm.

Monday 21st October

08.30

Registration of Workshop participants.

09.00

Opening Ceremony and Group Photograph

09.15

Introduction to Workshop Objectives

09.45

Coffee Break

10.15-12.30

Session I: Key Issues from the Prepared Case Studies (2001) Malaysia, Philippines, Thailand and Vietnam followed by presentations on management of mangroves in Bangladesh and Cambodia.

12.30-13.30

Lunch

13.30-15.00

Session II: Discussion of the Conceptual Framework for a Code of Conduct for Mangrove Forest Ecosystems. Articles 1 and 2*.

15.00-15.30

Coffee Break

15.30-16.30

Session III: Working Group discussions

16.30-17.00

Presentation of Working Group conclusions

18.30

Dinner at AIT

Tuesday 22nd October

08.30-10.00

Session IV: Discussion of Articles 3, 4 and 5 in Working Groups

10.00-10.30

Coffee Break

10.30-12.00
Groups

Session V: Discussion of Articles 6, 7, 8 and 9 in Working

12.00-13.30

Lunch

13.30-15.00

Session VI: Working Group discussions continued.

15.00-15.30

Coffee Break

15.30-16.30
Groups

Session VII: Discussion of Articles 10 and 11 in Working

16.30-17.00

Working Group discussions and presentations

18.30

Dinner at local restaurant

Wednesday 23rd October

08.30-10.00

Session VIII: Discussion of Articles 12, 13 and 14 in Working Groups

10.00-10.30

Coffee Break

10.30-12.00

Session IX: Working Groups complete drafting of Code of Conduct

12.00-14.00

Lunch

14.00-16.30

**Session X: Preparation and Review of Draft Code of Conduct
and Workshop Report**

16.30

Close of Workshop

*The Articles relate to the Conceptual Framework for the Code of Conduct already circulated by email and provided at the Workshop.

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WELCOME ADDRESS

Professor Don Macintosh (University of Aarhus, Denmark)

Distinguished Participants, Ladies and Gentlemen,

Good morning and a very warm welcome to AIT Bangkok, the venue for our workshop on Sustainable Management of Mangrove Forest Ecosystems. On behalf of the organizing committee, I am very grateful to all of you for making the effort to be here today, as I appreciate that some of you had very little time to make the necessary arrangements to travel.

Although this is intentionally a very small meeting, with an even smaller budget, I am pleased to tell you that six Asian countries are represented, namely Bangladesh, Cambodia, Malaysia, Philippines, Thailand and Vietnam. The range of expertise present among you covers all aspects of the dedication we share towards protecting the world's mangroves, from policy, to research, to education and training, and to all aspects of management, including mangrove resource utilisation, conservation, rehabilitation, restoration, afforestation and community based management. This is very much your workshop, on behalf of the countries you represent. The role of the three project consultants present, myself, Dr Ashton and Dr Vannucci is just to serve as facilitators and to ensure that your views are accurately reflected in the written materials, which will be submitted to ISME, the World Bank and eventually to your governments, and to other countries around the world.

I would now like to explain a little about the history of this project, how it came about and the process we are following to produce a draft Code of Conduct for Sustainable Management of Mangrove Forest Ecosystems. The more detailed objectives of our work together this week will be explained to you in the first session after this opening short ceremony.

In December 2000, just before the New Year, I was invited by the World Bank to submit a small proposal to produce a review report on mangrove conservation and biodiversity, which would serve as a reference text for the subsequent development of a Code of Conduct. The review was prepared in early 2001 and submitted to the World Bank in June last year. The review report included case studies from three pilot countries, Malaysia, the Philippines and Thailand; a start was also made on a case study from Vietnam.

From this experience, the World Bank then agreed to finance a second contract to expand the work to cover a further 10 countries (as case studies), which are representative of the three main regions of the tropics, South and Southeast Asia, Africa and Central and South America. With support from Danida, Cambodia was also included, making 14 countries in total at the present time. Reflecting the general geographical distribution and importance of mangroves worldwide, seven of the selected countries are in Asia, four in Africa and three in Central and South America. ISME was then requested to be the contract holder for this second phase of the project.

This, the Workshop for South and Southeast Asia is the first of three regional workshops intended as writing workshops to consult with experts in the three main regions of the tropics. The second and third workshops will be held in Africa (Ghana) and Central and

South America (Brazil) early next year. The draft Code of Conduct, based on these workshops and other consultations with the selected countries of each region, will be submitted to the World Bank on 30th March 2003. With your help, we can meet this deadline and present a carefully formulated draft Code of Conduct for consideration and endorsement by the World Bank, FAO, IUCN, ITTO, and other concerned international agencies, as well as to governments in countries throughout the world, wherever the conservation of mangrove forests is an issue.

Thank you once again for coming to Bangkok, I wish you a very happy stay at AIT, and I am sure that your contribution to this workshop will be of great value to ISME and to the eventual success of this project in providing your country, and other countries, with a Code of Conduct for mangrove ecosystems.

KEY NOTE ADDRESS

Dr. Marta Vannucci (ISME Consultant)

As an advisor to ISME, I will start my address by drawing the attention of all present on the responsibility involved in drafting a “Code of Conduct for the Sustainable Management of Mangrove Ecosystems”. Fortunately we are not alone in this task, we are backed by a large and growing number of even minded people worldwide, directly or indirectly interested in, and living in the coastal environment.

We must however, be aware of the fact that it is estimated that from 60% to 80% of the world money is spent on destructive activities, such as wars, overexploitation of resources, pollution and pollution control, waste, destruction of renewable and non renewable natural resources and so many others. We are engaged in constructive activities for which funds are not easily available or large. The responsibility we are facing in drafting this Code of Conduct is therefore considerable and of great importance for the safeguard and wise use of the mangroves of the world, including their flora, fauna and human population. The Code must be forceful and convincing, allowing for revisions as time progresses into the future.

Who are we writing to and for what purpose? The answer is that we hope to draw the attention of policy and decision makers, funding agencies in governments and sovereign nations on the urgent need to achieve constructive work towards the rational and wise use and management of mangrove ecosystems and of the maintenance of the obvious and of the hidden benefits they offer free of charge. The people in government are those who can advise on the use of the Code and can even make it mandatory.

Who will the users be? The Code should be considered as a tool for wise and enduring management and how will it be used? The Code would be such as all users, managers and policy makers would find it to be wise, convincing, instructive, based on traditional and scientific knowledge and experience, yet detailed enough to be used as a general guide.

Finally, I will close by pointing out that the “Ranong Programme” also called the “Ranong Experiment”, 1988-1999, which was the main activity of the last two years of the UNDP/UNESCO Mangrove Projects, was in fact a field practice` or general rehearsal, for the present Code which is now the theoretical expression of the real present concern with sustainable management of Mangrove Forests Ecosystems and their resources and function.

OPENING ADDRESS

Professor Sanit Aksornkoe (ISME Treasurer)

Distinguished experts, ladies and gentlemen,

It gives me great pleasure to add my personal welcome to all of you on the occasion of this first workshop to develop a Code of Conduct for Sustainable Management of Mangrove Forest Ecosystems. As the Treasurer of ISME, I am very glad to give my support to this important initiative entrusted to ISME, and the recognition which the World Bank has given ISME in this way. As a senior Thai scientist, I am also very pleased that Thailand has been selected as one of this project's case study countries, and that Bangkok has been chosen as the venue for this regional workshop for South and Southeast Asia.

For the benefit of those of you who are less familiar with ISME, I would like to explain a little about our organization, the International Society for Mangrove Ecosystems. ISME was established in August 1990. ISME is recognised as an international non-governmental organization dedicated to the study and conservation of mangroves. A secretariat for ISME was created on the island of Okinawa in Japan through the kind support of the Government of Japan, the prefecture of Okinawa, and the University of the Ryukyus. Today, ISME also has four sub regional centres, located in Fiji (Oceania and Australia), Ghana (Africa), Brazil (for the Americas) and India (South and Southeast Asia). There are about 1000 members worldwide.

This important project to formulate a Code of Conduct will enable ISME to further enhance its information system for mangroves, which already includes GLOMIS (the Global Mangrove Database and Information System). Among the aims of GLOMIS is the organization and up-dating of an information system for use by technical staff (fisheries and forestry), administrators, law makers, decision makers and users of mangrove ecosystems in general. The Code of Conduct will also be of great value to all these users served by ISME.

On behalf of ISME, and on behalf of the workshop host country, Thailand, I welcome you all to this important meeting and wish you a very pleasant stay in AIT Bangkok.

With these few words, it is my great pleasure to declare the first workshop to develop a Code of Conduct for Sustainable Management of Mangrove Forest Ecosystems, open.

INTRODUCTION TO WORKSHOP OBJECTIVES

Don Macintosh

Mainstreaming Conservation of Coastal Biodiversity through Formulation of a Code of Conduct for Sustainable Management of Mangrove Forest Ecosystems

Workplan

There are FOUR tasks (activities) specified in the contract:

ACTIVITY 1

Complete a further 10 country case studies from countries representing major regions of the world where mangroves are a significant natural resource (Bangladesh, India, Vietnam, Ghana, Kenya, Mozambique, Senegal, Brazil, Colombia, Nicaragua). In addition, as case study from Cambodia is being contributed from a Danida funded project.

ACTIVITY 2

Consult with policy makers, environmental managers and mangrove specialists in all the countries selected (for case studies), in order to critically examine the information documented in the review and case studies to date, and to prioritise topics to be included in the draft Code.

ACTIVITY 3

Undertake three regional workshops to consult with institutions and experts, and others concerned with environmental management, in the countries participating in the case studies. The workshops will cover (a) South and Southeast Asia; (b) Africa; and (c) Central and South America.

ACTIVITY 4

To formulate, as outputs from the case studies and workshops, a draft Code for consideration by the Bank and its development partners, and a clear strategy recommended to help the countries adopt the Code of Conduct.

Draft Terms of Reference

Background and Objective(s)

A desk review was undertaken in January-February 2001 on the above theme to formulate information and guidance materials as the basis for developing a Code of Conduct for Sustainable Mangrove Forest Management (Code) for World Bank staff, development partners, and clients.

The overall terms of reference for the review were to:

“Undertake a desk review which will form the resource document to complement and support subsequent case studies leading towards the development of a generic Code of Conduct for sustainable management of mangrove forest ecosystems.”

A draft review was submitted to the Bank in March 2001 that contained a detailed overview of the topic, supported by model country case studies from Malaysia and Thailand. In addition, a case study of the Philippines has been completed recently (September 2001). The country case studies were based on a structured template to enable standard reporting on the national legal and management framework for mangroves in each country, plus national and local experiences in managing mangroves sustainably. A national expert, assisted by the consultants has prepared each case study.

The country case study template was also circulated to experts in other countries to assess their interest in contributing to the activity. This resulted in strong interest among several other countries and partial case studies were received (e.g. from Kenya, and Vietnam). A number of mangrove experts have expressed interest in contributing to the country case studies if financial support is available (e.g. India and Nicaragua).

Program of Activities

The work will be undertaken by consultants from ISME (International Society for Mangrove Ecosystems, based in Okinawa Japan) in association with CenTER Aarhus (Centre for Tropical Ecosystems Research, University of Aarhus, Denmark), and ISME (International Society for Mangrove Ecosystems, based in Okinawa Japan). ISME operates four regional centres in Brazil, Fiji, Ghana, and India and CenTER Aarhus has offices in Bangkok, Thailand and Cantho, Vietnam. The country offices of ISME and CenTER will be used to co-ordinate the regional activities leading to the three planned workshops covering South and Southeast Asia, Africa and Central and South America.

The countries selected for case studies and follow up consultation are listed below, by region:

South and Southeast Asia

Bangladesh

India

Malaysia

Philippines

Thailand

Vietnam (additional financial support requested from Danida)

Cambodia (financial assistance requested from Danida)

Africa

Ghana

Kenya

Senegal

Mozambique (financial support to be requested from Danida)

Central and South America

Brazil

Colombia or Ecuador

Nicaragua

Each regional workshop will bring together 8-10 national representatives and mangrove experts from the above regions, in order to combine knowledge of the legal framework for mangrove in each country with practical experiences of mangrove ecosystem management.

Conceptual Framework for: A Code of Conduct for the Sustainable Management of Mangrove Forest Ecosystems

Macintosh D. J. and Ashton E. C.

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Preface

Introduction

Nature and Scope of the Code

General Objectives of the Code

General Implementation, Monitoring and Updating

General principles

Article 1	General Mangrove Management Objectives
Article 2	Legal Framework
Article 3	Implementation
Article 4	Financial institutions and incentives
Article 5	Precautionary Approach
Article 6	Data gathering and management advice
Article 7	Capacity Development
Article 8	Socio-Economic Considerations
Article 9	Cultural and Social Issues
Article 10	Forestry/Silviculture
Article 11	Aquaculture Development
Article 12	Mangrove products and responsible trade
Article 13	Integration of mangrove management into coastal area management
Article 14	Mangrove research

Template for Preparation of Country Case Studies

Note to authors: Please use a hierarchical pattern for each case study. Follow these guidelines (adapting where necessary):

➤ **Brief background to the country**

- Regional setting
- Size
- History
- Population
- Short summary of mangrove resources and biodiversity
(to include genetic level resources, species and habitats)

➤ **Give examples of the cross-sectoral issues involved in mangrove management**

- Forestry
- Fisheries
- Aquaculture
- Other sectors (e.g. agriculture, mining)
- Coastal protection
- Tourism and recreation
- Biodiversity conservation
- Research and education
- Others

➤ **Provide information on the existing legislation**

- Regulatory frameworks
- Laws and legal status
- Zoning plans
- Any other actions enacted by governments to protect mangroves
(Copies of any written legislation covering mangrove wetlands would be very helpful).

➤ **Institutional responsibilities for mangroves**

➤ **Implementation issues**

- Are the policy measures working well, or are enforcement or other measures still inadequate?

➤ **Co-operation, feedback mechanisms and monitoring**

- Co-management and other initiatives
- Role of major stakeholders. Explain how far consultation and co-operation among the main stakeholders has been achieved to date, namely:
 - Governmental departments and agencies
 - Local coastal communities
 - Private sector interests
 - NGOs
 - International community and agencies

➤ **Other problems or constraints**

COUNTRY PRESENTATIONS

The participants from each of the Asian countries represented at the Workshop gave a presentation on their country, especially the key issues concerning mangrove management. These countries were Malaysia, Philippines, Thailand, Vietnam (Country Case Studies completed) and Bangladesh and Cambodia (Country Case Studies in progress). Unfortunately, the invited participants from India were unable to attend.

MALAYSIA CASE STUDY KEY ISSUES

*Thai See Kiam (Forestry Department, Kuala Lumpur) and Murugadas T. L.
(Wetlands International Malaysia Office, Kuala Lumpur)*

1. Mangroves have been productively utilised traditionally.

- Has a long tradition, many centuries.
- Local people have been dependent on their resources, timber and non-timber products for a long time. Supports livelihoods and provides food security.
- Local people are traditionally aware of most of mangrove goods and services.

2. Mangrove Conservation and Management

- Many significant mangrove areas in Malaysia were gazetted as FRs during pre-independence years. Matang MFR was the oldest – reserved in 1902.
- Between 1900 and 2000, only one mangrove site (Matang MFR) in Malaysia successfully operated a 10-year revised Working Management Plan which was first developed in 1950. The Management Plan has gone through 6 cycles of revisions since its inception in 1950. Latest version: 2000-2009.
- MMFR is sustainably managed for wood production. Exemplifies a world-renowned production forest.
- National Forestry Policy adopted in 1978 uniformed and strengthened forestry laws throughout the country as well as strengthened areas of forest management planning and forest renewal operations.
- Amendment to the Policy in 1993 (following the Earth Summit 1992), enhanced sustainable management of forest resources, protection of biodiversity etc.
- The Johor state developed a state-wide 10 year Management Plan (2000-2009) for mangroves in 1999.
- The state of Sabah, owner of the largest mangrove area in Malaysia is keen to develop a state-wide management plan for mangroves. Currently in process of applying for technical support from ITTO to prepare Management Plan under the ITTO Mangrove Conservation Programme.
- A biodiversity expedition (the first of its kind) in the **Matang MFR** sponsored by the FDPM and State Government of Perak is to be launched 21st October, 2002).

Extent of mangroves in Malaysia

State	Mangrove Forest Reserves (ha)	Stateland Mangroves (ha)	Total Area (ha)	Conservation Areas (ha)
Johor	18,740	8,993	27,733	10,301
Kedah	7,849	100	7,949	
Kelantan		20	20	
Melaka	305		305	
Negeri Sembilan	1,061		1,061	
Pahang	2,032	450	2,482	56
Penang	351	100	451	
Perak	40,151	3,351	43,502	42
Perlis		100	100	
Selangor	19,882	4,000	23,882	320
Terengganu	954		954	
Sabah	316,460	96,428	412,888	4,840
Sarawak	36,992	131,000	167,992	15,983
Total	444,777	244,542	689,019	31,542

The total area of mangroves in Malaysia is 689,019 ha. **The largest area (60%) is on the coast of Sabah, 24.4% in Sarawak and 15.6% in Peninsular Malaysia.** Of the total mangrove area about 64.6% have been gazetted as forest reserve. These reserves form part of the country's Permanent Forest Estate, which is managed for sustainable forestry production by the respective State forestry Departments.

- **Stateland mangroves are forests outside the reserves.** Very few mangrove areas in Malaysia which are designated as nature parks and wildlife reserves are legally protected for conservation. While, some mangrove areas forming part of Stateland Forest and are essentially viewed as land earmarked for development.

- **There are a total of 31,542 ha (4.5% of total mangrove area) gazetted mangrove conservation areas in Malaysia.** In Peninsular Malaysia, totally protected mangrove forests account for only 10% of the total area of about 107,487 ha, of which 9.6% are located in the state of Johor. In Sarawak, protected mangrove forests account for 9.5% of the total mangrove area in the state. In Sabah, it accounts to 1.2%.

3. Facts

- Value of mangroves for fisheries outweighs the value of mangroves for timber. Study by FRIM in 1999 showed that revenue from fishery was 10 times that of timber (charcoal & poles)

- There has been a progressive decline in mangroves, mainly to make way for economic developments i.e. conversion into ports, maritime, agricultural land, aquaculture schemes, residential etc.

This has resulted in the following:

- FRs have been degazetted/excised to make way for these developments, namely in highly developing states –FRs shrunk/totally lost i.e. Selangor, Johor and Penang. Largely common during the 60s, 70s, 80s till mid-90s.
- Coastal mangroves protecting agriculture land exposed to high erosion risks due to lack of buffer zone area.
- Loss of other mangrove goods and services in these highly developed states.
- Mangrove death arising from accidental oil spills in local waters and international waters i.e. Johor.
- Badly planned aquaculture schemes leading to abandonment of cleared land subsequently – change in ecology. Restoration and rehabilitation work hardly evident in these areas.
- Local peoples' dependence on mangrove resources affected.
- Illegal land encroachment into mangroves.
- Mangroves fragmented, no more a continuum.
- Biodiversity hotspots in mangroves lack good protection, and are very few in number and relatively small in area (only 4.5% of total mangrove area).

4. Code of Conduct for sustainable mangrove management need to be improved in the following areas:

- Effective land use practices – integrated land use and natural resources management, river basin approach to effective mangrove management, managing land demands more effectively.
- Effective decision-making processes on natural resources management and utilisation.
- Effective implementation of national policies related to mangroves.
- Effective implementation of international treaties/conventions, ratified by Malaysia that impinges on mangrove ecosystem.
- Establish better tools for mangrove restoration and rehabilitation, mangrove economic valuation, and mangrove inventory, assessment and monitoring.
- Establish more research priorities in mangroves.
- Effective mobilisation of local and international funds for mangrove management and conservation efforts.
- Establish economic incentives for conserving mangroves.

- Promote and enhance awareness on the goods and services provided by mangroves to various stakeholders, including decision-makers. The misconception that mangroves are wastelands must change.
- Improve sustainable livelihoods for people living in mangroves.

PHILIPPINE MANGROVES

J.H. Primavera (SEAFDEC Aquaculture Department, Tigbauan, Iloilo) and Rodolfo Ungson (Department of Environment and Natural Resources, Quezon City)

Introduction

The following table shows the dramatic reduction in mangrove forest area that has occurred in the Philippines since the 1950s.

Changes in mangrove forest cover (ha) in the Philippines

Region	1951 ^a	1981-85 ^b	1987-88 ^c	1992 ^d	1995 ^e
CAR	-	-	-	-	-
Ilocos Region	771	-	100	400	100
Cagayan Valley	7322	3,834	5,500	5,572	3,700
Central Luzon	56,799	-	1,500	-	100
Southern Tagalog	77,997	36,190	46,600	55,852	28,800
Bicol Region	42,234	1,495	10,600	10,600	600
Western Visayas	49,035	4,926	2,900	4,334	2,800
Central Visayas	24,213	4,147	9,400	10,591	2,300
Eastern Visayas	36,501	6,421	26,300	17,028	600
Western Mindanao	91,072	38,498	24,600	21,074	52,500
Northern Mindanao	18,273	23,000	11,000	ND	20,200
Southern Mindanao	17,518	6,700	7,900	ND	5,800
Central Mindanao	6647	296	2,400	ND	200
ARMM	-	27,517	300	ND	ND
Total	428,382	153,024	149,100	125,451	117,700

Cross Sectoral Issues on Mangrove Management

➤ Forestry

Massive loss of mangroves due to cutting for firewood, building and construction supplies, thatch roofs for nipa foliage, dyes from the barks of Rhizophoraceae

➤ Fisheries

Most of the areas in the Philippines are over fished because of overpopulation and great demand for marine products

Illegal fishing activities such as trawl fishing, dynamite fishing, cyanide fishing, poaching in municipal waters are still prevalent due to poor law enforcement and lack of political will of the government.

➤ Aquaculture

Many private mangrove plantations have been converted to fishponds. Illegal conversions of public lands to fishponds were prevalent. In the past and continue to the present.

➤ **Coastal Protection**

20-30 typhoons visit the Philippines every year and mangroves act as protective buffer to coastal communities. There are laws promulgated to have mangrove buffer zone in rivers and open seas but these are not widely disseminated, let alone fully implemented.

➤ **Biodiversity Conservation**

Certain areas were proclaimed as wilderness areas to be preserved the remaining mangroves ecosystem. However, mangroves and their diversity still continue to decline.

Regulatory Framework

1. Philippine Constitution
2. Local Government Code
3. DENR – regional, provincial, local offices. DENR is the primary agency responsible for the conservation, management, development and proper use of the country's environment and natural resources.
4. There are also a number of government agencies that are involved in mangrove areas. They have overlapping mandates and conflicting priorities for mangrove areas.
5. Mangrove/forestry Legislation – Forestry Code, P.D. LOI, PP, AO No. 15
6. Tenure – 1990 MSA, 1993 FLMA, 1994 CBFMA

NOTE: Contradictory policy, overlapping agencies; continental vs archipelago bureaucracy

The present bureaucracy of the Philippine government is patterned after that of the U.S.A. (of which it was a former colony), a continental country where fisheries is subsumed under the Department of Interior. Because the Philippines is an archipelago with an extensive coastline and vast territorial waters, a separate Fisheries Department would more appropriately reflect the importance of marine fisheries.

Laws and Legal Status

1. There are many action-oriented policies, rules and regulations related to mangrove areas in the Philippines.
2. There are Administrative Orders issued to protect and rehabilitate mangrove areas and proclamations were issued to set aside areas as mangrove forest reserves.

Philippine Mangrove Laws

P.D. 705 (1975)	Revised Forestry Code: mangrove strips in islands providing protection from high winds, typhoons shall not be alienated
P.D. 953 (1976)	Fishpond/mangrove lease holders required to retain or replant 20 m mangrove strip along rivers, creeks
BFD A.O. (1979)	Min 25% of total mangrove forest in given area completely protected as Mangrove Wilderness Areas
P.P. 2151 & 2152 (1981)	Declaration of 4,326 ha mangroves as wilderness areas , 74,767 has as forest reserves
MNR A.O. 42 (1986)	Expansion of mangrove belt in storm surge, typhoon areas: 100 m along shorelines, 50 m along riverbanks
DENR A.O. 76 (1987)	Establishment of buffer zone : 50 m fronting seas, oceans and 20 m along riverbanks; lessees of FLA ponds required to plant 20-50 m mangrove strip
DENR A.O. 77 (1988)	Integrated Social Forestry Program (provision of legal tenure incentives for co-management of forest resources)
DENR A.O. 123 (1990)	Award of 25 year Community Forestry Management Agreement for small scale mangrove use, <i>Rhizophora</i> and <i>Nypa</i> plantations, aquasilviculture
DENR A.O. 15 (1990)	Policies on communal forests, plantations, tenure through Mangrove Stewardship Contracts; revert abandoned ponds to forest ; ban cutting of trees in FLA areas ; prohibit conversion of thickly vegetated areas
DENR A.O. 3 (1991)	Policies and guidelines for Mangrove Stewardship Agreement
DENR A.O. 23 (1993)	Combined 3 year Mangrove Reforestation Contract and 25 year Forest Land Management Agreement into 25 year FLMA for families (1-10 ha) and communities (10-1,000 ha)

Zoning Plans

The Revised Forestry Code of 1975, states that the protection, development and rehabilitation of forest land shall be emphasized and protects strips of mangrove at least 20 meters wide along the shorelines.

Institutional Factors/Problems

Population Pressure

Corruption, weak law enforcement, lack of political will

Indiscriminate promotion of aquaculture

Low economic rent – FLA fees

State-owned but de facto open access

Privatization through real estate tax payment

Economic rent: Philippine mangroves

P50/ha/yr (\$1-12.50/ha/yr)	Lease for government owned brackishwater ponds up to 2000
P515-3,296/ha/yr (\$20-130/ha/yr)	Economic rent of brackishwater ponds for milkfish and or shrimp crops (Evangelista, 1992)
\$42-156/ha/yr \$538/ha/yr	Value of mangrove wood products (Schatz, 1991) Value of mangrove fishery products (Schatz, 1991)
P1,000/ha/yr (\$1-12.50/ha/yr)	Government pond lease to start 1992 (BFAR FAO 125-1) delayed to 1994 (BFAR FAO 125-2)
P500/ha/yr (\$10/ha/yr)	Government pond lease starting 2000, with yearly increase up to P1,000 (\$20)/ha by 2004 (BFAR FAO 1997)

Timeline: Bulanon. Sagay Negros Occidental

1946	E. Treyes, Sr. granted DENR fuelwood license for bakery/sugar centrals; locals allowed to fish, collect wood
1950s - 1960s	E. Treyes elected Sagay Vice Mayor, appointed Mayor; refused to convert area to fishponds
1965	627 ha registered by M. Guanzon, no cadastral proceedings
1967	H. Benedicto purchased property for P19,000
1968	Forestry Bureau filed for the annulment with lower court (CFI)
1970s	H. Benedicto moved in with armed guards, uprooted trees, harvested about 48,000 m ³ of live corals for dikes
1983	Lower court nullified title, ruled in favour of Philippine Republic, E. Treyes as intervenor. Decision appealed by Benedicto
1987	Court of Appeals (CA) affirmed CFI decision. Benedicto appealed to Supreme Court (SC)
1987	SC sustained CA
1988	RTC (former CFI) cancelled titles; Benedicto family appealed to the Office of the President (OP)
1992	RTC ordered Benedicto to remove improvements, otherwise for demolition
1998	Treyes family occupied area
2000	OP ordered enforcement of 1983 RTC (CFI) decision to restore area to government, give Treyes family preference in public land award
2001	Benedicto family and CGR Corporation filed for reconsideration of OP resolution
2002	FLA application; Fisheries Regional Office certificates no pending case in area

Kalibo Timeline

1989	Japan OECF I funding (P561,705) to Kalibo
1990	Planting by Peoples Organization KASAMA
1993	Japan OECF II grant (P305,343)
1994	FLMA tenure from DENR
1995	Countryside Development Fund (P100,000)
1997	SEAFDEC AQD Mud crab pens
2000	CBFMA rights
2001	PACAP AUSAID ecotourism grant
2002	EU SEAFDEC Mud crab fisheries

Policy recommendations for the Philippine mangrove forests

- Highest priority is conservation of the country's remaining 100,000 ha of mangroves.
- Primary forests with high species diversity such as those around Pagbilao Bay, Quezon and Ulugan Bay, Palawan, should be designated as biodiversity reserves for scientific studies and ecotourism.
- The status of other permanent mangrove forests, especially those near populated areas, should be re-evaluated for possible application of family- or community-based management schemes to ensure their protection and prevent an "open-access" situation.
- Rehabilitation of degraded sites must also be undertaken with priority given to islands vulnerable to typhoons.
- Mangrove rehabilitation programs should consider local knowledge and skills, social organization and institutions, land use and tenure, suitable species, sites and seasons to achieve success.
- All government-leased brackishwater ponds should remain as public lands and not alienated for private ownership.
- Abandoned and undeveloped aquaculture ponds should be returned to DENR management for rehabilitation.
- Fees for aquaculture ponds should be increased to encourage efficient pond utilization and capture economic rent that can provide funds for mangrove rehabilitation.
- Small scale, family-based mangrove friendly aquaculture such as seaweeds, bivalves, crabs and fish (in cages) should be adopted in preference to brackishwater ponds.
- Management of mangroves should be community-based. The community should be involved in the planning, implementation and sharing the profits of successful coastal resource management.
- Co-management with local government units is also important for the enactment of ordinances pertaining to marine conservation, rehabilitation and their enforcement, often referred to as 'political will'.
- Rationalize government policies and reconcile conflicting laws on mangrove conservation and management.
- Dissemination of policies to coastal residents and government extension workers responsible for enforcing forestry and fisheries laws.
- Effective educational programs and awareness campaigns on the importance of mangroves and the need for integrated and sustainable management.
- Supplementary livelihood options.
- External technical expertise and funding is needed to invest in the restoration or rehabilitation of mangrove habitats damaged by aquaculture and to stop the further expansion of unsustainable aquaculture in the Philippines.

THAILAND CASE STUDY

Sanit Aksornkoe (Kasetsart University, Bangkok) and Sonjai Havanond (Royal Forest Department, Bangkok)

Introduction

The present status of mangroves in Thailand was reviewed. Until recently, mangrove forests were the responsibility of the Royal Forest Department and were allocated into three zones as follows:

Preservation Zone: Protected areas for nature conservation and/or environmental conservation. Such areas include:

- Areas for the preservation of economically important flora and fauna
- Areas of value for reproduction of flora and faunal breeding areas
- Areas subject to soil erosion and land degradation, such as beaches and sand bars, mud flats, caves and coral reefs
- Areas of historical or archaeological value
- Areas that represent a local symbol
- National parks and wildlife sanctuary
- Areas for wind protection
- Areas for environmental and ecosystem preservation
- All areas within 2 m of the natural riverside and within 75 m of the coastline.

Economic Zone A: Areas that are allowable for utilisation for forest resources and are to be managed for sustainable long-term yield. These include:

- Concession forest
- Public forest other than concession forest for local uses
- State and public forest plantations

Economic Zone B: Mangrove areas in which other development is allowable after careful consideration of the impact on the environment. These include areas converted for:

- Agriculture, including crops, animals farming, fisheries and salt production
- Industry, including mining, industrial development, urban and residential developments, seaboard development, and other industrial and commercial activities.

A major restructuring of the Ministerial and Departmental responsibilities for mangrove forests is currently underway. Thailand's mangrove resources are now the responsibility of the Office of Mangrove Conservation within the Department of Marine and Coastal

Resources, which is a department under the new Ministry of Natural Resources and Environment (one of six new ministries of the Thai Government).

Recent changes to Thailand's mangrove zoning Policy

Mangroves in Thailand have now been reallocated into two zones as described below:

Conservation Zone

All existing mangrove forest is allocated conservation zone status. Any change or utilisation of mangrove forest in this zone is absolutely prohibited. The forest must be protected and preserved in their natural zone. All forms of utilisation must cease.

- Wherever the forest has been damaged, reforestation should be undertaken by government agencies concerned.
- Newly formed areas (by accretion) within this zone are considered government properties unless proven otherwise, and plantation of mangroves must be undertaken immediately.
- In any place within this zone where people have settled permanently, the government agencies concerned must control encroachment of mangrove land.
- The validity of permits for logging concessions, shrimp farming, tin mining or other activities must not be extended when the existing concessions terminate.
- In case it is unavoidable for government agencies to implement projects of high economic importance or national security within this zone, they are allowed to do so, provided they adhere to the Cabinet's resolutions and submit their proposals, with EIA documentation, to the Cabinet for a final decision.

Development Zone.

All conversion of mangrove area is defined as development zone. The measures for land utilisation are as follows:

- Government agencies are authorised to rehabilitate any degraded mangrove area in this zone.
- In any part of development zone which was formally illegally developed, government agencies concerned are obliged to prohibit such activities and replace mangrove species.
- All laws and regulations should be revised to facilitate reforestation operations in this zone.
- In areas where tin mining is allowed, the concerned agencies have to follow the resolutions and laws formulated by the Cabinet.

- If it is unavoidable for the agencies concerned to use this mangrove land, they are allowed to do so within the Cabinet's resolutions.
- Utilisation of mangrove land for fisheries, tin mining, cultivation and other activities must be strictly controlled in accordance with given conservation techniques.
- Before commencing any activity in this area should follow operational procedures with respect to the Cabinet's resolutions and related laws.
- Land use for any purposes in this zone will be rearranged with technical back up.

Relevance of the Code of Conduct

The Code of Conduct under preparation with financial assistance from the World Bank will support Thailand's policy to conserve the remaining areas of mangrove forest and to restore the habitat and biodiversity in other, degraded or former mangrove areas. Secondly, the code will assist Thailand's efforts to utilize mangrove resources more sustainably to achieve better direct and indirect benefits.

Problems and Solutions

There are still a number of problems to resolve to achieve the above policies. The following lists eight identified problems and their possible solutions.

1. Degradation of mangrove resources – Enforce the Zoning system (as detailed above)
2. No definite policy, law and regulations, national plan – Revision is required under the new Department and Ministry
3. Insufficient research information background and knowledge applied – Link research more effectively to management
4. Insufficient public participation – Promote more public involvement and community based management
5. Conflicts among departments concerned – Revise departmental policies and coordination mechanisms
6. Conflicts among stakeholders – Organise seminars and other resolution mechanisms
7. Insufficient education/extension – Strengthen educational and extension services
8. Inadequate information exchange at national and international levels – Strengthen national bodies e.g. NATMANCOM and networking e.g. via ISME.

VIETNAM CASE STUDY

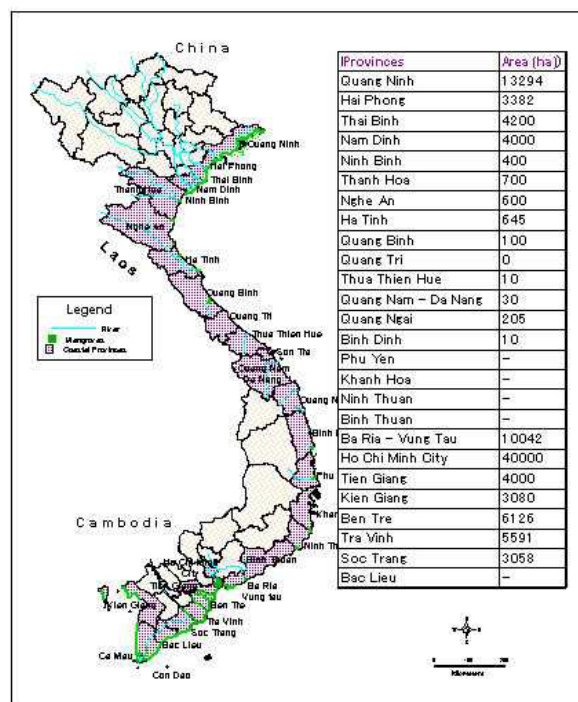
A review of the legal and regulatory status of Can Gio mangrove forests

Phan Thi Anh Dao, Phan Nguyen Hong and Quan Thi Quynh Dao (Mangrove Ecosystem Research Center, National University of Hanoi)

1. Mangrove in Vietnam

Mangrove forests covered more than 408,500 ha of Vietnam in the early 20th century (Maurand, 1943). Population growth, economic development pressure and, especially herbicides sprayed during the time of the second Indochina war, led to extensive loss and degradation of mangrove forests. In 1983, the total mangrove forest area of Vietnam was about 252,000 ha (FIPI, 1983). Between 1983 and 1993 the mangrove forest area declined most rapidly due to the conversion of mangroves to ponds for extensive shrimp culture (Hong, 1997). However, during 1975-1980, about 52,000 ha of mangrove forests, including Can Gio mangrove forest, were planted on deforested land (Hong, 2000). From 1990, the government and people of Vietnam have made great efforts to restore the mangrove forest. From 1993 up to 2000, the total area of mangrove rehabilitation has been about 64,000 ha. According to the statistics, only 42% of the original mangrove area remains at present (Hong, 2000).

Distribution map of Mangroves in Vietnam



2. Mangrove in Can Gio

Can Gio mangrove forest is an outstanding example of the success of mangrove reforestation in Vietnam. Can Gio mangrove forest is situated in Can Gio District southeast of Ho Chi Minh City and lies at the northern edge of the Mekong Delta (10°22'14"N – 10°37'39"N and 106°46'12"E - 107°00'59"E).

Can Gio District covers a total area of 73,360 ha. The extent of mangrove forest land accounts for 54.2% of the total natural area of the district (38,751 ha) (Tri et al., 2000). Before the first Indochina war, the area of Can Gio mangrove forests was about 40,000 ha (Cuong, 1963). Between 1965 and 1970, Can Gio Mangroves were sprayed heavily with herbicides and defoliants, resulting in death of most of the mangrove and breakdown of the ecosystem (NAS, 1974). In 1978, the mangrove forest habitat consisted of only 4,500 ha of the fern *Phoenix paludosa* and about 30,000 ha of tidally inundated but nearly fallow land (DARD,

1990). From 1978 to 1997, 20,638 ha of mangroves with the main species of *Rhizophora apiculata* were reforested (Tuan, 1998).

In the early 1980s, the value of shrimps increased very quickly in the marketplace, with a high demand for export. A great number of labourers, mainly from nearby provinces came to make a living. They adopted extensive shrimp culture and catching of aquatic resources. Some of them have settled in Can Gio permanently. As a result, during this period the population rose rapidly. Also during this time, the forests were managed directly by collective farms and afforestation units, with the combination of exploitation of both forest resources and aquatic resources.

From 1991, the Can Gio mangroves were brought under the management of The Board of Management of Protection Forest and the Environment of Ho Chi Minh City, which belonged to The Department of Agriculture and Rural Development. Can Gio Mangroves were divided into 24 sub-zones, forest exploitation was not allowed here, only tree-thinning to promote enough space for mangrove growth. The major forestry products during this period are those derived from thinning.

In 1999, Can Gio mangrove area was transferred to Can Gio District People's Committee and the Management Board for Can Gio Protected forest is the body directly managing this area. In 1999, the Can Gio Mangrove forests are under management of Can Gio Board of Management of Protection Forest, which belongs to Can Gio District People's Committee.

In 2000, Can Gio Mangroves became the Biosphere Reserve approved by UNESCO/MAB and the Management Board for Can Gio Biosphere Reserve, which is under the Department of Agriculture and Rural Development of Ho Chi Minh City.

3. Main legislative decisions directly related to Can Gio mangrove forest

During the restoration and protection of Can Gio Mangroves (from 1978 to 2001), 21 legislative decisions directly related to Can Gio concerning mangrove forests and 15 legislative decisions related to Can Gio mangrove fisheries have been listed. The legislation by Ministries applies to all mangrove areas in Vietnam, others are related specifically to Ho Chi Minh City or Can Gio.

Of the above decisions, there are 4 important decisions that have good effects on Can Gio Mangrove protection. Following these decisions, Can Gio Mangroves have developed in four periods:

a. Period 1:

- Decision No 165/QD-UB, dated Aug., 7th, 1978 of the People's Committee of Ho Chi Minh City on the establishment of Duyen Hai Forestry Enterprise.

Approximately 20,000 ha of mangroves were replanted after the war.

b. Period 2:

- Decision No 441/QD-UB, dated Dec., 29th, 1983 of the People's Committee of Ho Chi Minh City on forest and forest land allocation to state owned enterprises, collective units and local households for afforestation and forest caring and protection.

The mangroves were managed by local households and enterprises. A large area of the forests was converted to shrimp farms.

c. Period 3:

- Decision No 173/CT, dated May, 29th, 1991 of the President of the Ministerial Council on the approval of the pre-feasibility project of environmental protection forests of Ho Chi Minh City.

The mangroves became a protected area. Can Gio Mangrove Forest Park was established.

d. Period 4

- Decision No 843/TB/NN/HC, dated October, 11th, 2000 of the President of People Committee of Ho Chi Minh City on the establishment of a Board for Management of Can Gio Mangrove Biosphere Reserve.

Can Gio Biosphere Reserve was set up with 3 zones: core zone, buffer zone and transition zone. The forests have been well protected since then.

4. Conclusion

Can Gio Mangrove Forest was destroyed in the war and badly managed in the past. However, at present it becomes an ecosystem with high biodiversity and a good area for research, eco-tourism, and recreation. Can Gio mangrove forest is the first Biosphere Reserve in Vietnam. It is included in the World Network of Biosphere Reserves.

Thanks to better management, the quality of life of local people has been improved.

COASTAL FORESTRY IN BANGLADESH

Neaz Ahmed (Bangladesh Forest Research Institute, Chittagong)

Importance of Coastal Forests

- Timber and non-wood products for industry and rural poor
- Protect biodiversity and wildlife
- Protection against cyclone and storm surge
- Land reclamation and stabilization

Coastal Forests of Bangladesh

- Sunderbans 600,000 ha
- Chokoria Sunderbans 8,000 ha
- Mangrove plantations 170,000 ha
- Embankment plantations 10,000 ha

Coastal Forest _ Value

- 45% of the national forest area
- 50% of forest revenue from mangroves
- Over 1 million people directly employed in mangrove management and utilization
- Great intangible benefits but not yet estimated

Mangrove Degradation

Degradation is a serious threat

- 40-45% stocking Sunderbans depleted
- Chokoria destroyed by shrimp farming
- Plantations threatened by sedimentation, encroachment, human interference, etc

Planting in Coastal Areas

- Mangrove nursery and planting techniques
- Aided natural regeneration with mangroves and Reforestation with non-mangrove species
- Afforestation methods for accreted lands
- Sustainable management of coastal plantation

- Non-mangrove planting on embankment

Selected species for Sunderbans

Tidal Inundated Areas	Raised Areas
<i>Excoecaria agallocha</i>	<i>S. saman</i>
<i>Ceriops decandra</i>	<i>A. procera</i>
	<i>L. speciosa</i>
	<i>A. nilotica</i>

Selected species for Coastline

Pioneer Species	Raised Areas
<i>Sonneratia apetala</i>	<i>S. saman</i>
<i>Avicennia officinalis</i>	<i>A. procera</i>
Second Rotation Species	<i>A. lebbeek</i>
<i>H. fomes</i>	<i>C. equisetifolia</i>
<i>E. agallocha</i>	<i>A. nilotica</i>
<i>Xylocapus mekongensis</i>	<i>T. populnea</i>
<i>C. ramiflora</i>	<i>P. dulce</i>
<i>Phoenix paludosa</i>	

Species for Embankments (37 fruit/forest tree species planted)

Most promising species	
<i>D. auriculiformis</i>	<i>P. dulce</i>
<i>A. mangium</i>	<i>A. nitolica</i>
<i>L. leucocephala</i>	<i>S. saman</i>
<i>C. equisetifloia</i>	<i>C. nucifera</i>
<i>D. sissoo</i>	<i>A. procera</i>

Why Sustainable Management?

- Protection of coastal population
- Resource from forest areas
- Improvement of environment
- Healthy and productive ecosystems

How to achieve sustainability?

- Mixed plantations of mangroves
- Second rotation crops
- Planting non-mangroves
- Planned harvesting
- Assessment of benefit

MANGROVE RESOURCES MANAGEMENT IN CAMBODIA

Vann Momyneath (Ministry of Environment, Phnom Penh)

1. Overview of Coastal Cambodia

The coastline of Cambodia extends 435 km along the northeastern shore of the shallow Gulf of Thailand between the Vietnamese and Thai borders. The coastal zone encompasses estuaries and bays and 64 islands, 6 coastal protected areas cover 388,700 ha and mangrove areas has 85, 100 ha (MRC Secretariat , 1994). Administrative jurisdictions of the coastal zone include Koh Kong Province, Sihanoukville Municipality, Kampot Province, and Kep Municipality.

2. Mangrove distribution

With reference to Cambodia Land Cover Atlas 1994, MRC Secretariat, the Mangrove forests covered 85,700 ha, which 63,700 ha is located in Koh Kong province, 13,500 ha in Sihanoukville and 7,900 ha in both Kep municipality and Kampot province.

3. Uses and threats

The degradation of many mangrove resources area in Cambodia is caused practice of timber extraction and illicit export - construction and charcoal production; mangrove wetland reclamation for shrimp farms - clearing and conversion of the mangrove wetland into shrimp pond, which were found in Koh Kong province; mangrove wetland reclamation for salt farms – the construction of large scale salt farms is a major cause of destruction of mangrove wetlands in Kampot and in Kep; and the fishing pressure and illegal fishing are also subject to alarming degradation mainly due to over fishing and destructive fishing practices. The remedies to the damage of both the forest and aquatic resources of mangrove wetland are as complex as their underlying human socio-economic and political causes. In addition, lack of environmental awareness and poverty substances were related to public education for environmental concerns in particular for the perception of the value and functions of coastal forests and wetlands.

4. Shrimp pond development

According to the Ministry of Environment and Ministry of Agriculture Forestry and Fisheries sources shrimp farming started first in 1989 in Kampot while 5 year later there was already a total of 422 ha in Koh Kong, resulting in the loss more than 1000 ha of pristine mangrove wetland (ADB, 1996). However, by 1996 about 70% of shrimp farms were abandoned because there was no longer production. These failures are poor soil quality, several diseases, and poor of pond bottom to fertilizers and the drop of shrimp prices on international markets.

5. Mangrove protection and management

5.1 *Institutions*

The Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of Environment (MoE) are the main government agencies with responsibility for natural resources and environmental management in Cambodia.

MAFF has jurisdiction over mangrove and flooded forests in Cambodia. However, the most remaining mangrove resources are within protected areas, which are under the jurisdiction of the MoE.

5.2 *Laws and Regulations*

Many of current laws and regulations are dealing with mangrove resources have been adopted by national assembly and senate such as Law on Environmental Protection and Natural Resource Management, Law on Land, Law on Forestry, Royal decree on Creation and Designation of Protected Areas. However, some national policy and planning initiatives center on policy definition through revisions to, and elaborations of, the public administration structure and legal framework of the country. These include: new versions of the Fisheries Law and Protected Areas Law and some new ministries have established.

5.3 *Program and projects*

The NRE programme formulation took place between November 1999 and March 2001 and an NRE Programme Document covering the period between 2001-2005, thus coinciding with the 5 Year Socio-Economic Development plan of Cambodia, was signed by the Royal Governments of Cambodia and Denmark on June 5th 2001.

The objective of NRE Program is Sustainable management and equitable use of natural resources and protection of the environment in Cambodia to improve the livelihoods of poor people and support socio-economic development.

Phase 3 of Environmental Management in the Coastal Zone in Cambodia is under this program and will over the next five years build up comprehensive support to the country within geographical and thematic areas that have been targeted through the earlier and ongoing assistance to coastal zone management. The most relevant phase 3 project activities to deal with the mangrove ecosystems are to monitor and assess coastal resources and support environmental protection and community based coastal resource management. Develop environment impact assessment guidelines for coastal zone in Cambodia.

On the other project such as Participatory Management of Mangrove Resources is under funded by IDRC Canada and was implemented in Peam Krasoap Wildlife Sanctuary in Koh Kong province. The project focused on sustainable livelihood and management issues. The thrust of community-based natural resource management is to enhance means by which communities become better managers of the natural resources upon which they depend. This is achieved by both improving their skills and methods for management and by increasing their actual, as well as legitimate, control of resources.

The results of the above both implemented projects from 1999 to 2001 are replanted totally mangrove areas covered 55 ha in which 30 ha in Koh Kong and 25 ha in Kampot province.

6. Conclusion

There are substantial mangrove ecosystems still in place in Cambodia. These mangroves are under threats for the future economic development. However, there are increasing concerns about this situation and a number of activities are addressing to issues. Therefore, the code of conduct for sustainable management of mangrove forests ecosystem is a timely efforts that is likely to provide Cambodia with an important tool to highly consider in the future concerning of mangrove ecosystems.

CODE OF CONDUCT FOR MANGROVE MANAGEMENT

The remainder of the Workshop was devoted to Working Group discussions on the Articles for a draft Code of Conduct for Mangrove Forest Ecosystems. The following discussion summaries are provided, covering the theoretical framework for the Code of Conduct and the draft Articles 1-14.

Session II: Discussion of the Conceptual Framework and Articles 1 and 2 of Code

In discussing the conceptual framework for the draft Code of Conduct under consideration, two key points were agreed. Firstly, that the articles of the Code should be based on a well designed and structured theoretical framework, supported by case study information from the country reports as examples of mangrove management (or mangrove management problems) in practice. Secondly, that the FAO Code of Conduct for Responsible Fisheries (1995) represents a good model for the mangrove Code of Conduct in terms of its content and style of publication (i.e. simple booklet form).

Regarding the guiding principles for the Code, it was agreed that the following four issues were of great importance:

- 1 Strengthening of measures to protect existing mangrove forests.
- 2 Encouraging natural regeneration of mangroves wherever possible and before resorting to artificial restoration or rehabilitation.
- 3 Having more effective guidelines for coastal land-use and land-use practices.
- 4 Clearly defining the objectives of mangrove conservation.

Discussions then followed about the composition and tasks for the Working Groups, which would discuss the individual Articles for the Code. It was agreed that there would be two Working Groups initially and this would be reviewed depending on the rate of progress of their work. Each working group should appoint a chairperson and a rapporteur. The project consultants were divided between the two working groups. The participants and AIT observers were then invited to select their preferred group.

Considerable time was devoted to discussion of Article 1 of the Code, as this Article has the broadest coverage and helps to introduce the later Articles. A number of recommendations were discussed and adopted to guide the approach to management expounded in Article 1 and developed further in Article 2. It was agreed that the fundamental objective for the Code of Conduct should mirror the title of the study overall, i.e. to promote conservation, rehabilitation and sustainable management of mangrove ecosystems to benefit the global community. However, to

be effective, the Code should also clearly explain the means by which this fundamental objective can be achieved: this represents a major challenge!

Use of the word “States” was also discussed and it was agreed that this was the most appropriate term to use in reference to governments and other responsible agencies for management. Use of the term States has already been adopted by FAO and therefore it is an appropriate term to also adopt within the Code of Conduct for Mangroves. It was also agreed that the term optimum utilisation should be used with utmost care and be defined in the glossary accompanying the Code. A suitable working definition for the term optimum utilisation would be achieving maximum sustainable yield without damaging internal equilibrium.

Session III: Presentation of Working Group Conclusions for Articles 3 to 9

Detailed presentations were provided by the Working Groups in which changes to the draft Articles were recommended, discussed by all the participants present, and then adopted as recommendations by the Workshop. The key decisions were:

- 1 Article 4 should be revised from “Financial Institutions and Incentives” to “Socio-economic considerations”.
- 2 Article 8 (Socio-economic considerations) should be merged with new Article 4 with the same heading.
- 3 An issue of great importance to the Asian region and particularly the Philippines concerns the levying of fees for aquaculture development in mangrove areas.
- 4 Incentives for compliance with environmental regulations should be encouraged to promote better use of mangrove resources.
- 5 Article 5 dealing with the precautionary approach should include a box with the precautionary approach clearly defined, as such an approach is fundamental to the later Articles dealing with sectoral use of mangrove ecosystems and to many other aspects of the Code.
- 6 Article 6 on data gathering and management should be reorganized and the Code should avoid suggesting that sound management cannot be achieved unless more research and data gathering are undertaken. Conversely, the Code should emphasize that more effective use and dissemination of existing data to support management is urgently required.
- 7 Article 7 on capacity development should explain clearly the training programmes and training materials already available within the region.
- 8 Cultural and Social issues (Article 9) should be strengthened in order to raise awareness of the cultural and social importance of mangroves to many millions of people worldwide. Moreover, mangrove cultural and social values need to be recognized and used for the general benefit of society. One mechanism that the Code should recommend is for local

communities (mangrove dwellers) to have opportunities to exchange their experiences of mangrove conservation and rehabilitation (Reference Article 9.8).

Session VII: Presentation of Working Group Conclusions for Articles 10 to 14

Article 10 on Forestry/Silviculture is highly relevant to most of the Asian countries. The Table within Article 10 should be revised to show clearly the objectives for conserving mangroves; these objectives should include protecting and stabilizing shorelines in addition to the objectives already listed in the draft table.

Article 11 on aquaculture development was extensively reviewed and expanded particularly through contributions from the Philippines participants where aquaculture has been such a dominant use of mangrove resources. The Code of Conduct should also cite guidelines for sustainable aquaculture development already made available from other studies, for example from the Thematic Review of Shrimp Farming and the Environment, and other guidelines on mangroves provided by the Global Aquaculture Alliance (GAA). Dr. Primavera kindly agreed to provide an edited version of Article 11 before the end of the workshop.

The importance of integration of mangrove management into coastal area management (Article 13) was discussed at length because of its pivotal role in any attempts to harmonise the different and often conflicting sectoral uses of mangrove resources. It was noted that planning activities leading to e.g. strategic plans, coastal area management plans, action plans etc. were not adequate unless they could actually be implemented. Similarly the existence of committees at various levels, as mentioned in Article 13 e.g. national committees and state level committees, need to have clearly defined responsibilities, plus mechanisms for coordination with other sectors and agencies of management.

The final Article, on mangrove research, was strongly supported, as many of the participants are themselves mangrove researchers. It was noted that there is already a very good depth of knowledge on mangroves from existing research, and consequently the Code should emphasise the importance of applying existing research knowledge more effectively for management. One mechanism for this would be to strengthen and promote mangrove databases such as GLOMIS.

All the Discussions were then synthesized into the Draft Code of Conduct for sustainable management of mangrove forest ecosystems in South and Southeast Asia (see Annex 1).

ANNEX 1: A DRAFT CODE OF CONDUCT FOR THE SUSTAINABLE MANAGEMENT OF MANGROVE FOREST ECOSYSTEMS IN SOUTH AND SOUTHEAST ASIA