

# PRINCIPLES FOR A CODE OF CONDUCT FOR THE SUSTAINABLE MANAGEMENT OF MANGROVE ECOSYSTEMS



\* A WORK IN PROGRESS \*



# Collaboration

- **The Center for Tropical Ecosystem Research, Aarhus University, Denmark**
- **Stirling University, Scotland**
- **International Society for Mangrove Ecosystems, Japan**
- **The Bank Netherlands Partnership Program  
– Forest Biodiversity Window**
- **About 50 NGOs, multilateral organizations, and institutes in Asia, Africa, Latin America, Europe, and North America**



# Rationale

- **Mangroves serve important coastal functions:**
  - ✿ **Protection against coastal storms;**
  - ✿ **Critical habitats for coastal biodiversity;**
  - ✿ **Spawning areas for coastal, marine, and inland aquatic and terrestrial species and birds;**
  - ✿ **Waste treatment;**
  - ✿ **Source of timber (construction material and fuel) and non-timber products (honey, brackish water organisms, etc.); and**
  - ✿ **Recreation**
  
- **Poor communities in the vicinity of mangroves have traditionally depended upon them for income generation, often through sustainable management practices.**



# Summary of the uses, functions and attributes of mangroves

Uses	Functions	Attributes
Forestry	Flood mitigation	Biological diversity value
Agriculture	Prevention of intrusion of saline waters	Socio-economic values
Salt production	Storm protection	Cultural Value
Food, drugs, beverages	Sediment trapping	Historic value
Fuel wood, charcoal	Toxicant removal	Aesthetic value
Fishing/aquaculture materials	Groundwater recharge	Wilderness value
Household items	Erosion control	Educational value
Textile and leather production	Nutrient export	Research value
Agriculture	Wildlife habitat	
Construction materials	Fish/shellfish habitats	
Water supply	Protection of offshore habitats (coral reefs, sea-grass beds)	
Wildlife protection		
Recreation/tourism		
Research site		
Education site		
Transport routes		



# The application of economic valuation to mangroves

	On-site	Off-site
Marketed	Usually included in economic analysis, e.g., poles, charcoal, woodchips, crabs.	May be included in economic analysis, e.g., fish and shellfish caught in adjacent waters.
Non-marketed	Seldom included in economic analysis, e.g., medicinal uses, fish nursery areas, wildlife sanctuaries, biodiversity attributes, educational recreational and research values.	Usually ignored, e.g., nutrient flows to estuaries, buffer against storm damage, erosion control.



# Estimated loss of original mangrove area in different regions (based on country data available in WRI, 1996)

South and Southeast Asia	Loss of original area (%)	Africa	Loss of original area (%)
Bangladesh	73	Angola	50
Brunei	17	Congo	0
India	85	Djibouti	70
Indonesia	45	Equatorial Guinea	60
Malaysia	32	Gabon	50
Myanmar	58	Guinea	60
Pakistan	78	Guinea Bassau	70
Singapore	76	Kenya	70
Thailand	87	Liberia	70
Vietnam	62	Madagascar	40
		Mozambique	60
		Somalia	70
		South Africa	50
		Tanzania	60
		Zaire	50
<b>Inweighted average</b>	<b>61</b>		<b>55</b>

*Note: no data given for South America.*



## Conversion of mangrove areas in Thailand to other land uses

Land-use type	Before 1980	Between 1980-1986	Total (Km <sup>2</sup> )	% of total
Aquaculture	260.40	119.60	379.90	38.30
Mining	9.26	45.30	54.50	5.50
Salt pans	105.60	-	105.60	10.60
Others	318.70	21.33	340.00	45.60
Agriculture	-	(7.0)	-	-
Urbanisation	-	(7.4)	-	-
Industrial Sites	-	(1.8)	-	-
Harbours	-	(5.1)	-	-
<b>Total</b>	<b>693.90</b>	<b>186.20</b>	<b>880.10</b>	<b>100</b>

*(Source: modified from Aksornkoe, 1993).*



# Project Concept

- Provide a guide for sustainable management of mangrove ecosystems that can be adapted local circumstances; and
- Develop co-management strategies among communities, NGOs, and related government agencies through a consultative process that can lead to a regulatory framework.





# Project Design and Strategy

- **Conduct a literature review of global experience on the management of mangrove ecosystems;**
- **Prepare case studies from the Asia-Pacific, Africa and Latin American and Caribbean Regions;**
- **Based on findings from the review and case studies, prepare an early draft of the Code of Conduct;**
- **Conduct regional workshops to advance the formulation of the Code through consultation;**

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- **Conduct local workshops particularly with involved NGOs, other stakeholders and government agencies to adapt and field test the code as well as make further adjustments to its context; and**
  - **Collaborate with international NGOs, national, and multilateral organizations to gain endorsement or adoption of Code.**



# COUNTRY CASE STUDIES

## South and Southeast Asia

- Bangladesh
- India
- Malaysia
- Philippines
- Thailand
- Vietnam



# COUNTRY CASE STUDIES

## Africa

- Benin
- Ghana
- Kenya
- Mozambique
- Senegal



# COUNTRY CASE STUDIES

## Central and South America

- Brazil
- Colombia
- Ecuador
- Nicaragua



# Three Regional Consultation Workshops

Report on the S and SE Asian Regional Workshop on the Sustainable Management of Mangrove Forest Ecosystems

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  
 Funded by The World Bank



Report on the Africa Regional Workshop on the Sustainable Management of Mangrove Forest Ecosystems

ISME/cenTER/CAW  
**Report on the  
 Africa Regional Workshop  
 on  
 the Sustainable Management of Mangrove Forest Ecosystems**



Centre for African Wetlands, University of Ghana, Legon, Accra, Ghana  
 February 17-19<sup>th</sup> 2003  
 Edited by  
 Donald J. Macintosh and Elizabeth C. Ashton  
 Funded by The World Bank



Report on the Americas Regional Workshop on the Sustainable Management of Mangrove Forest Ecosystems

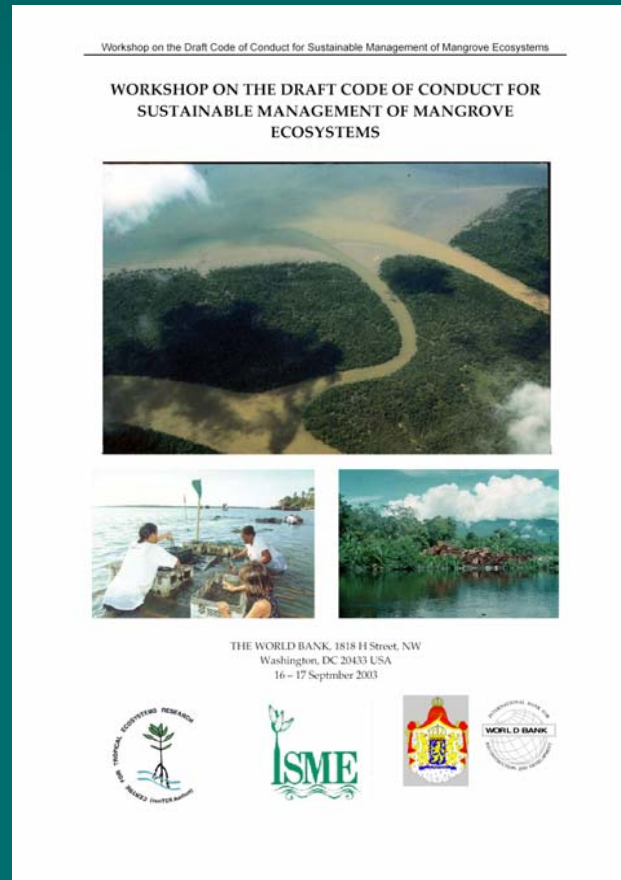
ISME/cenTER/CAW  
**Report on the  
 Central and South America Regional Workshop  
 on  
 the Sustainable Management of Mangrove Forest Ecosystems**



Universidade Federal do Ceará, Instituto de Ciência do Mar (LABOMAR)  
 Fortaleza, Ceará, Brazil, March 17-20<sup>th</sup> 2003  
 Edited by  
 Macintosh, D. J. and Ashton, E. C.  
 Funded by The World Bank



# Workshop and Peer Review at the World Bank in Washington, DC September 2003



For all documents, go to:

[http://www.biology.au.dk/cenTER/MCB\\_2003.htm](http://www.biology.au.dk/cenTER/MCB_2003.htm)



# PRINCIPLES OF THE CODE OF CONDUCT



**Principle 1. Objectives of Mangrove Ecosystem Management** *The fundamental objective of mangrove ecosystem management is to promote conservation, and where necessary restoration or rehabilitation and sustainable use of mangrove ecosystems and their associated habitats to benefit local to global populations.*

**Principle 2 . Precautionary Approach to Management** *The overall approach to mangrove management should be a precautionary one, but a lack of scientific information should not be used as an argument for postponing, or failing to conserve mangroves or to manage them sustainably.*

**Principle 3. Policy and Legal Frameworks** *National and international policy and legal frameworks are required to provide overall guidance for the conservation and sustainable use of mangrove resources and to ensure protection for mangrove-associated biodiversity.*

**Principle 4. Implementation and Integration** *There is a general weakness in the implementation of policy and legal frameworks for mangroves, lack of consultation between the management agencies and the various mangrove stakeholders, inadequate monitoring and evaluation of implementation performance and lack of integration of mangrove management with coastal and river basin area management.*





### **Principle 5. Mangrove Assessment**

*Mangrove survey, mapping, inventory and monitoring data are required to support the sustainable management of mangrove ecosystems.*

### **Principle 6. Socio-Economic Considerations**

*Mangroves provide important socio-economic benefits to indigenous peoples and local communities worldwide; it is essential therefore to manage mangrove ecosystems and their resources sustainably to maintain and improve their livelihoods.*

### **Principle 7. Cultural and Community Issues**

*Mangrove ecosystems are associated with unique human traditions and knowledge, but they are also under severe pressure from some forms of exploitation, both traditional and non-traditional.*

### **Principle 8. Capacity Development**

*Capacity development for mangrove ecosystem management, and awareness raising about mangroves in general are needed at all levels from decision makers in government, to district and municipal officials, community leaders and educational institutions (teachers, students and school children).*



### **Principle 9. Forest Management and Silviculture**

*Mangrove forestry/silviculture objectives may have an economic, environmental or aesthetic basis, or a combination of these. Wherever, possible, multiple use management should be the ultimate goal of mangrove forest management.*

### **Principle 10. Fisheries**

*Mangrove associated fisheries have worldwide importance in providing subsistence food and income, as well as commercial benefits, for a wide range of stakeholders, including indigenous peoples and local fisher communities.*

*However, lack of enforcement of existing fishery regulations, including lack of protection of mangrove nursery sites and habitat degradation are among the major reasons for the widespread decline in mangrove fisheries.*

### **Principle 11. Aquaculture**

*Mangrove associated aquaculture has worldwide importance in providing subsistence-level food and income, as well as commercial benefits, for a wide range of stakeholders. Unfortunately, some aquaculture development has also resulted in severe environmental degradation and socioeconomic problems, due in part, to poor management practices and/or lack of enforcement of environmental regulations. The importance of sound management in relation to mangrove aquaculture development in mangrove ecosystems cannot be overestimated.*



### **Principle 12. Agriculture, Salt production and Mining**

*The conversion of mangroves to other forms of land use, including agriculture and salt pans has been a major cause of wetland habitat loss in many countries.*

*Mining has also caused significant localized damage to mangrove ecosystems, especially in Africa and parts of Asia.*

### **Principle 13. Tourism, Recreation and Education**

*Tourism is one of the World's largest and fastest growing sector of the global economy. Mangrove ecosystems can provide ecotourists with unique habitats and biodiversity opportunities, with many potential activities, including recreational fishing, bird watching, viewing wildlife and scenic boat trips.*

### **Principle 14. Mangrove Products and Responsible Trade**

*Sustainably produced mangrove products should be promoted by "green labeling" and they should be marketed following the principles of fair-trading and benefit sharing.*

### **Principle 15. Mangrove Research and Information Dissemination**

*Inadequate understanding of the functions and values of mangrove ecosystems is one of the main constraints to conserving and managing mangrove resources sustainably. However, there are considerable skills, information and opportunities available worldwide to use research knowledge more effectively to improve mangrove management.*

# NEXT STEPS

- **Conduct local workshops particularly with involved NGOs, other stakeholders and government agencies to adapt and field test the code as well as make further adjustments to its context; and**
- **Collaborate with international NGOs, national, and multilateral organizations to gain endorsement or adoption of the Principles and formulation of local Codes.**

