

# **The Assessment of Management Effectiveness of Marine Protected Areas in Kenya**

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# Why evaluate effectiveness?



Managing an MPA is a **continuous, iterative, adaptive** and **participatory** process

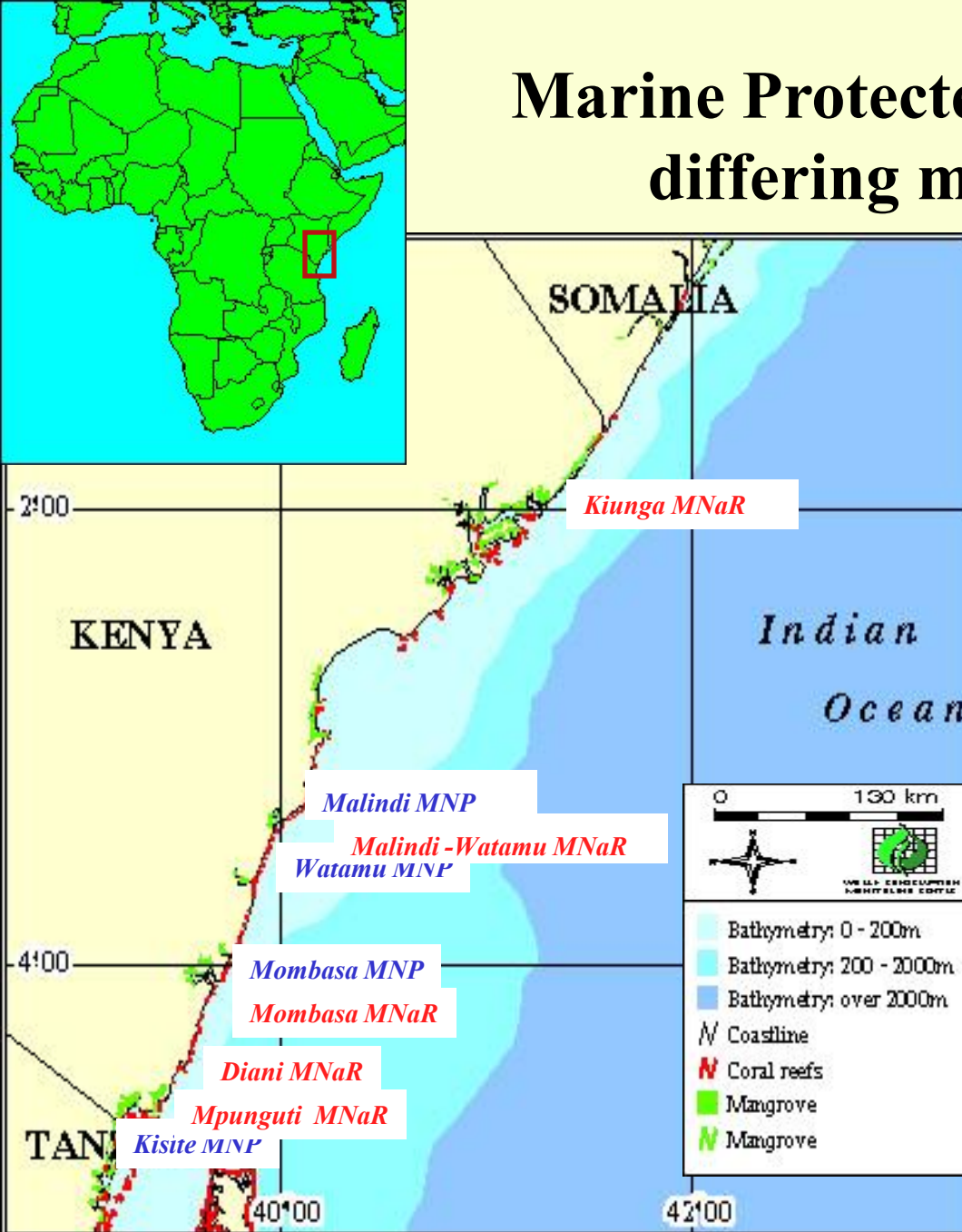
There are a set of **tasks** that must be carried out to achieve set **objectives**

Management effectiveness

- degree to which a MPA is meeting its objectives
- an assessment documents how management influences success



# Marine Protected Areas of Kenya under differing management regimes



Site name	Designation	Size-km <sup>2</sup>	Year
<i>Kiunga</i>	MnaR, UNESCO Biosphere Reserve	600	1980
<i>Malindi</i>	MNP	6.3	1968
<i>Malindi-Watamu Biosphere reserve</i>	UNESCO Biosphere Reserve	177	1968
<i>Watamu</i>	MNP	32	1968
<i>Mombasa</i>	MNP	10	1986
<i>Mombasa</i>	MNaR	200	1986
<i>Diani</i>	MNaR	75	1993
<i>Kisite</i>	MNP	28	1978
<i>Mpunguti</i>	MNaR	11	1978

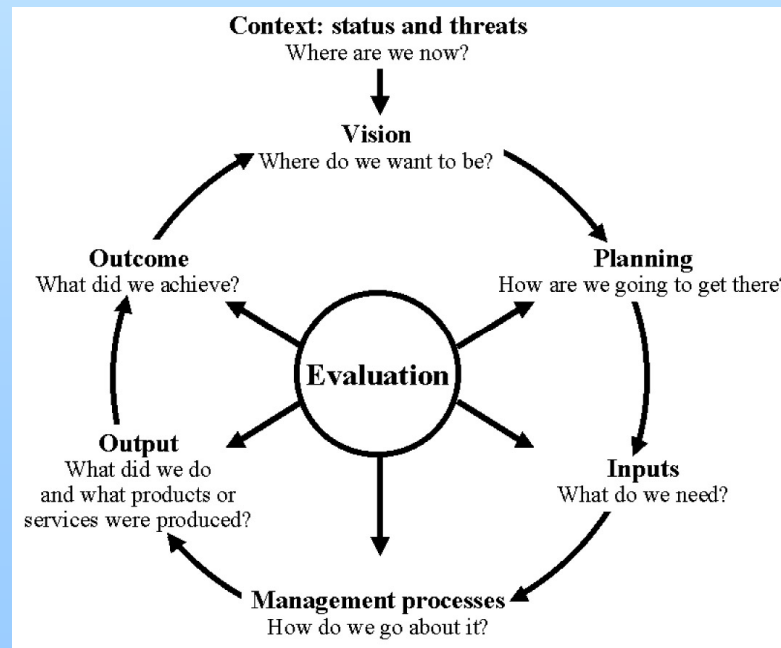
**MNP- Marine National Park**

**MS- Marine Sanctuary**

**MNaR- Marine National Reserve**

# MPA establishment

- Design: What is the **context** in which the MPA exists, and what is its vision? How appropriate is the **planning**?
- Management systems and processes: What **inputs** are needed? What is the management **process**?
- Delivery of objectives: What are the **outputs**/products? What are the **outcomes**/impacts?



# MPA objectives

- Preservation and conservation of marine biodiversity
- Sustainable use of marine resources for cultural and economic benefits (fisheries, tourism, recreation)
- Awareness and education
- Management oriented research

Mombasa MPA objective (Weru et al. 2001)

1. To protect a representative sample of the coral reef, mangrove and seagrass ecosystem
2. To restore and rehabilitate damaged marine ecosystems
3. To ensure that activities within the MPAs are controlled and conform to the management regulations for ecological sustainability
4. To enable stakeholders to participate in a wide range of eco-friendly recreational activities
5. To implement zoning as a management tool in order to eliminate conflicts between user
6. To enhance and encourage management oriented research for optimum resource use and to ensure information flow to stakeholders to allow better understanding of management decisions
7. To provide an information base for education and awareness programmes for local communities

# Regional Assessment Initiative

Regional Workbook based on WCPA/METF methodology

Tested in 3 countries

- Kenya: Kiunga MNR, Malindi MNP/MNR, Watamu MNP/MNR, Mombasa MNP/MNR, Kisite/Mpunguti MNP/MNR
- Tanzania: Mafia I. MP, Mnazi Bay-Ruvuma Estuary MP
- Seychelles: Cousin I. Special Reserve

Selection criteria

- Established MPA
- Management in place
- Management plan



# Assessment Process

Establish implementation teams



Emphasis on self-assessment with participation of stakeholders



Review by staff and stakeholders  
Consultative workshops



- Final revision by team
- Compilation of MEA Reports

# ME Worksheets

Assessment component	Worksheets
Context	Management targets Current threats Potential threats Review of National context Assessment of stakeholder engagement
Planning	List of planning documents Adequacy of management plans (others) Adequacy of design of MPA
Inputs	Assessment of resources (inputs) Resources summary
Process	Assessment of management process Assessment of capacity
Outputs	Assessment Management plan implementation Management plan implementation summary
Outcomes	Assessment of biodiversity objectives Assessment of Socio-economic objectives Ranking of current threats



# Sample Worksheet

## Review of National Context

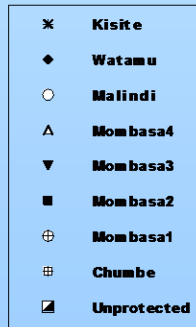
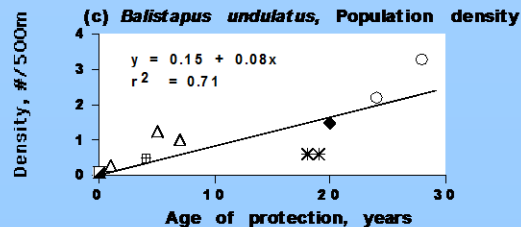
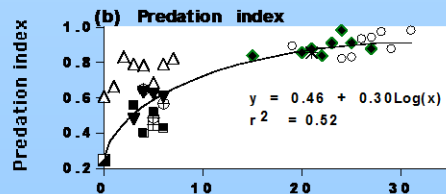
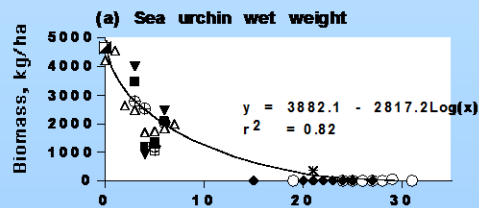
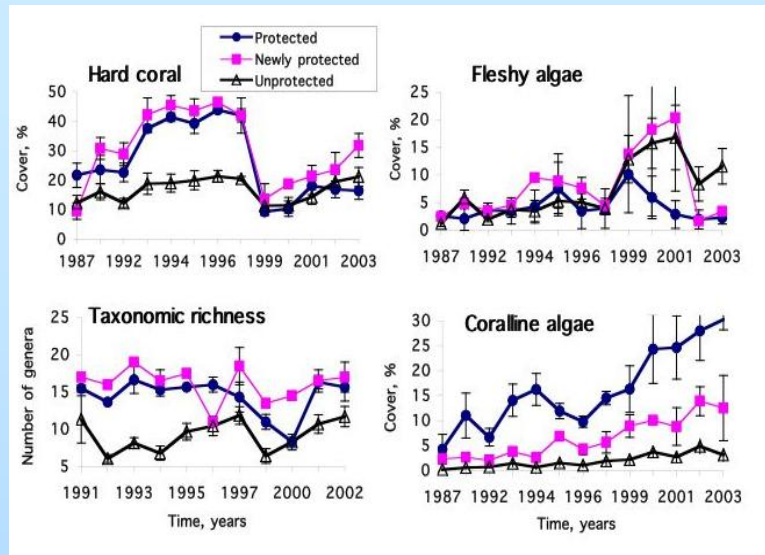
Criteria	Strengths	Weaknesses
MPA site & protected area legislation		
Conservation within broader government policy		
International conservation conventions & treaties		
Government support for MPA		
National protected area agency & MPA site		

# Types of information available

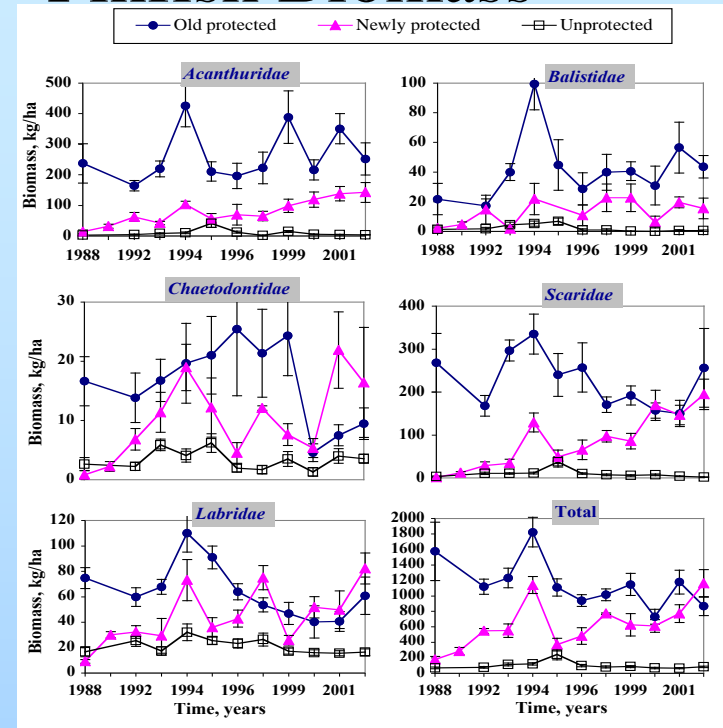
- Literature search, compiled an annotated bibliography about ~ 260 publications including journal articles, student theses, reports etc (Muthiga and Kawaka 2007)
- Ecological information from monitoring programs (CRCP, CORDIO, KWS)
- Socio-economic information (numbers of fishers, boat operators etc)
- Information on turtle nesting/mortality (KESCOM)
- Administrative information (staff, revenue, budgets)
- Occurrence book information and reports
- Visitor statistics

# Biological/ecological indicators of reef health

## Coral Cover



## Finfish Biomass

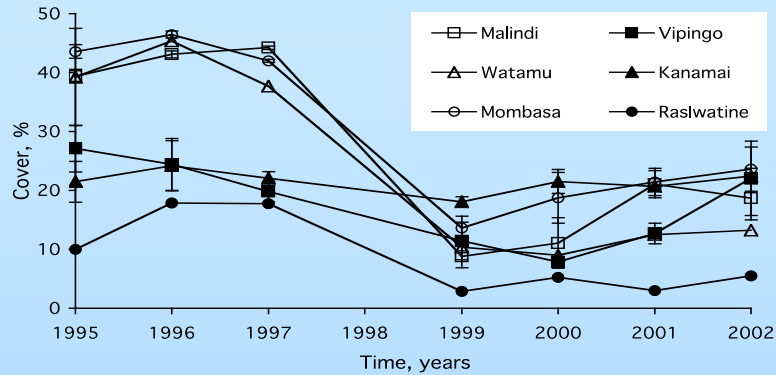


## Sea urchin biomass

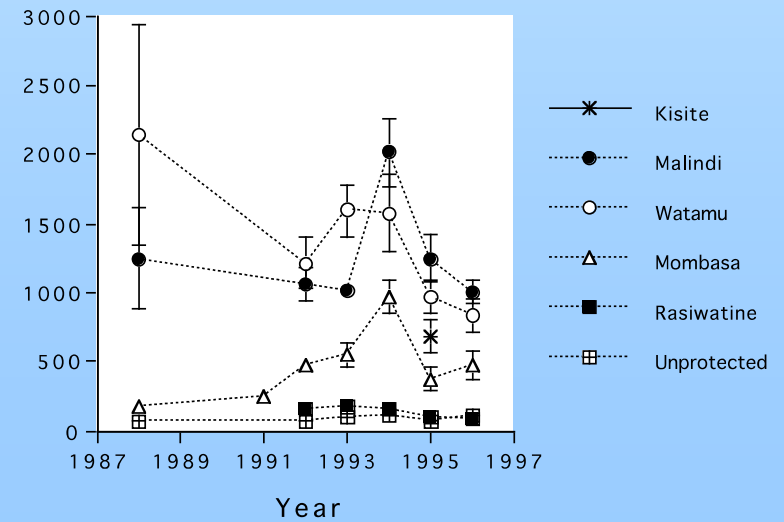
CRCP annual monitoring

# Coral Reef Health

## Coral cover



## All Fishes



# Socio-economic indicators

Table 1. Socio-economic information on various aspects of the Mombasa marine park and reserve as well as communities utilizing the MPA

INDICATOR	FACTOR	COMMENT
Population	207,862 (Kisauni division)	Kisauni division is 32% of the population of Mombasa district and 8.3% of the population of Coast province (Central Bureau of Statistics 2003).
Population density	1650/km <sup>2</sup>	The MPA straddles Kisauni and Bamburi locations of Kisauni division with a density of 1087 and 3150 persons/km <sup>2</sup> respectively. Mombasa district has a density of 2896 persons/km <sup>2</sup>
No of hotels	25	The number of hotels increased from 5 with less than 1000 beds in 1971 to 25 with 7000 beds by 1993 (UNEP/FAO/ICDA, 2000).
No of persons employed in tourism sector	153,000	This number includes persons employed in small-scale tourism sectors. An estimated 13,000 persons are employed in the hotels (CDA 1996)
No of fishermen and CPUE	45(2.5)	Fishers that land their catch at the Jomo Kenyatta landing site use mainly traps, gillnets, and hook and line. Fishers at Nyali and Marina use beach seines recently banned in Kenya (CRCP unpublished data).
- Kenyatta	40(1.5)	
- Nyali	50(1.5)	
- Marina		
No of hotel based boats	25 – 30	This number fluctuates increasing to 30 during the high season (KWS per com)
Number of community boats	15 - 20	This number fluctuates depending on the season peaking between Nov and Jan (KWS reports)
No of visitors to the MPA	~ 10,000 Residents ~ 30,000 Non-residents	The number of visitors was impacted by two main events; 1) BMP caused an increase by ~ 65% 2) Likoni clashes caused a reduction by an additional ~ 25% (Muthiga 1998).
Revenue to MPA	\$50,000	The revenue was negatively impacted by the Likoni ethnic clashes in 1997 decreasing by more than 50%
Community projects	- Rehabilitation of Jomo Kenyatta beach - Infrastructure for fishers and boat operators - moorings	- this beach receives ~ 3000 local residents per weekend  - this consists of a building housing the offices of the Mombasa boat operators and fisher associations as well facilities for processing fish (CDA 1996) - moorings and a code of conduct were installed for use by all boats in the MPA (Muthiga 1998)





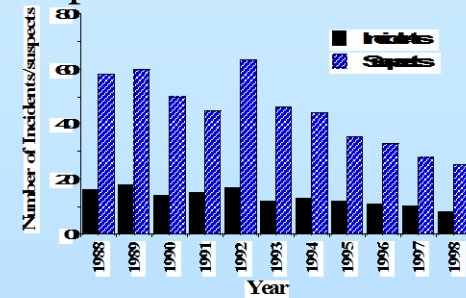
# Governance Indicators



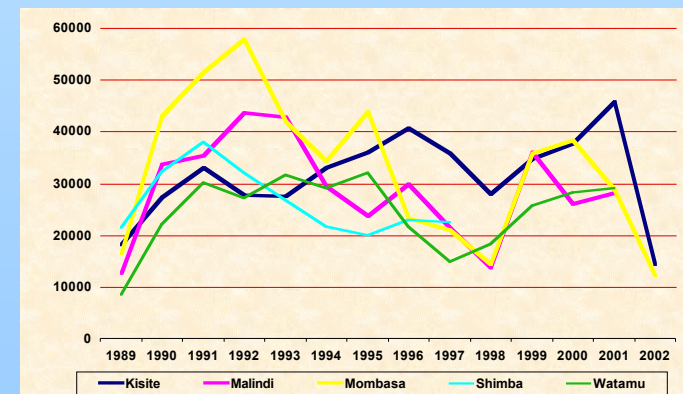
Malindi MPA

- Legislation and Wildlife Policy
- Management plans and structures
- Draft MPA regulations
- Management staff
- Infrastructure
- MOUs

## Compliance information



## Visitor statistics





# Management strategies

**Table 6.** Management strategies of the MPAs

STRATEGY	ACTIVITY	COMMENTS
1. Enforcement of MPA regulations	- Daily patrols to enforce regulations i.e. no fishing in park, restricted fishing in reserve use of moorings,	- Within the park this is fairly effective mainly due to the willingness of users to comply as they perceive the benefits - Within the reserve not effective as beach seining continues. Occasional poaching in park
2. Collection of Revenue	- Collection from several entry points sometimes based at a beach hotel	- Time consuming and expensive.
3. Mooring buoys	- mooring were installed at snorkel and dive sites including a code of conduct for boats	- Fairly effective because user group understands benefits - Maintenance and repair a problem - The code of conduct is mostly effective
4. Beach Management program	- Patrol of beaches to ensure security - Cleaning of the beach - Revenue collected by hotels based on number of tourists at \$US 0.5/bed night	- Very effective at the beginning however after the ethnic clashes of 1998 tourism almost collapsed in Kenya and hotels were reluctant to pay dues. - No legal framework was developed - Little government support
5. Research and Monitoring	- Annual monitoring by CRCP and KWS - monitoring of visitor statistic, water quality assessment and turtle nesting and mortality (KESCOM) - other research by KMFRI universities and projects	- This has been a very successful partnership, many research publications of the area now exit - local and international scientists and students use the park - Effective although information not always readily available for management - Collaboration reduces management costs
6. Community initiatives	- Community projects include training in mooring use, refurbishment of boats and provision of safety equipment	- Effective in assisting communities gain benefits from tourism ventures in the MPA
7. Integrated Coastal Zone Area Management	- Formation of ICAM secretariat and participation in ICAM activities - Fisheries, boat operators and mooring demo projects	- Shows the benefits of working in an integrated way - reduced destruction of reefs
8. Management Plan development and implementation	- Stakeholder consultation leading to drafting of management plans.	- slowly being implemented - Key features include MPA regulations, formation of an Advisory committee and training
9. Awareness and Education	- regular activities include Marine Environment Day, International Coastal Clean-up and tours of Schools Groups	- especially effective in raising awareness in schools

# Education and Awareness



1. Awareness programs
2. Environment days
3. Coastal clean-ups
4. Training of staff

Malindi resource center

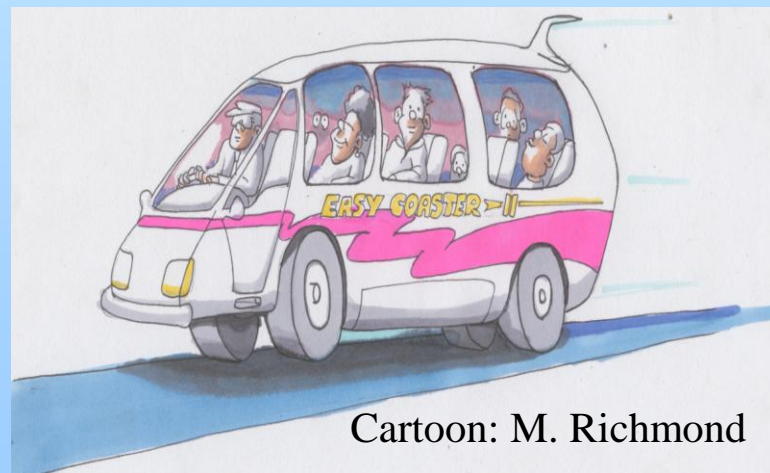
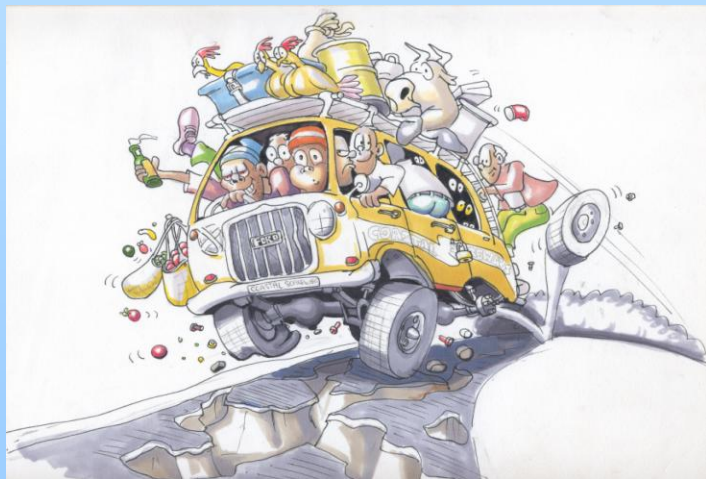
# Summary MPAs



- Each MPA compiled a report (50 - 100 pg)
- Marine parks making progress towards meeting objectives (biodiversity protection)
- Marine reserves not meeting their objective of sustainable fisheries
- Revision of management plans needed (2004)
- Research and monitoring activities should be better linked to management
- Training and awareness activities better linked to management

# Lessons learned about the process of MEA

1. Difficulty understanding the concept of ME assessment
  - Required extensive training and technical support
  - Matatu concept



Cartoon: M. Richmond

Does your MPA look like this?

Or this !

# **Lessons learned**

- 2. Methodology too complex for some sites (requires computer skills and ability to analyse information)**
- Workbook revision should include questionnaire for use at sites with less capacity and academic training**

# **Lessons learned**

## **3. Stakeholder participation is essential:**

- MPA staff tend to rate progress too highly; stakeholders provide an objective view;**
- Assessment provides good opportunity to build relationships with stakeholders – first time stakeholders were involved during an assessment of management**



# **Lessons learned**

**4. Assessments cost time and money but this need not be excessive:**

- Each MPA had \$2500-3000; assessment period was c. 6 months;**
- In-kind support provided by each MPA**
- Mainstreaming of assessments in management cycle should be possible (e.g. as part of review process for management plans)**

# General Conclusions

- Assessments were useful – MPA staff increased knowledge of their MPAs and links with stakeholders
- MPA managers were also able to increase their skills in MEA
- Baseline assessments now available for each MPA
- Annotated bibliography in print (Muthiga & Kawaka 2007)
- Revised Workbook now available (Mangubhai and Wells 2003)
- Scientific information is available: accessibility issue
- A strong national co-coordinating agency facilitates assessment (e.g. KWS)
- Both this method and the WCPA-Marine approach are useful and complementary – develop better links between the two

# Additional Observations

## **Institutional Issues**

1. Organizational structure: coast region as a seascape
2. Wildlife Policy: marine and coastal issues
3. MPA plans (measurable management targets) and regulations specific to MPAs
4. Retention of skills
5. Conflict resolution

## **External issues**

1. El nino and Coral bleaching and mortality
2. Economic instability and reliance on tourism: 9/11 and Likoni clashes effects on visitor numbers

## **Management of information**

- Better storage and management
- Annotated bibliography

# Publications

- Wells S (2004) Assessment of management effectiveness in selected Marine Protected Areas in the Western Indian Ocean. Final report. IUCN Eastern Africa Programme. 29 pp
- Muthiga, NA (2006) Assessing the effectiveness of management of marine protected areas in Kenya: Experiences from the Mombasa marine park and reserve. Proc 10<sup>th</sup> Int Coral Reef Symp 1231-1242
- Wells S, Burgess N, Ngusaru A (2007) Towards the 2012 marine protected area targets in Eastern Africa. Ocean & Coastal Management. 50 (1-2):67-83

# Acknowledgements

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- Stakeholders of MPAs
- Sue Wells



Asante sana