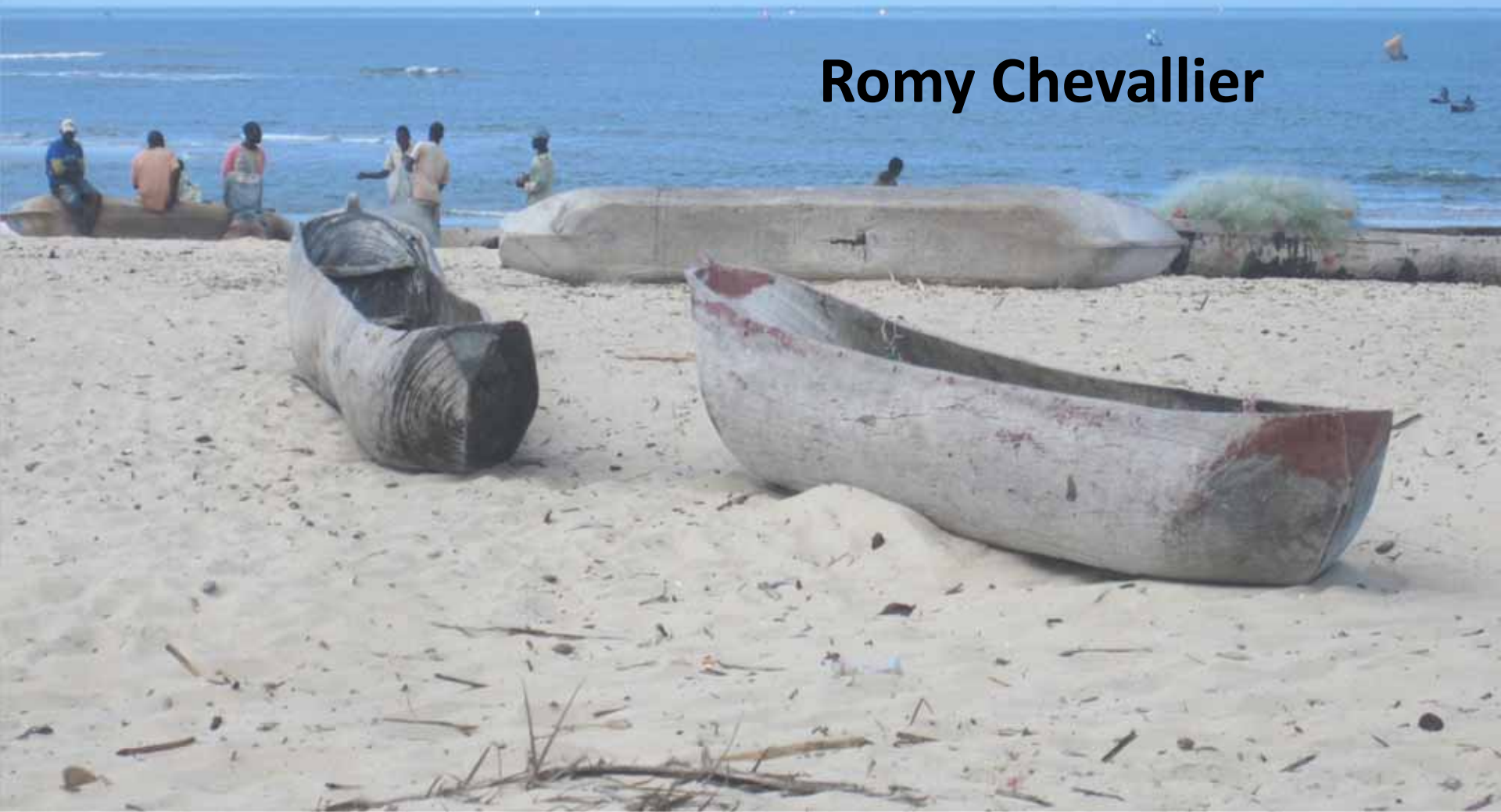
Reconciling growth and development with ecological integrity of the coastline:

The case of mangroves in Mozambique



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Mangroves/ mangrove forests

Salt tolerant trees and shrubs

- Interface between sea and land
- Tropical & sub-tropical coastlines, estuaries/ deltas
- Mangroves = 1% of forested areas globally
- Highly productive ecosystems
- Highly threatened
- Heavily populated coastal zones, coastal developments, aquaculture, fuelwood, timber production, agriculture, chemical + oil spills, climate change, mining..
- Lack of data & knowledge of importance

Africa = 21% of total mangroves (3.5 million ha)

1) Nigeria (5% of total global area)
2) Guinea Bissau (2.5%)
3) **Mozambique – largest in east Africa (2.3%)**
4) Madagascar (2%)

- Threatened vegetation type (with almost 50% of original area destroyed)
- 70 species of mangroves – 11 are highly threatened/ endangered

Mangroves benefits: Ecosystem services & functions

= habitat & breeding ground for fish
= protection for crustaceans
= nursery for other animals/ birds
= filtering of water
= buffer against sea-level rise
= absorb and store carbon dioxide
= prevent/ reduce coastal erosion
= fire wood/ timber
= cultural services
= tourism

- Development and poverty reduction benefits
- Livelihoods dependent on ecosystem services

Mangrove services for Mozambique

- Habitat and breeding ground fisheries/ prawns (Sofala bank)
- Shelters & buffers Mozambique coastline from sea level rise (3rd most exposed country to natural disaster risks)
- Absorbs carbon dioxide
- Timber for construction/ fuelwood
- Supports biodiversity
- Tourism

Mangroves in Mozambique

- 390,000 ha (2007), extending over 2770km coastline
- North and central areas, 50% of mangroves are found in Zambezi Delta
- Consensus highly vulnerable and being destructed at a fast rate
- 2.5 million people living in the coastal zone (Maputo, Beira, Quelimane, Pemba...), needs of urban centres, energy needs
- Clearing for coastal developments, agriculture, salt extraction, upstream dam construction, oil spills
- Hydrocarbons & mining (offshore gas exploration in Rovuma Basin near Quirimbas National Marine Park, offshore gas exploration & pipeline construction in Inhambane Province, oil and gas prospecting in Marromeu Complex (Ramsar site), heavy mineral sands mining
- Infrastructure, port construction & process of exporting coal
- Expansion of aquaculture

Governance of Mozambique's mangroves:

Adopt economic models to better demonstrate the true value of mangrove systems

- Ecosystem services included in development choices, inform decisions
- Make use of ecosystem valuations and ecological accounting to justify decisions to accelerate and scale up investment in the management and restoration of mangroves
- Awareness raising

Adopt integrated, ecosystem-based approach to management & planning

- Balancing sectors impact land-use change in coastal zone –marine, terrestrial and coastal, all stakeholders and users
- Map current and future human and industry footprints
- Balancing economic interests in coastal zone – hydrocarbons, coastal development, tourism, fisheries, mining, ports, conservation
- Spatial development and environmental management plans to pre-empt destructive practices, minimise livelihood loss, prioritise of vulnerable/ important zones, determine cost-benefits of various scenarios
- Mozambique's draft 2012 Coastal Strategic Environmental Assessment (SEA) IMPACTO – coast-wide study, identified major concerns that needed to be addressed, recommendations
- SEA for localised situations – Bazaruto (determine impact gas exploration in Archipelago)

Enabling policies and legal frameworks

- Deforestation vary between countries (state reserves, blanket regulations for protecting mangroves, licensed exploitation)
- US and Australia: ‘no net loss’ policy
- Philippines: legal requirements restricting aquaculture
- Mozambique: mangroves are subject to partial protection under Environmental Law (1997). Law establishes instruments for controlling destructive activities through strict licensing systems, EIAs and audits
- Law allows harvesting for subsistence purposes. Commercial exploitation & activities in coastal zone can only go ahead if EIA is undertaken and MICOA issues an environmental licence
- Strengthening legislation governing extractives in coastal zone

Integrating ecosystem services & conservation into development policy

- Integrated: Poverty reduction strategies/ development policies
  : Other sectoral policies
- Clarify roles and responsibility of key institutions
- Centralised interdisciplinary forums to examine these national decisions – Mozambique's National Council for Sustainable Development (CONDES)
- CONDES has established environmental units and focal points in relevant ministries &established 4 research centres (CDS)
- Broaden role and capacity of MICOA – coordinate environmental functions, also to perform management & intervention functions
- Devolution of law enforcement to local authorities

Promoting sustainable land-use change

- Alternative practices that are less destructive
- Guinea Bissau, Sierra Leone: new practices of smoking fish that requires less wood
- Indonesia and Vietnam: sustainable shrimp farming/ aquaculture - silvofishery concept
- Extractives and wetlands: measures/ best practice to minimise destruction, guidelines for mining companies

Restoring & planting mangroves

- Reverse loss/ replenish (although conservation is cheaper)
- Current replanting and restoration over 400,000 ha globally
- Labour intensive = unskilled jobs
- NGO sector very active: India, Indonesia, Senegal – collaborating with business offset carbon credits
- Livelihoods Fund in Senegal: 110,000 ppl, 100 million mangrove trees

Use of national and transboundary protected areas

- Total protection/ management & sustainable use of natural resources
- Moz: 6 national parks, 8 national reserves, 13 forest reserves and 10 hunting areas
- 15 % of protected areas – coastal and marine
- Only 50% of mangroves are protected in these areas
- Reliable data & inventories are needed for refining conservation priorities and informing policies for regulating resource extraction, trade, and coastal development
  - include the presence of threatened species and the designation of critical habitats, no-take zones, and marine protected areas

Use of international environmental conventions and treaties

- Protocols mangrove conservation provide opportunities for strengthening the management of mangrove areas.
- 11 international treaties which protect mangroves to some extent (Ramsar Convention)
- Platform for highlighting achievements & subjecting them to international scrutiny, promoting better management practices through peer learning
- However, do not automatically provide legal protection, and do not protect or conserve particular mangrove species. They also do not carry sufficient penalties for non-compliance, and are only effective if implemented by national parties

New & innovative financing to support mangrove management

- Explore new financial incentives for protecting non-market ecosystem benefits
- Incentives, compensation mechanisms and other economic instruments like Payment for Environment Services Schemes (Carbon, biodiversity and water markets)
- Blue Carbon – mangroves climate mitigation potential is recognised and entered into UNFCCC frameworks - Mozambique low awareness these opportunities (1 carbon demonstration pilot project in Zambezi delta)
- Private sector

Community participation

- Mangrove action plans developed at the national level need to be implemented and enforced at the local level.
- As key beneficiaries of mangrove goods and services, local communities need to buy into new management strategies.
- Coastal communities are able to manage and protect ecosystems, and can play key roles in restoration and law enforcement
- CCPs

In conclusion

- Reconcile Mozambique's rapid economic growth with the maintenance of ecological processes and coastal biodiversity
- Balance: social development, economic growth and environmental protection
- Recognise true value of mangroves and incorporate these into high level decisions
- Make use and strength tools and instruments to ensure mangroves are managed more effectively, restored & maintained

- SAIIA Policy briefing 74 ‘governing Africa’s mangroves for a sustainable future’
- SAIIA Research report – in the pipeline – to be published by end 2013. ‘Balancing development and coastal conservation: mangroves in Mozambique’