



Wealth Accounting and Valuation of Ecosystem Services: A Global Partnership

Mini-Symposium: A Healthy Ocean: Why it Matters to
our Mission
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Why do we need WAVES?

MEA: **undervaluation of natural capital** a major cause of ecosystem degradation and biodiversity loss

Progress with valuation: wide support in the environment community (TEEB),

How do we **convince Ministries of Finance**, Planning agencies that they have a stake in sustainable mgmt of natural capital

→ bring natural capital into the **national income accounts** to show the link between natural capital and long-term growth, sustainable development



How do we engage ministries of finance, central banks, planning agencies?

...Identify their stake in ecosystem services

Leveraging natural capital for economic growth

- Is economic growth sustainable, or are we ‘living off our natural capital?’
- Contribution of Env and NR sectors to
 - national income, employment, foreign exchange earnings
 - government revenue
- How can Natural Capital be managed more productively, to increase national income and reduce poverty?
- How much should be invested in Natural Capital in order to improve management

Who benefits—Incentives or Disincentives for sustainable management

Distribution of incomes and role in livelihoods, poverty reduction. for example —

- Local communities vs others
- Domestic vs foreign stakeholders

Long-term growth depends on the wealth of a nation, including natural capital

WAVES Conceptual framework for sustainable development:

Comprehensive Wealth Approach where wealth includes all assets--Manufactured capital, Natural capital, Human & Social capital, but Ecosystems and their services not explicit

→ Development is a process of building wealth and managing this portfolio of assets (*The Changing Wealth of Nations*, World Bank, 2011)

WAVES Methodological framework for implementation:
UN's System of Environmental and Economic Accounting (SEEA), developed over past 20+yrs.

SEEA is a comprehensive accounting framework, like the System of National Accounts (SNA), that includes both

- indicators for evaluation performance
- detailed statistics for management

Accounting for ecosystems is a major focus of current and future work



Ecosystem Accounting: two parts

Construct economic accounts for the ecosystem instead of administrative region—for example, economic accounts of the North Sea (Netherlands)

Expand services to include many non-market ecosystem services, especially the regulating services

WAVES: “Greening” the National Accounts to fill critical gaps for Natural Capital

Ecosystem services	Representation in the National Accounts (NA)
Provisioning services—food, fuel, fiber, etc.	Mostly identifiable in the NA because they have prices, but some poorly measured
Cultural & recreational services	Mostly identifiable in the National accounts
Regulating & supporting services, e.g., Forests: <ul style="list-style-type: none">- water regulation and sediment control- pollination services Mangroves <ul style="list-style-type: none">- habitat for fisheries- coastal protection services Carbon sequestration—most commonly measured ES, but not in NA	Mostly in the National Accounts, but ‘invisible’ due to lack of prices



Accounting for marine & coastal ecosystem services, an example from Zanzibar

ECOSYSTEM ACCOUNTING

Holistic, systems approach to accounting for the environment in a manner consistent with the National Income Accounts

3 Components:

Economic dimension

Land accounts: land cover by land use (extend to seascape)

Ecosystem dimension: major components of ecosystem



Economic Accounts

Economic value & physical measures for

- Fishing, gleaning, fish processing & marketing, seaweed farming
- Tourism: Hotels & restaurants, diving & snorkeling, other tourist-related activities, seaweed farming
- Mangrove harvesting

Value chain analysis to trace benefits through entire processing & marketing of resources

Also,

- Capital stocks, infrastructure
- Population
- Tourist arrivals & expenditure, etc.



Land Cover



LAND COVER: 13 classes

- **On-shore, above high-tide line, 5 classes**
- **Inter-tidal zone from high-tide to coral reefs, 5 classes**
- **Coral reefs & off-shore, 3 but likely to be increased**

Land accounts derived from aerial photo GIS database that extend to the coral reefs

Measurement of Shoreline and access to shore is critical

Ecosystem dimension



Stocks & flows of ecosystem components

- Fish stocks & catch
- Coral stocks
- Mangrove forests stocks & harvest
- Seagrass beds

Indicators of health, integrity, such as

Changing balance of fish groups

Indicators of coral health

Beach erosion

Volume & quality of freshwater use for tourism

Coastal water quality, nutrient loading



Who are the Stakeholders/Beneficiaries for the Marine Ecosystem?

Local beneficiaries:

1. Zanzibari villagers in coastal areas, tourism, fishing and seaweed farming
2. Urban Zanzibaris in urban business, mainly tourism and some fishing in Zanzibar Town

Zanzibari, but not local, beneficiaries:

3. Urban Zanzibaris in rural areas
4. Zanzibari government

Outside, Non-Zanzibari beneficiaries:

5. Mainland Tanzania or other countries, mainly tourism (also researchers, others with concern for marine conservation)



Contribution of marine ecosystem services to the macro-economy of Zanzibar, 2007

(thousand US\$)

	Share of GDP	Foreign exchange earnings	Employment of Zanzibaris	Share of investment
1. Provisioning services				
Seaweed farming	0.4%	2,397	16,422	
Fishing**	6.2%		37,203	1%
Mangrove harvesting	*		unknown	
2. Recreation & tourism services				
	23.6%	184,929	9,351 +	76%
Total value	30.2%	187,326	62,976 +	77%
3. Other ecosystem services, non-market:				
Education & research	Value unknown but likely to be significant			
Regulating services: Fisheries habitat, Wastewater assimilation, Shore protection				

*less than 1%. **only artisanal fishery, not including off-shore fishery licensed to foreigners

Segments of tourism market

1. All-inclusive, 'Club' tourism, mid-range budget
2. Large-scale, up-market
3. Small-scale, up-market & eco-tourism
4. Mid-range
5. Budget/Low

With different impacts:

Economic benefits, total & distribution

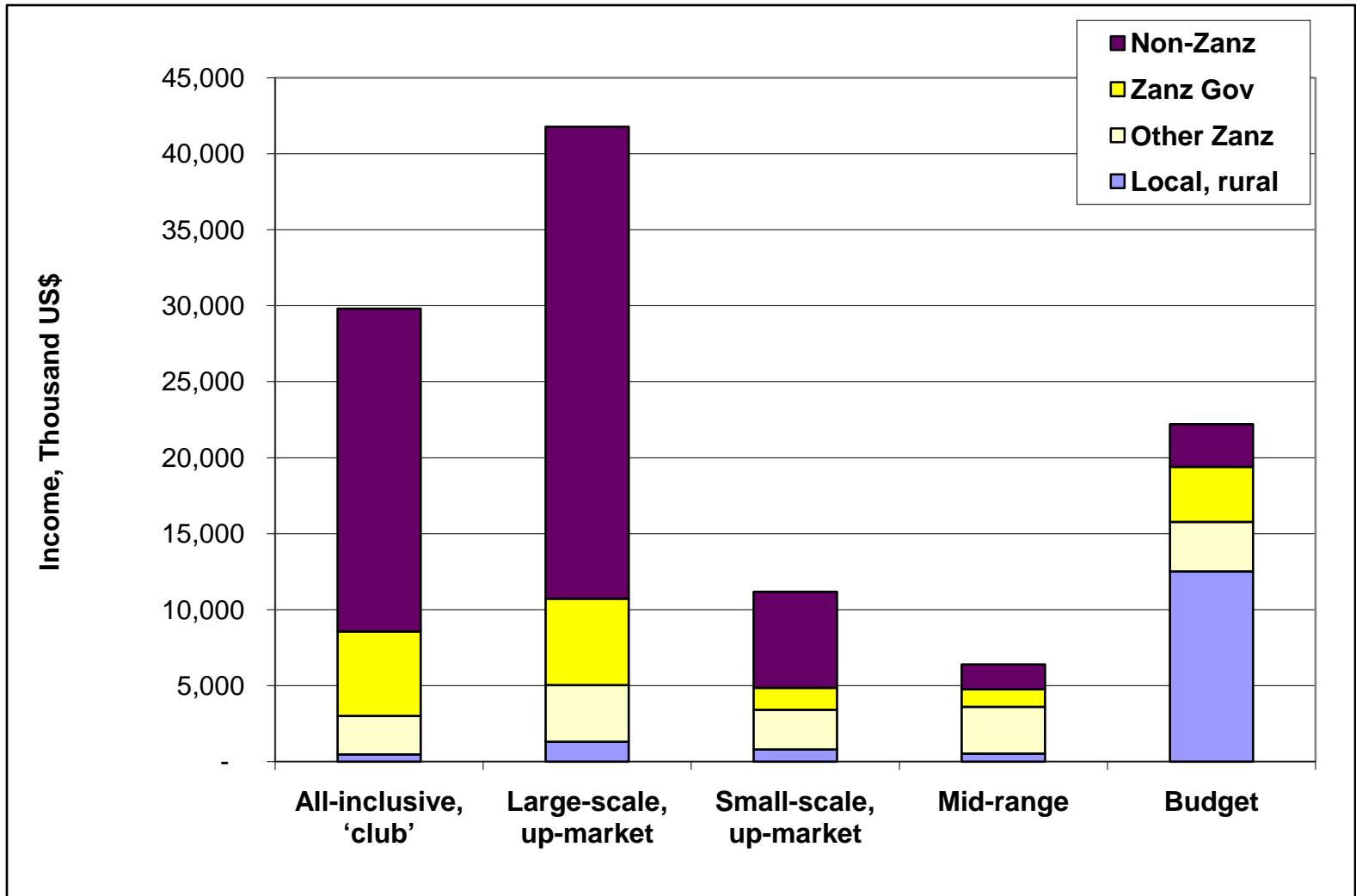
Role of local community

Environment

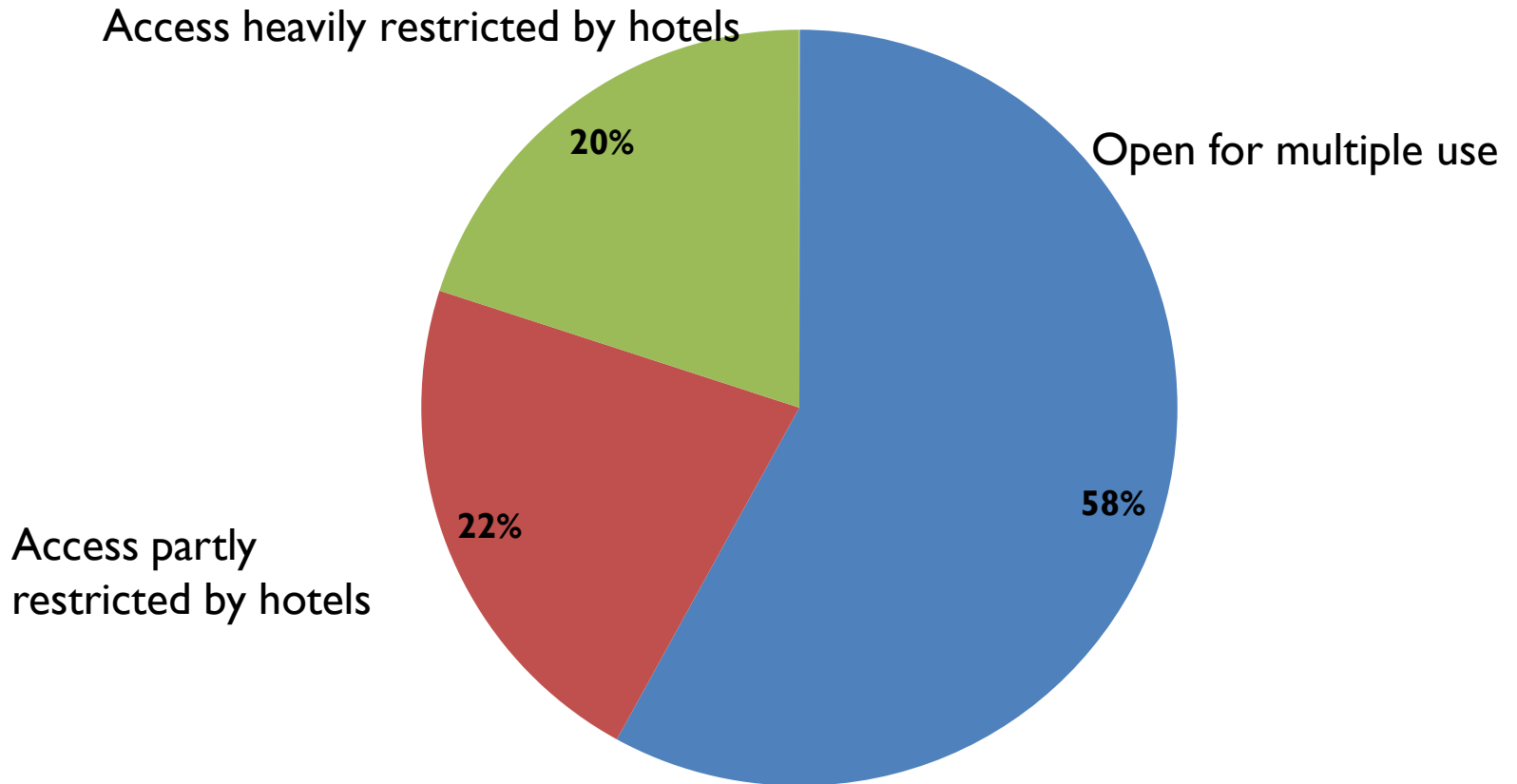
Social & cultural impact



Who benefits from different types of tourism in Zanzibar? (income, thousand US\$)

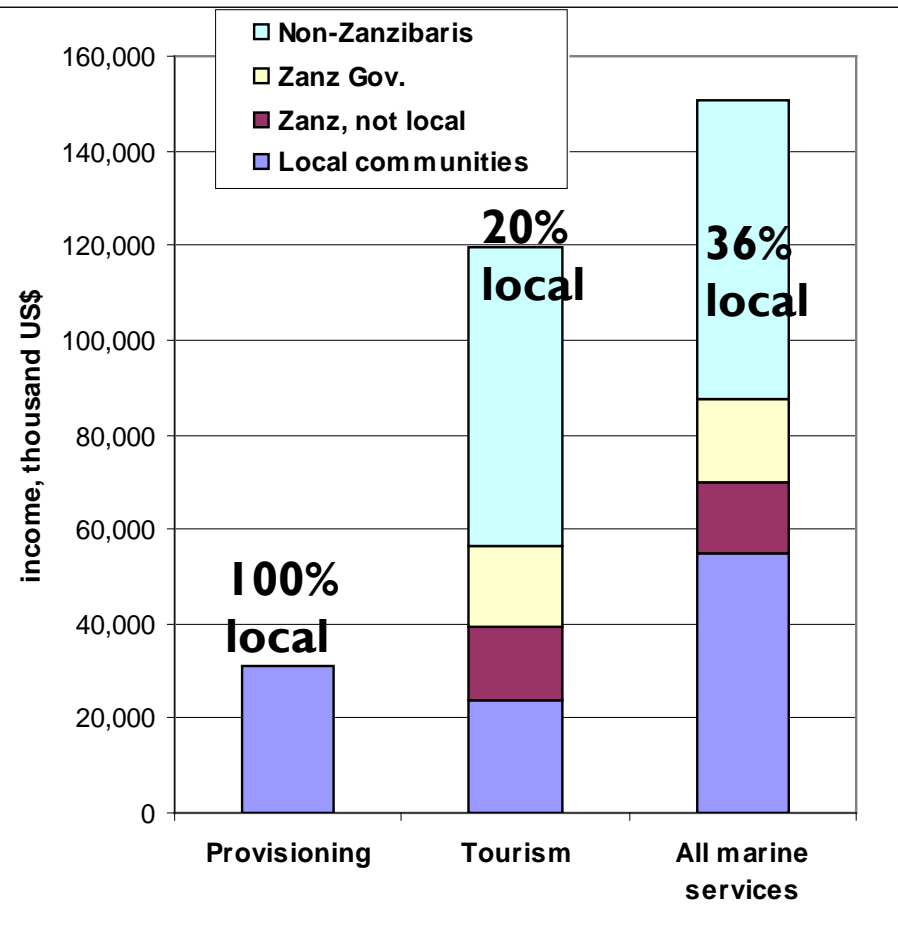


Contested Terrain: Public access to shoreline in Zanzibar



Note: Analysis is for Unguja, the main island; Pemba is not yet developed for tourism. Length of sandy beach is 109 km.

What does distribution of benefits mean for marine conservation in Zanzibar?



- 1. Local communities:**
Benefit from provisioning, but with low incomes, destructive use, & little opportunity to increase incomes
→ increase participation in tourism
- 2. Non-local stakeholders:**
Most benefits from large-scale & club tourism that relies least on healthy marine ecosystem, tourists participate least in diving/snorkeling
→ Increase budget & small-scale eco-tourism
- 3. Most govt revenue is from tourism that relies least on healthy ecosystem**

Structure of WAVES

Major Components

1. Implementation of natural capital accounting, physical and monetary, in 6-10 countries:
Colombia, Botswana, Madagascar, Philippines, India (Costa Rica, Vietnam, Namibia)
Norway, UK, Australia (Canada, Japan)
2. Incorporate natural capital accounts in policy analysis and development planning
3. Contribute to methodology for ecosystem accounting for the SEEA
4. Promote adoption of natural capital accounting beyond the pilot countries

Focus on Marine and Coastal Ecosystems in several countries

Blue carbon an emerging priority

Broad Partnership: UNEP, UNDP, other UN agencies, governments, NGOs, academic institutions, others

5 year program, \$15 million—

- currently we are in 1-year Preparation phase
- full implementation in 2012



Thank You!