RESEARCH BRIEF

The **Environment for Development** initiative is a capacity building program in environmental economics focused on international research collaboration, policy advice, and academic training. It consists of centers in Central America, China, Ethiopia, Kenya, South Africa, and Tanzania, in partnership with the Environmental Economics Unit at the University of Gothenburg in Sweden and Resources for the Future in Washington, DC. Financial support is provided by the Swedish International Development Cooperation Agency (Sida). www.efdinitiative.org

Maximising the value of South Africa's coast

The recreational and aesthetic values of coastal areas have a significant economic impact, and because they are enhanced by coastal protection, the latter should receive top priority in striving to achieve development goals

JANE TURPIE – DECEMBER 15, 2011

South Africa's coastal resources are increasingly under threat from a variety of pressures, including recreational and consumptive use. Conservation planning studies have identified the need to increase the coverage of Marine Protected Areas and other conservation measures, and new laws are enhancing the opportunity for coastal protection. However, conservation is often perceived as being at the expense of development goals, and is resisted. Recent research shows that coastal protection is actually essential for development.

Because development has historically concentrated on the interior of the country, outside the few coastal cities, South Africa's coastal areas have been predominantly used for recreation, fisheries and localized mining activities, and most areas have enjoyed a reasonable state of health. However, levels of coastal development, exploitation of resources and pressure on water resources have escalated considerably in recent years, and management of the coast needs to ensure that the overall integrity and value of the coast are protected. This has been recently addressed in the promulgation of the Integrated Coastal Management Act (No. 24 of 2008), which requires that coastal municipalities develop coastal management plans that take both development and conservation needs into account. At the same time, national government has identified the expansion of small-scale fisheries as an important avenue for achieving development goals.

Several studies have made bold estimates of the value of coastal areas which help to make the case for the sustainable management of coastal areas and their resources. Costanza et al. (1997) estimated that the services provided by coastal ecosystems contributed US$1.28 trillion, or 71% of global Gross National Product (GNP) per annum. A more conservative preliminary estimate suggests that South Africa's coastal resources were worth at least US$11 billion in 2009 (Table 1), equivalent to 3.6% of GDP. However, it is important to understand that the component values making up these figures, including tourism, natural resource use and mining, relate to ecosystem condition in different ways and compete with one

Key Points

- Tourism and property values are enhanced by environmental protection and way exceed the value of inshore fisheries.
- No-take marine protected areas are valuable for both tourism and fisheries, and expansion of the MPA system is economically justified.
- Protection carries opportunity costs, but these can be minimized if development planning and management take spatial variation in fishery and recreational values into account

another. Understanding the tradeoffs involved at different scales is vital to decision making.

Table 1. Summary of the economic contribution (gross output, in million US$) of different coastal/inshore activities in South Africa (based on Turpie & Wilson 2011)

Activity		Contribution to Gross Economic Output (Million US$)	Jobs
Renewable resource extraction	Commercial	558	108 000
	Subsistence	3.6	29 500
	Recreational	586[1]	131 500
Non-renewable resource extraction		1 450[2]	±10 000
Coastal Tourism		4 200	594 000
Mariculture		38	1300
Ports/harbours		1 500	?
Regulatory Services		3 000[3]	-
Total		**11 336**	**>874 300**

[1]Total value added; [2]Excluding coastal diamonds; [3]Rough, based on global estimates

Along the south Cape coast, the main activities are small scale fisheries and tourism/recreation, with recreational fishing being an important component of the latter. There is considerable conflict both between and within these groups. Adding to this, conservation planners have identified the need for the expansion of marine protected areas, but there is also pressure from other quarters to reduce the amount of protection in the marine zone in the interests of previously disadvantaged communities. Detailed studies of two sections of the Cape coast - the 140km Garden Route Coast (at least 250km from any major metropolitan area) and the 79km Kogelberg Coast (close to Cape Town), have shown that there is considerable variation in patterns of use and value at a local scale.

One striking thing about both of these highly scenic stretches of coast is the growing level of development of holiday and lifestyle homes for the relatively well-off, in the various villages and small towns along the coast. Turpie (2011a) modeled the relationship between property prices and variables such as house characteristics, location, views of the coast and sea-frontage. Based on this, it was estimated that proximity to and views of the coast added some 14% to the estimated overall value of property along these coasts, adding R2.5 and R1 billion to property value in the two areas. Given the turnover in the property market, income generated in the property and financial sectors as a result of the coast alone could amount to some R125 and R59 million per annum in the two areas, which equates to R890 000 and R750 000 per km in gross output per year, respectively. However, property owners are convinced that over-development of the surrounding natural environments is one of the main threats to their property prices. We have yet to determine what the optimal level of development should be.

In addition to their resident populations, tourism along the Garden Route and Kogelberg coasts was estimated to amount to about 9.4 and 4.8 million visitor days per year, respectively. These visitors spend in the order of R946 and R213 million[1], which equates to R6.75 and R2.7 million per km of coast on average.

These values are considerably larger than the R46 million (R0.33m/km) and R40 million (R0.5m/km) generated by small-scale inshore fisheries along the two coasts, including the potential value of the now closed abalone fishery.

[1] US$1 ~ R8

Based on statistical analysis of their activities, the users of these coasts could be divided into two main groups – beach-oriented users (comprising two-thirds of visitors) and watersport-oriented users (mainly fishing). These groups segregated spatially in their activities to some extent based on physical characteristics of the coastline. Their expenditure and management preferences were very similar. The majority of coastal users in both areas rated a crime-free coast considerably higher than any other potential future scenario (Table 2). Beach cleanliness, development along the coast, fishing conditions and enforcement of laws for vehicles, boats and fishing were also important factors determining recreational utility. Based on respondents' estimates of how these scenarios would change their behavior and the value of their properties, it can be seen that some kinds management interventions could yield substantial returns in terms of the value they would generate (Table 2). Similarly, impacts on the coastal environment will have a significant negative economic impact.

Table 2. Utility score and expected change in expenditure in the tourism and property sectors for a range future scenarios compared with the present status quo.

	Garden Route (140km)			Kogelberg (79km)		
Scenario	U_p	Uv	Change in expenditure (Rm/y)	U_p	Uv	Change in expenditure (Rm/y)
Status quo (SQ)	8.3	8.3	[R1089m]	7.8	7.8	[R272m]
SQ + MPA deproclaimed	6.4	6.4	-179	4.6	4.6	-59
SQ +Depleted resources	5.6	5.6	-253	3.3	3.3	-82
SQ +Enviro. laws enforced	10.1	10.4	58	10.4	9.0	34
SQ +No crime	16.1	17.2	252	17.9	12.6	126
SQ +Development doubled	5.2	5.2	-292	3.6	3.6	-77
SQ +Whales/dolphins halved	4.6	4.6	-351	3.5	3.5	-77
SQ +Beaches not free of litter	3.2	3.2	-481	1.9	1.9	-107
SQ +MPAs expanded (SQ + 2xMPA)	7.4	7.4	-82	7.4	7.4	-7
SQ + 2xMPA + Fishing 20 % better	7.8	7.8	-47	9.0	8.3	15
SQ + 2xMPA + Fishing 2x as good	8.0	8.0	-32	10.8	9.2	37

U_p = Property-owners' utility score; Uv = Visitors' utility score

More detailed studies on the marine protected areas along the Garden Route coast found that they added substantial value compared with unprotected coastal areas (Turpie 2011). The additional recreational value attributed to managing these areas as MPAs is in the order of R9 million per annum (R82 000/km), when taking consumer surplus into account, and is far greater than the management costs of these systems. The total economic value of the MPAs includes the export of fish which add value to recreational and commercial fisheries in surrounding areas, a value that has been estimated to be in the order of R33 million per annum (R303 000/km). The public were willing to pay over R230 million (R2.1 m/km; in present value terms) to maintain the MPA system. The opportunity costs of conservation were high (R450 million), but short-lived, as the accumulated stocks would be depleted well within a year if the MPAs were deproclaimed. On the other hand, medium term sacrifices involved in MPA expansion are paid off within a generation. Overall, the benefits have been shown to outweigh the costs, and there is an increase in overall net present value with an increase in protection.

Increasing protection also involves tradeoffs within the tourism sector. For example, closing MPAs to fishing will discourage angling tourists from an area. However, it has been found that the area soon attracts a new type of visitor. For example, the ban on use of off-road vehicles (ORVs) in the coastal zone created a lot of concern about its impacts on local economies. However, a study in the Greater St Lucia Wetland Park in Kwazulu-Natal, found out that there were two types of users in this area, and those attracted to a vehicle-free natural environment

began to make more use of the area, compensating for the loss of income derived from the ORV enthusiasts (Turpie 2005).

Conclusions

The conservation of coastal areas requires some stringent measures including the expansion of no-take marine protected areas that will reduce areas available for recreational and small-scale fishing. While there has been much political resistance to this because of its apparent conflict with development objectives, studies have shown that improved protection will bring significant contributions to the economy from the tourism and property sectors that more than compensate for the opportunity costs involved. Not only will marine protected areas support the long term sustainability of small scale fisheries that are important for people's livelihoods, but they will expand the economic opportunities for poor households as a result of the enhanced demand for recreation and tourism. Thus coastal conservation measures will play an important role in development, while at the same time ensuring that the opportunities of future generations are not compromised. In addition, the net benefits of conservation can be maximized if the spatial variation in different types of benefits is also understood.

ABOUT THIS BRIEF (FONT: ARIAL 8 UPPERCASE)

This brief is based on working papers from the Working Paper Series of the Environmental Policy Research Unit, University of Cape Town, as well as other unpublished studies on coastal values and management.

REFERENCES

Turpie, J.K.. 2005. The economic impact of the Off-Road Vehicle Ban: A Case study of the Greater St Lucia Wetland Park. Report to the GSLWP Authority and DEAT: Marine and Coastal Management.

Turpie, J.K. 2011a. Recreational and aesthetic values of the Kogelberg and Garden Route Coasts, South Africa, and their links to coastal management. Working Paper Series, Environmental Policy Research Unit, University of Cape Town, South Africa.

Turpie, J.K. 2011b. The economic value of marine protected areas along the Garden Route coast, South Africa, and implications of changes in levels of protection. Working Paper Series, Environmental Policy Research Unit, University of Cape Town, South Africa.

Turpie, J.K. & Wilson, G. 2011 Cost/benefit assessment of marine and coastal resources in the western Indian Ocean: Mozambique and South Africa. Anchor Environmental Consultants.

CONTACT

Dr Jane Turpie, jane@anchorenvironmental.co.za or jane.turpie@uct.ac.za

EfD Center in South Africa, www.efdinitiative.org/centers/south-africa
jane.turpie@uct.ac.za ; Phone.+27-21-6505241, Fax.+27-21-6502854
Environmental Policy Research Unit (EPRU)
EPRU, Southern Africa Labour & Development Research Unit (SALDRU), School of Economics, University of Cape Town (UCT), Private Bag, Rondebosch 7701, South Africa

EfD, Environment for Development initiative, www.environmentfordevelopment.org
EfD Secretariat: info@efdinitiative.org, Phone: +46-31-786 2595, Fax +46-31-786 10 43, www.efdinitiative.org./efd-initiative/organisation/secretariat, Department of Economics, University of Gothenburg , PO Box 640, SE 405 30 Gothenburg, Sweden