The business case for investing in the natural capital of the City of Cape Town, South Africa: An exercise with foundations in ecosystem services valuation

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Overview

- City of Cape Town Environmental Management Department commissioned the study in order to make the 'business case' for environmental protection and management
- Focus was on attaching economic values to the city's natural assets and building the case around these
- Study process was highly participative with ongoing inputs from City departments involved in environmental management or with an influence on it
- Study team consisted of 2 senior environmental economists, 1 economic modeller and 1 junior researcher. Study period roughly one year.

De Wit, M.P., Van Zyl, H., Crookes, D.J., Blignaut, J.N., Jayiya, T., Goiset, V. & Mahumani, B.K. 2009. *Investing in Natural Assets. A Business Case for the Environment in the City of Cape Town*. Report prepared for the City of Cape Town.

Point of departure: Ecosystems, services and human well-being

Biologically diverse systems are more productive	More resilient functioning	Delivering more and/or better quality goods and services	Additional contribution to human well-being

Increasingly, ecosystems are seen as capital assets, with the potential to generate a stream of vital life-support services meriting careful evaluation and investment (Turner & Daily 2008)

Main steps used have clear parallels with TEEB stepwise approach

Step 1: Specify the policy and management issue and the need for assessment

Step 2: Identify and prioritise Ecosystem Services (ES) for further assessment/valuation

Step 3: Select appropriate economic valuation techniques and qualitative measures for each prioritised ES and conduct an assessment

Step 4: Integrate valuation into wider business case and augment with further appraisal of policy options

TEEB stepwise:

1. Specify and agree on the problem
2. Identify which ecosystem services are relevant to the decision
3. Define the information needs and select appropriate methods
4. Assess the expected changes on the flow of ecosystem services
5. Identify and assess policy options
6. Assess distributional impacts of policy options

Step 2: Identify and prioritise Ecosystem Services (ES) for further assessment/valuation

Included a participatory process with key decision makers:

1. Assess the relative importance of different natural assets (e.g. nature reserves, wetlands, coastal areas, etc.) for the generation of ES
2. Estimate the importance of ES to users/beneficiaries using an impact matrix - helped to determine what the most important ES values
3. Assess and qualitatively spell out the broad links between natural assets and economic development goals.
4. Assess the City's ability to influence the value of ES through management. The assets and flows completely outside of the City's control may have high value, but will generally be less important when motivating for increased investment
5. Rank the ES according to the level of ecological and socio-economic risks they face - recognises that certain environments are likely to be more vulnerable.

Prioritised ecosystem services for Cape Town

Higher	High	Medium	Lower
Natural hazard regulation	Water purification and waste treatment, assimilation	Climate regulation – local (air quality)	Climate regulation global
Recreation and Tourism	Space for biota	Small scale urban farming	Fresh water provision
	Aesthetic values and sense of place	Water regulation	Building materials provision
		Fish and marine resources	Provision of inspirational beauty
Natural hazard regulation (buffering function for flooding, fires, sea level rise/ coastal surge)			Educational users
			Cultural and artistic practices
Provision of natural characteristics that are conducive to tourism and recreation			Religious practices
			Erosion regulation
The improvement of water quality and the assimilation of waste - ecosystems help filter and decompose organic wastes			Disease regulation
			Harvesting
Provision of space for globally important biota, and			Materials for craft and fashion
The aesthetics and sense of place provided by the natural environment			Use in productions, advertising and publications

Based on Participatory Rapid Assessment with line function managers and senior staff 4
Criteria: Beneficiaries, Development Objectives, Environmental mandate, Socio-ecological Risks

Nature's value in Tourism and Recreation

Green open spaces: R270 – R326 m/a

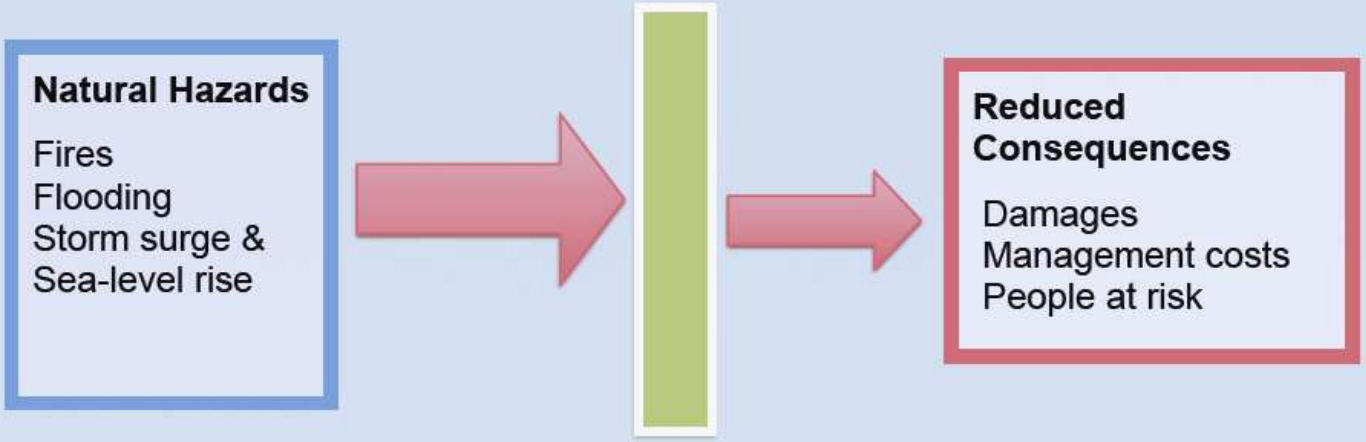
Tourism: R965 m - R2.95 bn/a

Nature Reserves: R 68 – R83 m/a

Beaches: R70 – R85 m/a

*These values are an estimation of **nature's share** in the production and consumption of ecosystem goods and services.*

Natural Hazard Regulation



Ecosystems: natural barriers and buffers against natural hazards.

- Dune cordons and kelp beds reduce storm surges impact on land.
- Natural pervious ground cover absorb rainfall, impervious ground cover increases water runoff and flood risk.

Lack of management: enhanced natural hazards risk and potential damages.

- Invasive alien species enhance fire risk, frequency, intensity, soil's vulnerability to erosion → enhance potential damages, fire fighting costs, and clean up costs.

Nature's services in hazard regulation: R5m - R60m/a

Water purification and waste absorption: investing in rivers and wetlands

Within assimilative capacities

Water purification function

- processing some of the grey and waste water outfalls
- creation of recreational and economic opportunities
- contribution to a healthy environment for communities.

Services provided by wetlands save cities significant amounts of infrastructural costs if the natural ecosystem wasn't present or became inefficient.

Zandvlei:

- Replacement cost of a treatment plant: R180 million estimated.
- Replacement cost of a flood storage capacity: R24 million estimated
- Costs of constructing an artificial wetland.

Illustrates the magnitude of the "free" services provided.

Space for biota: investing in biodiversity

Biodiversity needs to be recognised and valued as a critical 'umbrella' service without which most other valuable ecosystems services would be diminished or may even become unavailable.

Cape Floral Kingdom

9000 plant species
70% endemic

2002 - 2006: International funding = R225 million

2008 - 2009: Environmental Education Programs =

23 781 learners from 500 schools.

Film making: investing in aesthetics and scenery

Table 3: Number of productions and expenditure in the Cape Town and Western Cape film industry (2005/2006)

	Number of productions	Average expenditure per production (Rm 2006)	Total expenditure (Rm 2006)
Long form (features)	30	37.2	1 115.6
Local Commercials	142	0.9	162.5
Service Commercials	400	1.8	631.8
International Commercials	58	2.6	77.9
Stills	2 100	0.3	659.8
Provincial Total	**2 730**		**2 647.6**
Cape Town Total			**2 027.0**

Source: Standish & Boting (2007)

Film and advertising total values associated with natural assets of between R133 million and R398 million pa

‘Bang for your buck’ when investing in the environment

Insights into the level of environmental expenditures in relation to the benefits received from the natural environment.

Indicator 1

Net present value of combined natural assets:

→ R43 billion to R82 billion.

Ratio of environmental expenditure to the value generated EGS

Indicator 2

→ R1 spent by municipality on natural assets ≈ R8.30 (range R4.50 - R13.50) of ecosystem goods and services (EGS) generated compared to

→ R1 spent by municipality overall ≈ R 7.30 added value generated in local economy

Leverage of municipal expenditure on economic value of EGS

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Between 1.2 and 2 times

Leverage of municipal expenditure on the broader City economy.

Conclusions: Results

- Investing and maintaining the City's natural assets or 'ecological infrastructure' yields highly valuable services which provide the backbone for value addition in the City's economy.
- It is conservatively estimated that the highest priority natural assets in the City yield a flow of services valued at R4 billion per annum, within a range of between R2 billion and R6 billion per annum.
- Investing in underlying natural assets can leverage relatively high economic value in the broader City economy (1.2 - 2 times higher than overall municipal expenditure).
- As an entity focused on service provision and as an enabler of economic growth and development, the municipality has the mandate and opportunity to invest adequately in natural assets to maintain a healthy flow of services to the benefit of people living in and visiting Cape Town.

Conclusions: Process and impact

- Argument for increased funding needed to be both quantitative (valuation results) and qualitative (City economic development goals will be met)
- Participation of key city officials not only in the environmental management department can play an important role in enhancing study results, maintaining focus and building awareness, acceptance.
- 'Environment' is not only for the environmental department, an argument that became entrenched through a relatively deep and wide process within the City.
- Difficult to make the case more than once using the same value estimate - therefore helpful to proceed in a way that key values can be updated.
- Further assessments can be used to identify additional sources of income for management of natural assets. Identifying important beneficiaries, who so far do not pay for benefits, is a first logical step.
- Still relatively early and difficult to make clear link between study and increased budgets. Initial signs are hopeful.

Nature provides a free lunch, but only if we control our appetites.

William Ruckelshaus, Business Week, 18 June 1990

Study can be downloaded from:
http://www.capetown.gov.za/en/EnvironmentalResourceManagement/projects/Pages/EnvironmentalResourceEconomics.aspx