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Including the economic value of well-functioning urban ecosystems in financial decisions: Evidence from a process in Cape Town

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ABSTRACT

Investing in urban natural assets can leverage relatively high economic value in city economies. It is not only the case for highly developed cities, but could also be the case for rapidly developing cities. This is the key message from a case study for the City of Cape Town in South Africa as presented in this paper. It was calculated that the leverage of municipal expenditure on maintaining and enhancing ecosystems is 1.2–2 times higher than the leverage of all municipal expenditure on the City economy. Investing and maintaining a City's natural assets or ecological infrastructure yields economically valuable services that could prove to be an important driver of value addition in a city's economy. It is conservatively estimated that for the City of Cape Town, natural assets yield a flow of ecosystem services valued in the order of R4 billion per annum, within a range between R2 billion and R6 billion per annum. Most of this value for the City of Cape Town is created through the tourism industry, but recreation in parks, open spaces and beaches, as well as specific industries such as film-making, also benefit substantially from the services provided by well-functioning ecosystems. Buffering services to better cope with natural hazards such as coastal surges, flooding and fires in urban contexts are important services from an insurance perspective. As entities focused on service provision and as enablers of economic growth and development, municipalities in rapidly developing urban centrums have the mandate and must create the opportunity to invest adequately in natural assets to maintain a healthy flow of ecosystem services to the benefit of people living in and visiting their cities.

1. Introduction

Rapid urbanization raises the question of how to provide a continued flow of ecosystem goods and services without negatively affecting underlying stocks of natural capital within the context of increased pressure and density. While most cities import ecosystem goods and services, this is not the only option and this option is increasingly under pressure (Folke et al., 1997). Another option is to maintain and enhance local urban natural capital not only for efficiency, educational and ethical reasons, but also to improve the quality of urban life (Bolund and Hunhammar, 1999).

With an increasing global scarcity of ecosystem goods and services the latter option is becoming more relevant. Especially when a city's socio-economic activities are closely linked to the services provided by its underlying urban natural assets. The City of Cape Town (2455 km^2 in size with 3.7 million people) is one such city. The City of Cape Town is situated in the Cape Floristic Kingdom, a global biodiversity hotspot where natural assets provide a substantial contribution to the regional economy (Turpie et al., 2003).

Earlier economic valuation studies in the City of Cape Town highlighted the economic value of green, open spaces (Turpie et al., 2001); the premium achieved with property in proximity to wetlands (Van Zyl, 2007; Van Zyl and Leiman, 2001); and direct use values from agricultural production in a city wetland (Lannas and Turpie, 2009). Furthermore, Ballance et al. (2000) used the travel cost method to estimate the recreational use value of ten beaches along the Cape Peninsula. These studies highlighted the economic importance of certain natural assets and ecosystem

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services, but have not yet been integrated into an argument aimed at financial decision-makers to invest in the City of Cape Town's urban natural assets. This paper presents the results of a project that was intended to fill this gap, as reported in De Wit et al. (2009).

The key challenge is that information about the value of underlying urban natural assets is not generally included in the financial decision-making processes, leading to weakly informed decisions regarding budget allocations to departments that manage natural assets and the flow of ecosystem goods and services. There are two main reasons for this. The first reason is that it is often implicitly assumed that urban natural assets will continue to provide a healthy flow of goods and services to its inhabitants and visitors and that no specific intervention is required. This is evident through low budgets to urban environmental management. It is a strong assumption to make and one that needs to be questioned within the context of rapid urbanization and a global declining flow of ecosystem services. The second reason is that investments in natural assets are not seen to yield adequate returns, while investment in other infrastructure and services such as housing and education yields visibly higher returns to the urban economy.

In this paper we present an argument for increased investment in urban natural capital. Using a case study of the City of Cape Town, South Africa, we argue that investments in urban natural capital are increasingly needed to repair, maintain and enhance the flow of ecosystems goods and services to people living in and visiting cities. We also argue that investment in urban natural capital, at least for the City of Cape Town, yields higher economic benefits than the overall municipal expenditure in the urban economy. Furthermore, this paper presents the point that results can be significantly enhanced through the use of a participatory process that includes both financial and environmental decision-makers.

We used accepted methods to estimate the economic value of ecosystem goods and services. In the design of the project we recognized the need to move away from technocratic solutions and the importance of including financial and environmental decision-makers in the City of Cape Town in a process of selecting and prioritizing key ecosystem services and key users. A six-step process methodology is presented in this paper, including a participatory process with the aim to identify and prioritize valuable ecosystem goods and services as well as focusing on how to select and use economic valuation techniques. Although the monetary valuation results were important to the project on which this paper is based, their estimation did not require particularly novel techniques and they are not the focus of this paper.

2. Methods

2.1. Six-step process methodology

The integrative and practical focus of the study required a methodology that included both process design and the use of economic valuation techniques. We used a conceptual model of natural assets yielding a flow of ecosystems goods and services (EGS) as applied earlier in the Millennium Ecosystem Assessment (2005). We further developed this conceptual model to include a participatory process with key decision-makers focused on the selection and prioritization of ecosystem goods and services within the context of the City of Cape Town. The methodology was tested and reduced to six generic steps as illustrated in Fig. 1. These steps are very similar to those developed independently in the TEEB process (Hussain et al. 2012), although some important nuances exist. Both the specification of policy and management issues and the need for assessment (TEEB, step 1) as well as the integration of valuation outcomes into business case (TEEB, step 5) were part of the Cape Town study, but are not explicitly stated in the process methodology specified here. The focus was more on the detail in and process followed for the identification and prioritization of EGS (TEEB, step 2); namely what EGS are available, what the users are, how EGS related to development objectives, how EGS can be influenced by management and what the risks are to sustainable flows of EGS. Each of these steps is now introduced in more detail.

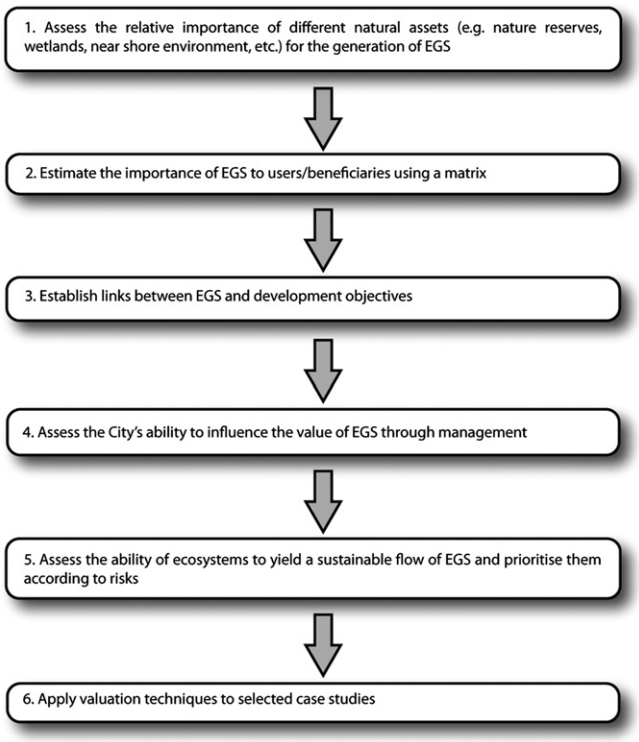

Fig. 1. Six-step valuation methodology.
Source: Own.

First, the natural assets of the City can be divided into different categories that, in turn, yield different flows of EGS. A basic understanding of the relationships between natural assets and EGS flows is needed in order to appreciate which ones are important in the generation of different EGS and to prioritize underlying assets for investment. Table 1 outlines the broad categories of natural assets used to categorize the sources of EGS and may differ per City. The three basic categories are biota (fauna and flora) and soils, the water environment and the atmosphere, and provide the first level of basic categorization. Biota (fauna and flora) and soils are further divided into natural areas and reserves, municipal parks, sports grounds, agricultural lands and vacant land. The water environment category is divided into watercourses, wetlands and dams (aquatic environments), and the near-shore coast (marine environments).

Second, the number of beneficiaries, as well as the estimated value for each of the EGS to these beneficiaries, will determine what the highest ranked values are likely to be. It is, therefore, critical to consider who the users or beneficiaries of EGS in a particular context are, and the relative importance of these EGS to different users. In order to choose appropriate user categories, high-level distinctions were made between local users and regional, national and international users. Among the local users, further distinctions were made, namely residents, key commercial groups and key public bodies (see also Eftec, 2006). The categorization of users and beneficiaries of EGS can be further developed for any local urban context. This step can be particularly useful if distributional aspects are important and the needs and values of certain beneficiary groups require prioritization.