TRADE & INDUSTRIAL POLICY STRATEGIES

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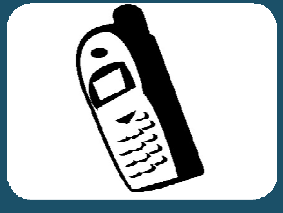
POLICY BRIEF

Market challenges for the restoration of the natural environment



INTRODUCTION

Over the past century South Africa has become increasingly reliant on the manufacturing and services industries for its economic development and growth. However, the natural environment continues to play an important role in the livelihoods of particularly the poor, those in rural areas and the agriculture sector – the latter being essential for urban living.

The productivity of land and the availability of water can help the poor overcome some of the critical constraints they face in meeting their basic needs, and they are essential for productive farming.

Restoration of the natural environment involves the replenishment of the natural environment through both active and passive means. Passive restoration undertakes the removal of those things that damage the environment such as invasive alien plants. The natural environment is then left to re-establish itself without further intervention.

Active restoration, on the other hand, involves active intervention such as the control of alien invasive plant species and the re-establishing of natural (indigenous) vegetation, for example by re-seeding, re-planting and soil preparation treatments.

Restoring the natural environment in South Africa is not new. The Working for Water programme, a government programme to eradicate invasive alien plants, has been in operation since 1995, and spawned a number of other initiatives such as the Working for Wetlands and Working for Fire programmes.

Only recently, however, have the proponents of these programmes begun to consider the market implications of restoring the natural environment. The marketability of the natural environment is influenced by different forms of restoration activities, which in turn has cost implications depending on the different types of ecosystems and the extent of the damage. Furthermore, different sites will have different vectors of benefits. These different

KEY ASPECTS

Location: The selection of the restoration site is crucial, as this affects the supply of environmental goods and services to the market. Features to consider include the extent of degradation, distance from the market, the existence of an appropriate distribution channel, and the nature of the land tenure. Other factors include the climatic conditions, and also the vegetation type, as this will affect the range of environmental goods and services supplied. There is a need to start in areas where there is a greater chance of success.

Functionality: Restoration has the aim of restoring the functionality of an ecosystem. This in turn affects the flow of goods and services onto the market. However, this can only happen if markets themselves are well functioning, where possible free from restrictions and characterised by many buyers and sellers. Where markets are not well functioning, some monitoring is required to ensure that dominant players do not manipulate the system to the detriment of other participants.

Process: Many environmental commodities are traded as free goods, or at a price that does not reflect their true value. One example in South Africa is water. A key market challenge for restoration is to determine an appropriate price for environmental goods and services. A number of techniques are available in order to achieve this.

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Examples of active restoration of the natural environment include repairing dongas in the Drakensberg. The reduction of soil loss through erosion has downstream benefits since water from this catchment flows into the Woodstock dam, which in turn supplies water to communities throughout South Africa. Reduced erosion from the communal areas reduces siltation of dams such as Woodstock, and therefore reduces the management costs of these dams.

factors suggest that there is no one-size-fits-all solution but each is site specific and context specific. There is also a need to start in areas where there is a better likelihood of success.

It is important to note that an economic approach to the environment is being applied in this brief. One of the major market challenges is therefore simply to accept that different role players – scientists, ecologists, managers – have different ways of expressing value. Not everyone is comfortable with the concept of the environment as a source of economic value. The market challenges of restoration are essentially twofold: first, to stimulate the production of environmental commodities; and second, to create market demand for those commodities.

SUPPLY CHALLENGES FOR RESTORATION

A number of issues are relevant in stimulating the production of environmental commodities – or supply side market challenges. First, it is important to take note of the site location, and site characteristics, such as extent of degradation. Restoration can also take place on different land ownership patterns, including private land, mixed land use, public land or communal areas. A further example of site characteristics is the location of the restoration site. For example, if the restoration site is located a long distance from potential markets, this will have an adverse effect on market access and will also increase transportation and transaction costs. Another factor that influences location is the availability of distribution networks. In some cases, good distribution networks can mitigate the supply costs where natural resources are situated far from markets, for example the case of water supply in South Africa.

As noted, one of the market challenge of restoration is to stimulate the production of environmental commodities. This in turn restores the functionality of ecosystems that have been damaged. Examples include the restoration of wetlands, natural forests, grasslands and other ecosystems.

Restoring the functionality of an ecosystem has a direct impact on the types of goods and services that an ecosystem can provide. On the negative side, a degraded ecosystem can have adverse health impacts, for example the link between poor water quality and cholera. On the positive side, a well-functioning ecosystem provides a stream of positive goods and services, directly, for example wild flowers, carbon water and pollination services, and indirectly through enhanced agricultural production. These and other market challenges affect the supply of environmental goods and services.

SITE CHARACTERISTICS

Site characteristics are one of the key features that affect the supply of ecosystem goods and services. South Africa represents a highly diverse landscape, with different ecosystem features. For example, the natural landscape falls within a range of vegetation types, from Nama Karoo and Succulent Karoo, through fynbos, savannah, grassland and forest. The natural landscape also falls within different climatic zones, which in turn have different ecosystem features. Some landscapes are in arid or semi-arid

Restoration of ostrich farmland, Little Karoo with degraded land (left) and restoration in progress (right)

climatic zones, with mean annual precipitation of less and 700mm per year, while others are in temperate areas with higher rainfall. Another important site characteristic is the nature of property ownership. Some sites may be communal, others private property, others state owned. These different ownership structures have different implications for market access, and who is entitles to the revenues from sales of natural resource products. It is therefore important to consider a range of site characteristics when considering restoration.

Some restoration sites have low connectivity to the origin (leading to fragmentation), which occurs when only a small parcel of the total degraded area is restored. In other cases, restoration occurs across entire landscapes.

The extent of degradation also varies quite significantly across sites. Different types of activity also affect the extent of degradation, for example mining activity (strip mining) would have much worse landscape consequences compared with commercial farming as well as the communal grazing activities, although there would also be considerable variation within each of these categories of activities.

SUPPLY CHALLENGES FOR RESTORATION

Supply challenges for restoration involve how to get environmental goods and services (EGS) on the market. The major market challenge of restoration is stimulating demand for environmental commodities. This can be achieved in a number of ways.

First, *a well-functioning market is crucial* to provide the conditions in which market participants can trade. For the financial benefits of carbon sequestration to be realised, for example, a well-functioning carbon market needs to exist. This involves the promotion of healthy levels of competition, as well as creating an enabling regulatory framework for the free functioning of markets without restrictions. These latter two objectives are sometimes in conflict with each other. For example, when the carbon markets were introduced many of the biggest emitters stockpiled emission permits, benefiting from low prices as a result of a flooded market.

A second aspect of demand is *marketing of products*. The market for EGS comprises individuals needing a product, having the ability to purchase, wanting to

Restoration of grassland ecosystem in the communal areas of the Drakensberg with eroded grassland (left) and restoration in progress (right)

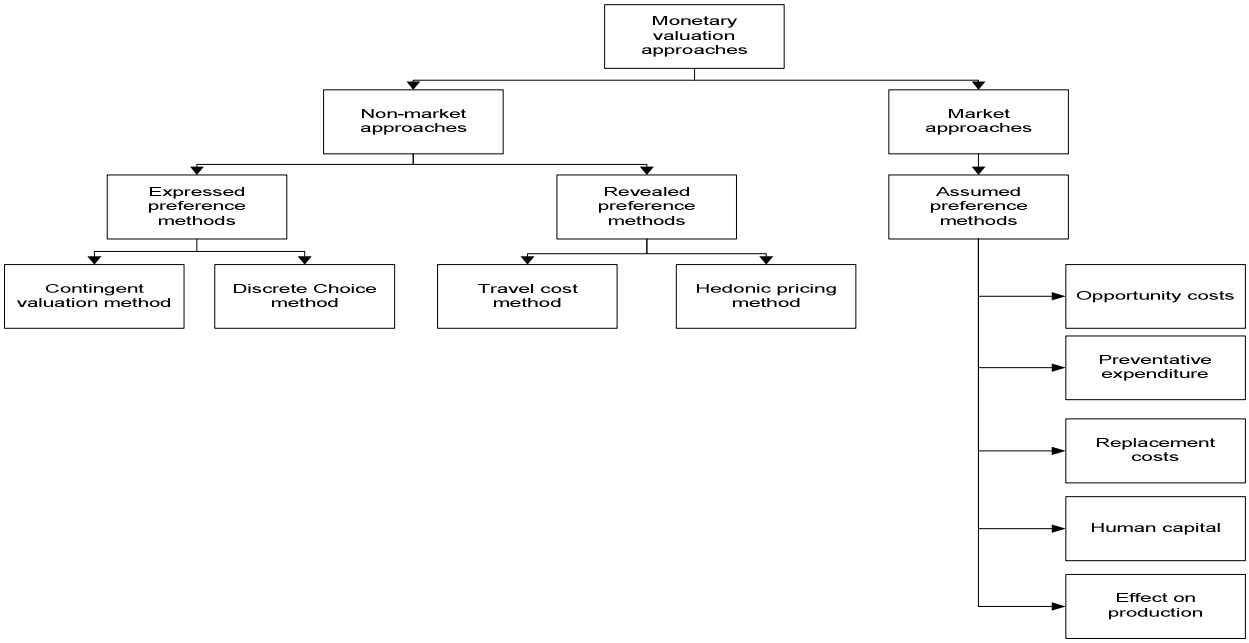

Figure 1: Techniques for valuing ecosystem goods and services

purchase the product and having the authority to purchase the product. The environmental goods and service market ranges from essential items (such as water) to luxury items (such as organic ostrich meat). It is important when marketing EGS to have a good understanding of the market participants, their socioeconomic status and specific needs and desires. Not everyone will be interested in all environmental commodities. A major challenge for marketing EGS is determining an *appropriate market price* that reflects the worth or value of the good or service provided.

An appropriate measure needs to be found to express environmental commodities. This can pose a problem. Most markets trade in financial currency, whereas many environmental goods are expressed in ecological units, and this can cause controversy. For example, what is the appropriate measure for 'water quality' or 'wildlife habitat'? Some form of proxy measure is required.

PUTTING A PRICE ON ENVIRONMENTAL GOODS AND SERVICES

One of the main market challenges of restoration is the value or price placed on EGS. In many cases EGS are not traded on traditional markets, or when they are, they are often traded at prices below their true worth. How can the true value of an ecosystem good or service be estimated? A range of different valuation techniques are available to economists.

It is, however, important to stress a number of points. First, most valuation exercises provide only an approximate value of ecosystem goods and services. Second, it is important to know exactly what ecosystem good or service is valued. Some techniques might value a range of EGS, while others may only value one or two. Third, these are not all stand-alone techniques and some may be used in conjunction with others to determine the total economic value of a good or service. Finally, it is not appropriate, due to cost and time constraints, or even desirable to conduct an in-depth valuation study of all ecosystem goods and services for all land use changes. Certain ecosystem values fall out the domain of economic valuation (e.g. ecosystem primary values).

Valuing EGS falls into two categories: those that use a market-based approach and those use a non-market approach (See Figure 1 above). Market-based approaches use actual market prices to estimate the value of EGS. Examples of valuation techniques that use this method include the opportunity cost approach, replacement cost method and preventative expenditure approach.

Many EGS, however, are not traded on an actual market, and this makes it much harder to estimate their true worth. Two categories of valuation techniques are used in this case. The first is known as *stated (or expressed) preference method*, in which value is expressed by respondents in an interview. Examples include the contingent valuation method, in which respondents are asked to state willingness to pay for an EGS, or willingness to accept compensation for the loss of that good or service. Another example is the discrete choice method, in which respondents are given a range of choices with associated costs, and asked to choose their preferred option.

The second category of non-market approaches is the so-called *revealed preference techniques*, where value

Successful rehabilitation on a coastal mineral sands mine in Namaqualand

is revealed through a directly related, or surrogate, market. Examples include the travel cost method, in which respondents are asked the costs associated with visiting a particular site, and the hedonic pricing method, which uses property prices to estimate the value of an environmental benefit. The revealed preference techniques are mostly used for recreational benefits of EGS, while the stated preference techniques may be used for a much broader range of benefits.

CONCLUSION

Market challenges of restoration are twofold: first to stimulate the production of environmental commodities; and second, to create market demand for those commodities. Stimulating the production of environmental commodities is a supply-side challenge, and a number of challenges affect the supply of environmental commodities onto the market, including distance to the market, patterns of land ownership, and climatic variability. Furthermore, there are potential adverse impacts of ecosystem degradation, and a functioning ecosystem in the supply of ecosystem goods and services is important.

Demand-side challenges include establishing a well-functioning market with stable and effective distribution channels, and marketing of the environmental commodities with due cognisance of socioeconomic profiles (including purchasing power) of participants, nature of environmental good traded (luxury or necessity), and the extent and strength of competitors. Marketability of environmental goods and services may be increased by the presence of local institutions such as the Ostrich Business Chamber. The South African Ostrich Business Chamber, for example, has been active in promoting sustainable practices among farmers in the Oudtshoorn basin of the Little Karoo.

Local conditions play an important role in determining the marketability of restoring the environment, and starting in areas where there is a better likelihood of success is important. Appropriate financing models are also important as in many instances restoration is limited by a lack of funds. Many of the benefits realised are social benefits, and there is a need to further expand public works programmes such as the Working for Water programme into other areas, although some of this work is already underway.

ABOUT THIS POLICY BRIEF

This Policy Brief was prepared by Douglas J Crookes, University of Stellenbosch and ASSET Research, (d_crookes@hotmail.com), and James N Blignaut, Pretoria University, Beatus and ASSET Research (jnblignaut@gmail.com)

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