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## Ecosystem Marketplace

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### **Assessing the Market: Conversations with Private Sector Businesses About Payments for Ecosystem Services –**

#### **A Letter from Uganda**

**BY**

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*Without buyers, there is no market. Given the importance of engaging a broad range of prospective buyers in the discussion about payments for ecosystem services (PES), the Ecosystem Marketplace asked Alice Ruhweza, East and Southern Africa Katoomba Group Coordinator, about a new approach to opening up new conversations with private sector firms about their reliance on ecosystem services and potential interest in PES.*

In February 2007, the East and Southern Africa Katoomba Group began a pilot test of a new approach to opening conversations with business people about whether companies:

- are becoming aware of linkages between their core operations and critical ecosystem services on which they rely, and
- see a business case for investing in the restoration and maintenance of ecosystems for reliable and flows of ecosystem services.

Conversations began with water-reliant firms, based on a sense that payments for watershed services may be the most straight-forward to make. And therefore, a range of water-reliant firms were included: Uganda-based beverage manufacturers; soft drinks bottling companies; breweries; district / municipal water companies, electricity distribution companies and exporters of cut flowers.

The process began with a short, semi-structured interview during which corporate decision-makers were asked to speak about (1) key ecosystem services for business operations; (2) the status of those ecosystems and trends, and (3) the past and future corporate strategy as it applied to ecosystem services.

#### **Findings**

After more than fifteen semi-structured interviews, one of the most important findings is that whereas companies are aware that water is indeed the most important input into their operations, none had a clear strategy to invest in the restoration and maintenance of ecosystems that play a pivotal role in both water quantity and quality. Other specific insights included:

### **Identifying Key Ecosystem Services to Business Operations**

**All companies surveyed named water as the resource most critical to their business.** Most of businesses draw their water from Lake Victoria, with the exception of the district/municipal water companies which draw their water from underground water through the use of boreholes. The flower exporters also own drilled licensed boreholes and have some small shallow wells which they use as back-up. Some companies also mentioned using water collection from rain water. Water is used for a variety of activities including as an input for beverage manufacturing; running the turbines for the electricity company; watering the flowers; and domestic household activities.

Energy/Electricity was the second most critical resource and most of the companies surveyed depend, which is directly tied to water as much of the electricity generated is from hydro-power. The electricity distribution company stated additional ecosystem services on which they rely in their operations, such as transmission line poles extracted from the forests.

### **Assessing the Status of Relevant Ecosystem Services and Key Trends**

A few key areas of concern emerge from a rapid assessment of key ecosystem services on which the private sector firms surveyed rely, including:

#### **(1) Water quality and quantity are both issues in areas where companies source water.**

- **Water quality:** Lake Victoria is the source of water for most companies. However, water quality issues with the lake are rife, as it receives excessive nutrients and untreated effluent which have led to fish die-offs, algal blooms and the spread of water hyacinth (a waterweed). Although mostly eradicated now, the remnants of the water hyacinth on Lake Victoria deplete dissolved oxygen, sunlight and are an obstacle to water transport. Along the shoreline, hyacinth provides habitat for malaria mosquitoes and snails which harbor bilharzia parasites. Point sources and non-point sources such as deficient sewage and industrial wastewater plants, small-scale workshops, waste oil from parking lots and car repair garages are major sources of pollution load for the lake.

The sewer system in Kampala serves only a small fraction of the city population and only 10% of all sewage generated in Kampala gets treated. Guesthouses, slum dwellings and industries discharging untreated wastewater in Nakivubo channel, which flows into Murchison Bay contribute lachrymal pollution load and depleted oxygen levels in Lake Victoria. An engineer from AWE recorded dissolved oxygen (DO) levels of less than 2 mg/liter in Murchison Bay yet most fish species die off at DO of 4 mg/liter<sup>1</sup>. Nakivubo Channel carries approximately 75% of the nitrogen and 85% of phosphorus nutrient load discharged daily into Murchison

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<sup>1</sup> *Why Lake Victoria pollution levels are rising* by Air Water Earth (AWE)–Environmental Engineers and Project Management Consultants- <http://www.awe-engineers.com/news1.html>

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Bay. The high nitrogen and phosphorous levels are responsible for excessive eutrophication and algal blooms seen in the Bay. Algal blooms clog water treatment plants and deoxygenate lake water causing fish die-offs.

**Figure 1; The water-hyacinth that had choked most of Lake Victoria.**



Source: Ashbindu Singh (2007); *Africa's Lakes: Atlas of Our Changing Environment*; (UNEP)

Uganda's *National Water & Sewerage Corporation (NWSC)* is experiencing rising treatment costs because lake water is dirtier and increasingly expensive to treat to potable quality. Ironically, NWSC's Sewage Treatment Plant at Bugolobi, which discharges 15,000 m<sup>3</sup>/day of inadequately treated sewage into Murchison Bay has been named as the single largest polluter of Lake Victoria<sup>2</sup>.

- Nakivubo wetland and other major catchment wetlands, which used to play the vital role of tertiary purification of effluent and storm water discharging into the lake, have long been encroached and degraded by settlement and cultivation. Widespread lakeshore cultivation and soil erosion also contribute excessive sediment and nutrients into the lake. Storm water flowing in Nakivubo Channel now carries along tones of soil straight into the lake.<sup>3</sup>
- **Water quantity:** The water levels of Lake Victoria have been going down (*see figure 2 and 3 below*)

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<sup>2</sup> ibid

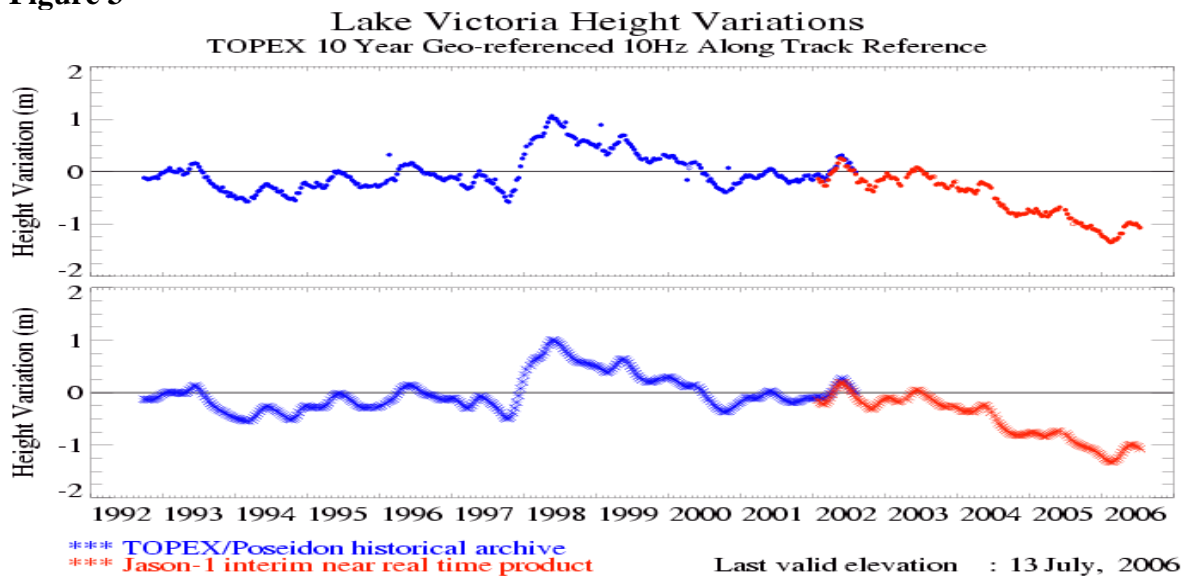
<sup>3</sup> ibid

**Figure 2. Lake Victoria levels from 1910- 2000**



Source: <http://earthobservatory.nasa.gov/Study/Victoria/>

**Figure 3**



Source: Ashbindu Singh (2007); *Africa's Lakes: Atlas of Our Changing Environment*; (UNEP)

## **(2) Energy / hydropower challenges linked to water quantity issues**

The falling water levels in the lake, which act as a reservoir, have resulted into reduced water available for generation. This situation is becoming an issue for businesses as diesel-generated power is expensive and electricity tariffs have increased recently. Further compounding expenses, the severe power outages last year resulted in business disruptions. For example, a failure of cut flower exporters to meet export volumes required by customers in time. As a result the overall revenue from flower exports in Uganda dropped from US\$ 24 million to US\$ 20 million in 2006.<sup>4</sup>

## **(3) Water quantity and climate change**

<sup>4</sup> Uganda Bureau of Statistics 2006 Export figures

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All the companies cited climate change as a big threat. The flower exporters and the district water supplier raised concerns about the canals drying up during recent periods of prolonged drought which are becoming more frequent. Companies also expect water stress due to climate change. The electricity distribution companies were concerned that less water will be available for power generation. Already, some companies require water use permits from the Directorate of Water Development which now have even more strict approval conditions to use water. These climate change-related concerns can be further compounded environmental degradation as rainfall results in deluges with sediment running into the lake, rather than more even flows of clear water.

#### **(4) Timber, to needed specifications, also in short supply**

Good electricity poles are also in short supply in Uganda. Therefore, at present, most poles are imported from South Africa, which is costly. Imported electric poles cost Uganda shillings 1,200,000 (approximately US\$ 750) each.<sup>5</sup> Recently, the Parliamentary Committee on Natural Resources raised concerns about these costs and asked Uganda Electricity Distribution Company (UEDCL) to find a solution. Furthermore, due to land shortage from high population growth, no land will be allocated for growth of poles and the shortage will continue. Eucalyptus poles have high nutrient and water demand and are not a sustainable option. PES approaches that could rectify this situation need to be explored. For example, a group of land owners could be given an incentive to plant fast growing native trees.

#### **Understanding Corporate Responses and Strategies to Deal with Ecosystem Changes:**

Most of the companies surveyed have made investments to respond to ecosystem changes. For example:

- **Beverage manufacturers** have:
  - built water reservoirs on their plants which store water for up to two days,
  - recycle 80% of the water that they use, and
  - maintain water treatment plants and waste treatment plants.
- **Flower companies** have supplemented the water shortages by:
  - drilling of bore holes,
  - constructing water collection reservoirs for rain water harvesting, and
  - planting trees.
- **The district water system** is:
  - advising communities to form water user committees to be proactive in address soil erosion threats by:
    - planting grass, and
    - digging terraces in gardens.

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<sup>5</sup> "UMEME Grilled over imported poles"; Reported in the New Vision newspaper; Monday August 6<sup>th</sup>, 2007

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For example, some of the companies have *Safety, Health and Environment Policies* in which employees are trained. However, implementation of some of the issues is costly, so the companies have not achieved all the requirements in existing policies.

In addition, most companies are engaged in some or all of the following activities:

- **promoting sound water resource management** and sustainable service delivery in the areas where they operate;
- **ensuring access** to constant and dependable water supply;
- **enhancing protection of the environment** particularly for women, children and other vulnerable community members who are recovering from years of displacement due to the war in Northern Uganda;
- **assisting communities to harvest rainwater** by training them and constructing water tanks, which is aimed at easing the burden of fetching water for the rural women in an area that already receives a lot of rainfall but has no technology for utilising the water adequately, and
- **launching community tree planting** initiatives.

### **Exploring Corporate Strategy Looking Forward:**

- **Beverage Industry:**
  - Many of the beverage manufacturers plan to minimise water usage by modifying technology, such as by using machines that minimise the use of water and other resources.
- **Electricity sector:**
  - The sector has not yet articulated a strategy yet to deal with various environmental service shortages, especially related to water.
  - The Ministry of Energy is promoting other sustainable alternative sources of energy such as:
    - mini-hydropower generation on small rivers,
    - solar power,
    - wind power,
    - biomass energy, and
    - biogas.
  - All of these options need to be rigorously assessed in terms of environmental services status and trends.

All companies said it was critical for natural resources management to be integrated in the company strategies. This would enable market-based mechanisms to be part of the company programs. For example water, which is a critical natural resource for every company, should be paid for (the current tariffs are very low). However, it would take a while to change the mindset of water users, many of whom assert that natural resources are free and should not be paid for.

### **CONCLUSION AND NEXT STEPS**

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The Payment for Watershed services (PWS) concept – is not yet fully incorporated into the present models of water management in Uganda. Based on the survey and roundtable discussions, payments for water to also cover the cost of maintaining and restoring watershed services would constitute a general shift in company policy. Until now, the companies have emphasised on-site investments to cater for future water shortages and to ensure water quality. PWS would shift them towards the protection and maintenance of ecosystems that provide the water that they use and ideally an eventual recovery of costs.

For a payment scheme to succeed and endure, the actions and change brought about by upstream land and water managers should result in identifiable benefits for downstream water users. Therefore, clear cause-and-effect relationships between upstream land and water use practices and the provision of watershed services for downstream users needs to be identified. The degree to which this is possible varies considerably from case to case

A key policy question of how competing users should pay for the services of one watershed may arise. Who uses it more? A decision based only on willingness-to-pay may be controversial because it can lead to the exclusion of those who have less ability to pay; or free riders who enjoy the benefits of the watershed without paying for any of them

There is therefore need for more site specific analysis in order to determine whether a particular site is feasible for PWS.

### **Making the Case for Investing in Ecosystems – Payments for Watershed services**

*Why take a market-based approach?*

Those who own or manage upper watershed land often have little incentive to provide watershed services because the benefits occur downstream and most of the time; they do not receive compensation for providing them. Development of incentives for appropriate land use practices therefore require finding ways for upstream landholders to be compensated for their costs.

*Examples of payments for watershed services include:-*

- Paying land owners in the upper water catchment to maintain existing forest cover or vegetation cover in order to maintain stable stream flows and reduce sedimentation.
- **Adding a small fee to the monthly water bill** and then setting aside the funds to use towards conservation and watershed protection projects.

*What should companies do next?*

**Phase 1:** *Exploring the potential for—and returns on return on investment related to—payments for watershed services in key areas of Uganda relevant to business.* which would include identifying and locating specific areas within targeted watersheds that contribute the most to the water problem (such as water shortages or poor water quality). These studies would also indicate where and how land use changes must be introduced in order to reduce and eventually eradicate the sources of such problem.

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**Phase 2: Designing a pilot payment for watershed services for private sector investment.** Based on Phase I findings, a pilot test of changed watershed management practices can be designed for private sector investment and collaborative implementation and study. Such a pilot would include a cooperation agreement (or memorandum of understanding) between watershed upland service providers and downstream service users (the company/businesses); whereby the upland providers would agree to carry out certain activities to ensure water quantity and quality in return for an agreed amount of money or form of compensation. Monitoring and verification can be undertaken by a third party.

**Phase 3: Implementing a pilot payment for watershed services project (or portfolio of projects) and assessing results, including return on investment (ROI).** The last stage would be implementation of the agreement for an agreed period of time (with continuous monitoring) that would enable private sector partners to assess if payments for watershed services offers improved reliability of water quantity, quality and/or cost savings.

*For more information on the East and Southern Africa conversations with buyers and proceedings of the roundtable, please visit [www.katoombagroup.org/africa](http://www.katoombagroup.org/africa).*