

### LEADERSHIP OPPORTUNITIES: Turning environmental problems into economic opportunities—a story of rural African woman entrepreneur

*From the African Community of Practice on Managing for Development  
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### SYNOPSIS

Water hyacinth has become a global menace with negative impacts on the environment and local communities that live around water areas. Its presence on Lake Nokoué in Benin affects locals who live in the surrounding area. As it clogs waterways, paralyzes fishing activities, and emits greenhouse gases, it slows down local socioeconomic activities.

Among the key findings: A rural woman found an interesting business idea to transform the environmental problem into an economic opportunity. She created an organization, developed her leadership skills to involve rural women, and established a business entity. She now provides income for 25 rural women.

The main conclusions: This story demystifies the plant (water hyacinth) and describes this woman's business success. But some key challenges remain, requiring policy and decision makers' attention in helping rural women and many others sustain and expand their businesses.

The key lessons: In practical terms, it is crucial to support establishing a framework that promotes the development, monitoring, and branding of such innovation. Eventually, this framework will provide African nations with a thriving private sector that reduces unemployment and poverty.

The main recommendations: Public institutions' support is important to enable people to innovate. Monitoring innovators is important to build their capacity in order to have a flourishing private sector. Branding local innovators' products is important. This aspect requires policy attention to protect innovations and allow innovators to develop and expand their businesses.

### Introduction

Water hyacinth proliferation is one of the main environmental problems for aquatic areas. It is a highly invasive plant that dramatically blocks transportation, reduces water flows, and starves the water of oxygen, killing fish (ACED and GEVALOR 2014). Water hyacinth also emits methane, which contributes to global warming at least 20 times more than carbon dioxide (Reilly and

others 2003). It is definitely a major socioeconomic and ecological challenge for water areas and the communities that live there.

In Benin, a community-based organization led by a rural woman, Agnes Kpakpo, is innovating to transform this environmental problem into an economic opportunity. The organization's main activity is processing water hyacinth into different products, such as hats, baskets, and ornamental

materials. Her leadership has created value and jobs from an environmental problem. It has also helped many other rural women earn income from collecting and transforming water hyacinth.

This innovation is worth sharing with the broader African community. The case is valuable because it targets rural women who are innovating but do not have the chance to showcase their work.

### The proliferation of water hyacinth

Water hyacinth (*Eichhornia crassipes*) is one of the world's most invasive plant species (Jiang and Zhang 2003). The problems it causes include impeding drainage, destroying wildlife, and obstructing waterways, reducing outdoor recreational opportunities, and lowering dissolved oxygen, reducing oxygen for animals and plants (Toft and others 2003). Indeed, the ecological impacts of invasive species are mainly due to their rapid growth, which creates dense mats on the water surface and within the water column. These mats clog waterways; outcompete native species; increase rates of saltation; and alter pH, turbidity, temperature, conductivity, and nutrient cycling (Masser 2007). Consequently, invasive species alter ecology and water quality, reducing native population densities and species diversity (Texas Invasive Plant and Pest Council 2010). They also limit the daily operational and recreational uses of the waterways and decrease waterfront property values (Masser 2007).

Water hyacinth proliferation produces greenhouse gas (GHG) emissions, contributing to climate change. The plant grows and dies in its natural habitat and, while decomposing, emits large quantities of GHGs, mainly methane, contributing to global warming.

In the past, biological control agents, chemical herbicides, and mechanical removal were used to manage species in their various environments (Chilton and Durocher 2009). Indeed, harvesting and using the plant material for animal feed, compost, fertilizer, energy production, paper, and

water pollution control at wastewater treatment plants have been explored (Gopal 1987). Herbicides have also been used to kill the plant (De Marchi and others 2009; Koschnick and others 2004; Wersal and Madsen 2010). But these solutions were not sustainable.

### Combating water hyacinth: A rural woman entrepreneur

#### The problem

Water hyacinth is one of the world's most invasive species. It proliferates dangerously in the waters of Lake Nokoué in Benin to the point of substantially covering its entire surface during floods. Besides clogging communication channels and paralyzing fishing activities, it provokes a very strong eutrophication and a fatal anoxia to fish resources, which support more than 150 bird species and a large part of the region's economy (Lake Nokoué is considered the most productive lake in West Africa).

Nine months a year, water hyacinth covers Lake Nokoué to such a degree that fishing, transporting, and marketing agricultural products on the lake are almost impossible. Local communities see it as the most problematic aquatic plant, with both environmental and socioeconomic constraints.

#### The solution

Water hyacinth has different uses in different world regions (such as compost, paper, and artisanal products). So, under the auspices of the Ministries of Trade and Tourism of Benin, a rural woman from the village of Ganvié was trained in Bangladesh in techniques for transforming water hyacinth into artisanal products. Back in Benin, in her village, she created a community-based organization that aims to transform the plant into artisanal products to be sold to locals and those who visit Ganvié, a tourist village.

The process starts with collecting water hyacinth on Lake Nokoué. The collected water hyacinth is then stripped of its leaves and roots to where only the

stem remains. The stem is washed with clean water and dried for about 30 days, kept in a dry place away from moisture. At this stage, the stem can be used to make artisanal products. To improve the aesthetics of products, the stem can be colored, adding some value and increasing its price.

### **The implementation approach**

Kpakpo recruited and trained 25 rural women in the water hyacinth transformation process to increase production and profit. To motivate the women, she provided a good income, helping them with their financial problems. And as a good rural woman, she retained them in the organization by giving advice and by caring about their social problems such as family issues. She thus created a trusting environment that motivated the women to work together and boost their activities.

To maintain an effective collaborative environment and to reduce the risk of having her innovation stolen, she trained women on different links in the value chain. The skills of women are complementary, with no one woman able to run the innovation alone. She designed a marketing plan that spells out the prices, places, visibility, and strategy for product distribution. The final products are sold to local people, but most are sold to tourists who visit Ganvié. She also participates in national and international fairs to increase product visibility, clients, and sales.

### **The challenges**

After working for many years, Kpakpo noted three challenges. The first relates to marketing. Because the products are artisanal, local people are not usually interested in them, so most of the marketing is aimed at tourists, which can require more effort. The second relates to organizational capacities. It is difficult sometimes to manage the women who work in the organization, especially when they are not following instructions. The third is that the products are not properly branded, so the innovation can be easily replicated.

## **Outcomes and overall assessment**

### **The business succeeds because of one woman's leadership**

This woman shows good leadership by setting up a business based on an environmental problem. She then creates value around water hyacinth and develops a business model from collecting the plant to marketing the products. She also has a good sense of management, training women and keeping them in her organization. By giving them an important income source and by caring about them personally, she motivates them to develop and boost the business. With 25 employees, the business also creates jobs and empowers women.

### **Transforming water hyacinth into artisanal products has a positive effect on the environment**

Removing water hyacinth frees spaces for aquatic resources and creates a safe environment for them to grow. This effect has been measured by fishermen, who are certain about their fish stocks increasing over the years. The process also reduces GHG emissions, especially methane, which contributes to climate change.

### **The business helps develop local socioeconomic activities**

The livelihoods of fishermen, farmers, transporters, and women have improved. Indeed, fishermen can fish easily on the lake and farmers have access to markets in good time. Transporters are also more comfortable in their work as the lake becomes freer of water hyacinth.

## **Lessons and the way forward**

Based on the problems that water hyacinth is causing to the surrounding environment and locals of Lake Nokoué, a rural woman, Kpakpo, created a successful business. She used her leadership to train, motivate, and maintain 25 other rural women, who are developing her activities. To boost her turnover, she developed a business plan that included marketing, distribution, and communication strategies. She also participated in

national and international fairs. The lessons are as follows:

**A business idea can come from an environmental problem**

The water hyacinth proliferation enabled the woman to innovate and to create a business. Not only has the innovation reduced the invasive phenomenon but it also allows locals to easily develop their livelihood activities (fishing, farming, tourism).

**Public institutions' support is important to enable people to innovate**

This entrepreneur has an advantage in conducting her business because she enjoys the support of public institutions. Without this support, she could not learn the techniques that were put into practice.

**Monitoring innovators is important to enhance their capacity in order to have a flourishing private sector**

One challenge for the entrepreneur is product marketing. She has developed a marketing plan, but marketing is still a bottleneck in selling products. It may be useful to insert such innovators into official distribution networks for other artisanal products in the country.

**Branding local innovators' products is important**

Another challenge faced by the woman is branding the products, without which the innovation can easily be replicated. This aspect requires policy attention to protect innovations and allow innovators to develop and expand their businesses.

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