



# **RAVINE REHABILITATION IN BRAZZAVILLE, CONGO**

**Alain Ndonga**

***Vetiver Network International Representative  
Kinshasa, Democratic Republic of Congo***

**and**

**Paul Truong**

***Director, Vetiver Network International  
Brisbane, Australia.***

# INTRODUCTION

Located on the flood plain of the mighty Congo River, Brazzaville shares the enormous erosion problems with Kinshasa on the opposite side of the river.

The sandy alluvial soil has a weak structure hence highly vulnerable to water erosion

Huge ravines, up to 100m deep developed readily as a result of land clearing and urban development. The traditional method of rehabilitation/stabilisation of these ravines is the use of hard conventional engineering structures such as gabions, rock baskets and sand bags etc, which are very expensive to build and maintain. In addition, these hard structures are also vulnerable to erosion themselves by water seeping behind the structures, undermining their foundations.

Vetiver System has proved to be very effective in the rehabilitation/stabilisation of these ravines in Kikwit, a rural region of the Democratic Republic of Congo, with the incorporation of land terracing first.

However, in urban situations, terracing is often impractical due to limited land, hence more expensive hard structures are used.

The following slides show that the incorporation of the Vetiver System with sand bags has successfully rehabilitated the slopes of these ravines in Brazzaville, Congo.



**Terracing the ravine walls at Kikwit**

**Before and six months after vetiver planting**





**Urban ravines in Brazzaville, Congo**





**These hard conventional engineering structures such as gabions, rock baskets, which are very expensive to built and maintain.**





**These conventional chutes are not only very expensive to built and maintain, they are unsustainable as they are also vulnerable to erosion themselves by water seeping behind the structures, undermining of their foundations.**

**Living proof of the unsustainability of these hard structures due to undermining of their foundations in Brazzaville.**





**In the long term sand bags by themselves are not sustainable either, as they will breakdown and as with the hard structures their foundations will also be undermined by seeping water.**





**However the stability of these bags will be much enhanced with the incorporation of the Vetiver System due to following factors:**

- 1- Vetiver extensive roots will reinforce the soil in the sand bags**
- 2- Its very deep root system will anchor the bags to the slopes**
- 3- Its vigorous growth will reduce the pore pressure in the wet season thus minimizing the undermining effect of seeping water.**



## New method of urban ravine erosion control in Brazzaville, Congo





**Three weeks after  
planting**



**Four weeks after planting**





**Four months after  
planting**



**Four months after planting**



# **CONCLUSION**

**Although it is too early at this stage to draw a firm conclusion on the success of this method, results to date are very encouraging. In addition results from Kikwit , four years after vetiver planting, have shown that the vetiver planting on these terraces has successfully stabilised these ravine walls. Hence it is most likely that this site in Brazzaville will also be successful.**

**The result of this site will be closely monitored and reported in the near future.**

## **THANK YOU**