

BRAZZAVILLE TO POINTE-NOIRE HIGHWAY CONGO BRAZZAVILLE



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INTRODUCTION

This 600 km Highway linking Brazzaville, capital of Congo Brazzaville to the port city of Pointe-Noire on the Gulf of Guinea on the Atlantic Coast.

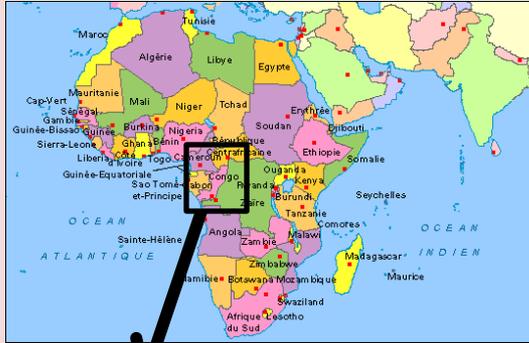
The highway civil construction was designed by Egis, a French construction company.

Alain Ndonga was in charge of the design and implementation of vetiver system erosion and sediment control on embankment of this highway

The project was carried out in 5 stages:

- 1. Importing planting material**
- 2. Training of Chinese technicians and their subcontractors**
- 3. Nursery establishment**
- 4. Demonstration trial**
- 5. Full implementation**

Introducing Congo-Brazzaville



The Congo region is the traditional name of the equatorial Middle Africa that lies between the [Gulf of Guinea](#) and the [African Great Lakes](#). It comprises some of the largest tropical rainforests in the world.

The climate is equatorial and tropical, with two rainy seasons including very high rainfalls, and high temperature all the year round

The soil is alluvial from the Congo River, very deep sandy loam, infertile and highly erodible when clear of vegetation



Vetiver Supplier

Kunming Further Step Technology Co., Ltd., Kunming, Yunnan Province, South West China. This company currently has a 15ha nursery capable of producing more than 80 million seedlings per year.

Since 2011 this company also carried out ecosystems restoration projects using vetiver technology in Sichuan earthquake-stricken area, Luquan county in xerothermic valley area of Jinsha river, in rocky desertification area in Dongchuan District and Yimen county, ecosystems restoration of manganese mine in Jianshui county.

STAGE 1:

Importing planting material



**One million vetiver slips were
airlifted directly from
Kunming to Brazzaville**





STAGE 2:

Short training course

Alain Ndonga conducted a short training course for Chinese technicians and their subcontractor



STAGE 3:

Nursery establishment



A large nursery was established near the construction site to supply up to 150M planting slips over the period of 2-3 years



A well established nursery with healthy and vigorously growing plants is one of the most important point to assure success of any VS projects

Vetiver in polybags ready for planting



STAGE 4:

Demonstration trials

April 2012



A small section of the highway cut embankment was used as a training site as well as a test of VS effectiveness on local soil and environment

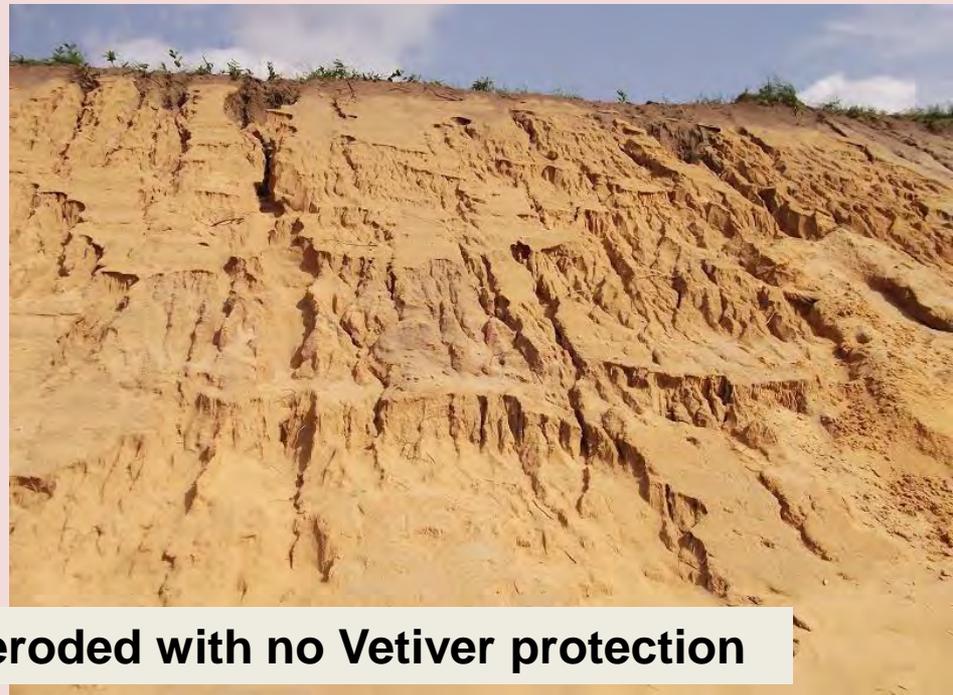


Very good growth and establishment 11 weeks after planting





Cut batter initial state, badly eroded with no Vetiver protection



Cut batter fully protected 11 weeks after planting, July 2012,



STAGE 5: Full implementation

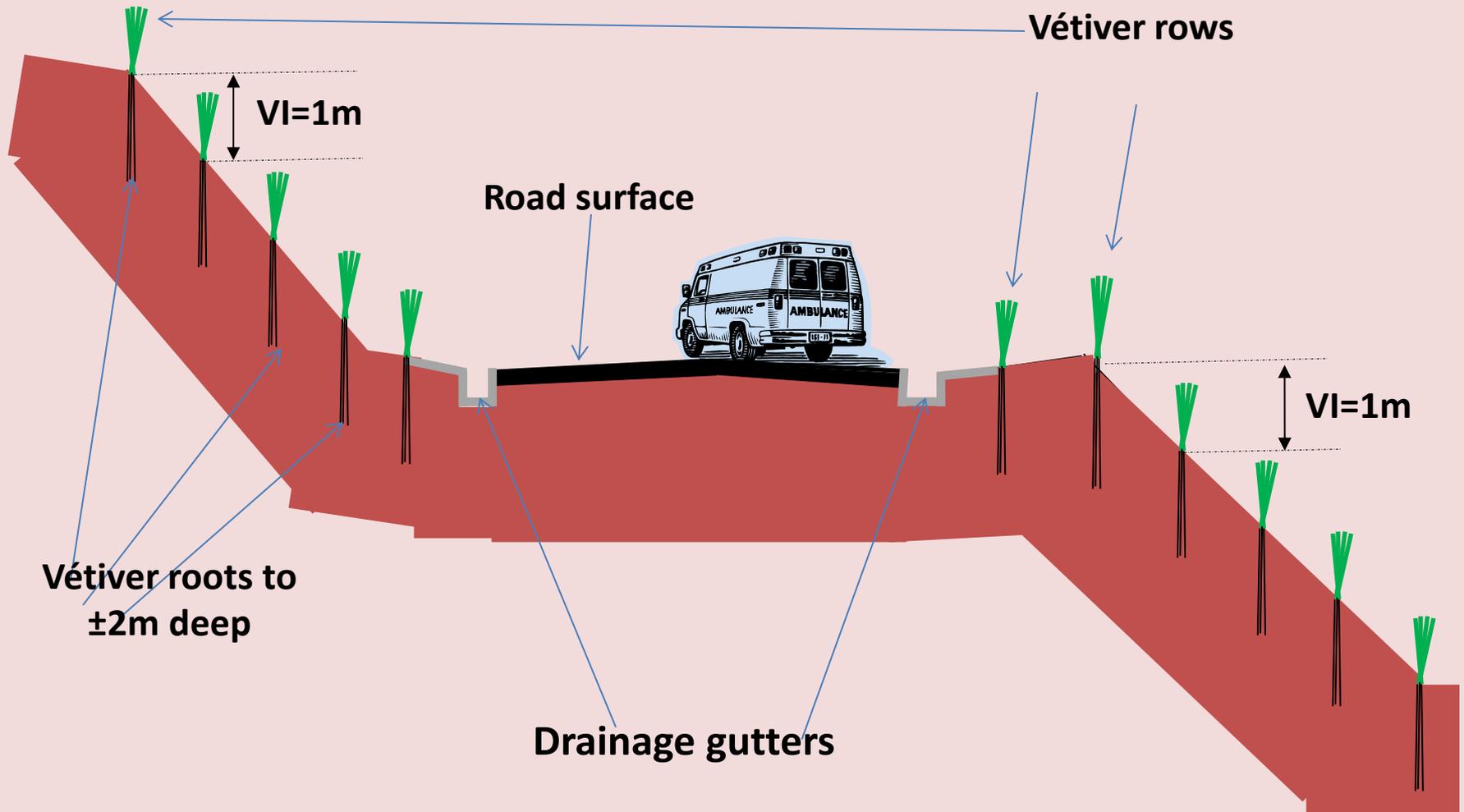


Erosion of these unprotected batters will deposit mud on the foundation layer of the road. This makes further work difficult before the paving of asphalt



Design Principle

On steep slopes and both cut and fill embankment, VI = 1m must be used between vetiver rows

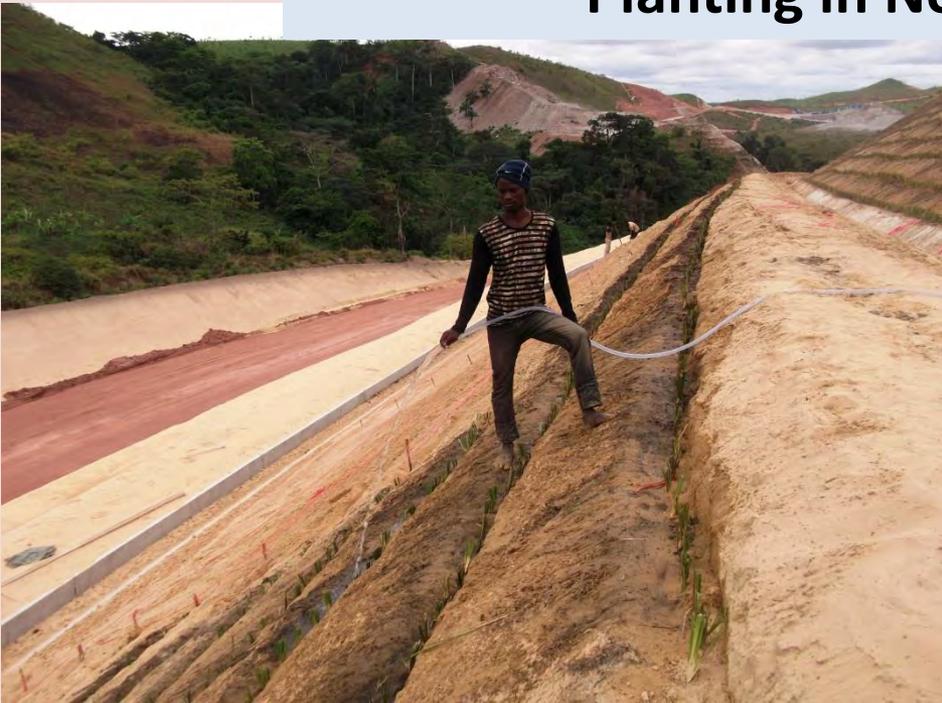


**Planting started in
October 2012**





Planting in November 2012



Protecting steep culvert head





April 2013

**4 months after
planting**



Planting in November 2012



4 months after planting



May 2013

**5 months after
planting**



**Vetiver was trimmed back
to 40-50cm high to
encourage tillering**





**Vetiver was
trimmed back to
40-50cm high to
encourage tillering**



**Vetiver was
trimmed back and
shoots use as
mulch on inter row
space**



THANK YOU