

Role of The Vetiver System in the Achievement of Kenya Vision 2030

James O. Owino

Coordinator, Vetiver Network Kenya
Egerton University, Department of
Agricultural Engineering



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INTRODUCTION

- Kenya has in the past had two long-term policies and several 5-Year Development Plans
- Sessional Paper No. 10 of 1965: African Socialism and its Application to Kenya, and the Sessional Paper No.1 1986: Economic Management for Renewed Growth.
- Since 2003, we have had Economic Recovery Strategy (ERS) with the GDP growth rate shooting back to 6.1 per cent by 2006.



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INTRODUCTION – CONT.

- In order to improve Kenya's economy so that it compares with other middle-income countries, such as Malaysia Indonesia and Thailand, Kenya Vision 2030 was introduced
- This paper looks at the role of the Vetiver System in the achievement of the Vision 2030



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VETIVER SYSTEM

Cost-effective, low maintenance technology used for:

- Soil & water conservation
- Slope stabilisation
- Water quality improvement
- Treatment of contaminated land
 - Fodder for livestock
 - Handicraft (roof thatch, baskets, hats)
 - Pest control (on-farm and in storage)
 - Fuel.



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THE PLANT

Chrysopogon zizanioides (Ex. *Vetiveria zizanioides*)



Voi River bank



Naivasha



Nyando



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THE ROOT



**Excavated root.
Average tensile root
strength 75 Mpa (China)**



**Longitudinal section through hedge
note the root mass in the top meter of the soil
profile. This type of root mass will improve
soil shear strength by up to 39% (Malaysia)**



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VETIVER GRASS SPECIAL CHARACTERISTICS

Grows under extreme and wide range of conditions:

- **Long Living Perennial Grass**
- **Air temperatures: -14°C to $>55^{\circ}\text{C}$**
- **Soil pH from <3 to >10**
- **Annual Rainfall 300 mm to $> 5,000$ mm**
- **Tolerant to all heavy metals**
- **Saline tolerant**
- **Fire tolerant**
- **Few Pests and diseases**
- **Powerful (75 MPa root strength) and deep root system**
- **Non competitive and non invasive**



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PROPAGATION

Vetiver grass cultivars originally from South India are sterile and non invasive. It is these types that are used for the Vetiver System.

Vetiver is propagated by root division.

If large quantities of plant material is required nurseries have to be established.



**China - 20 ha nursery
- bare rooted plants**



**Malaysia - containerized vetiver
nursery**



Voi -Kenya



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PLANTING



Mexico - Planting by hand



Planting Vetiver from polyethylene sleeves



**Australia -
machine planting.
Modified
vegetable planter**



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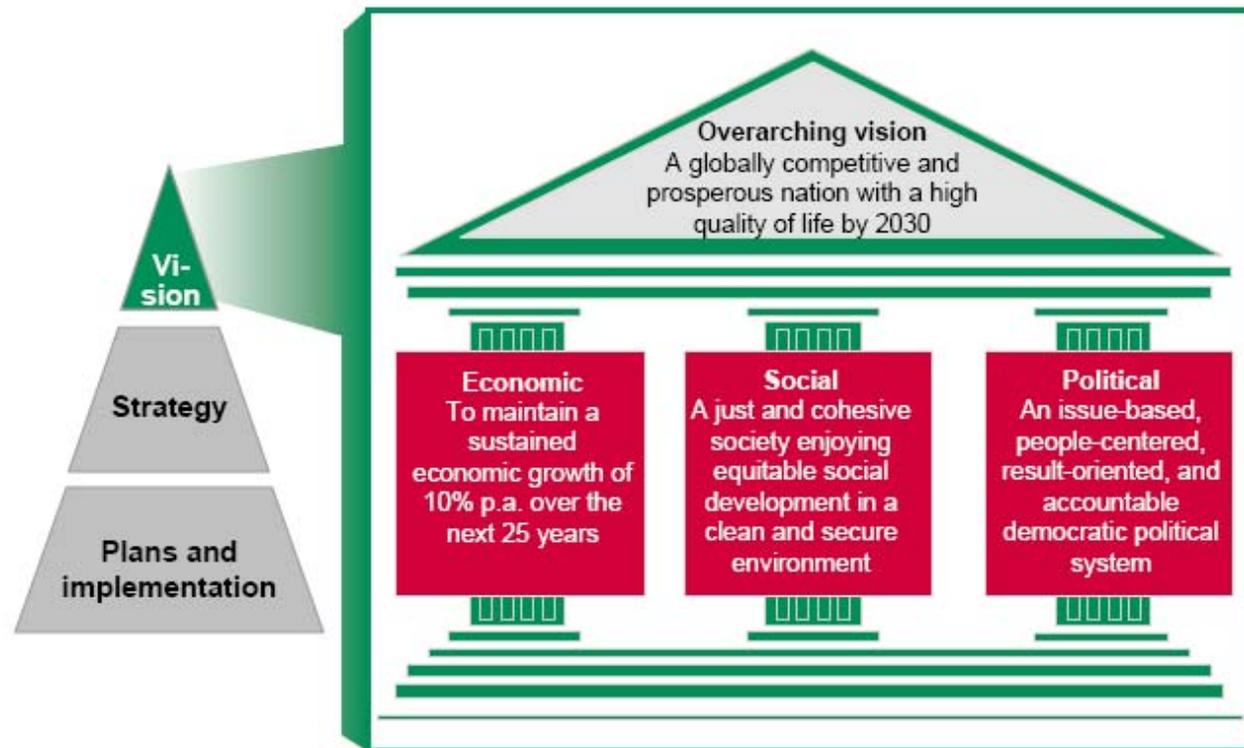
KENYA VISION 2030

- Kenya Vision 2030 is the new country's development blueprint covering the period 2008 to 2030.
- It aims at making Kenya a newly industrializing, “middle income country providing high quality life for all its citizens by the year 2030”
- It has three main pillars namely, Economic, Social and Political



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KENYA VISION 2030

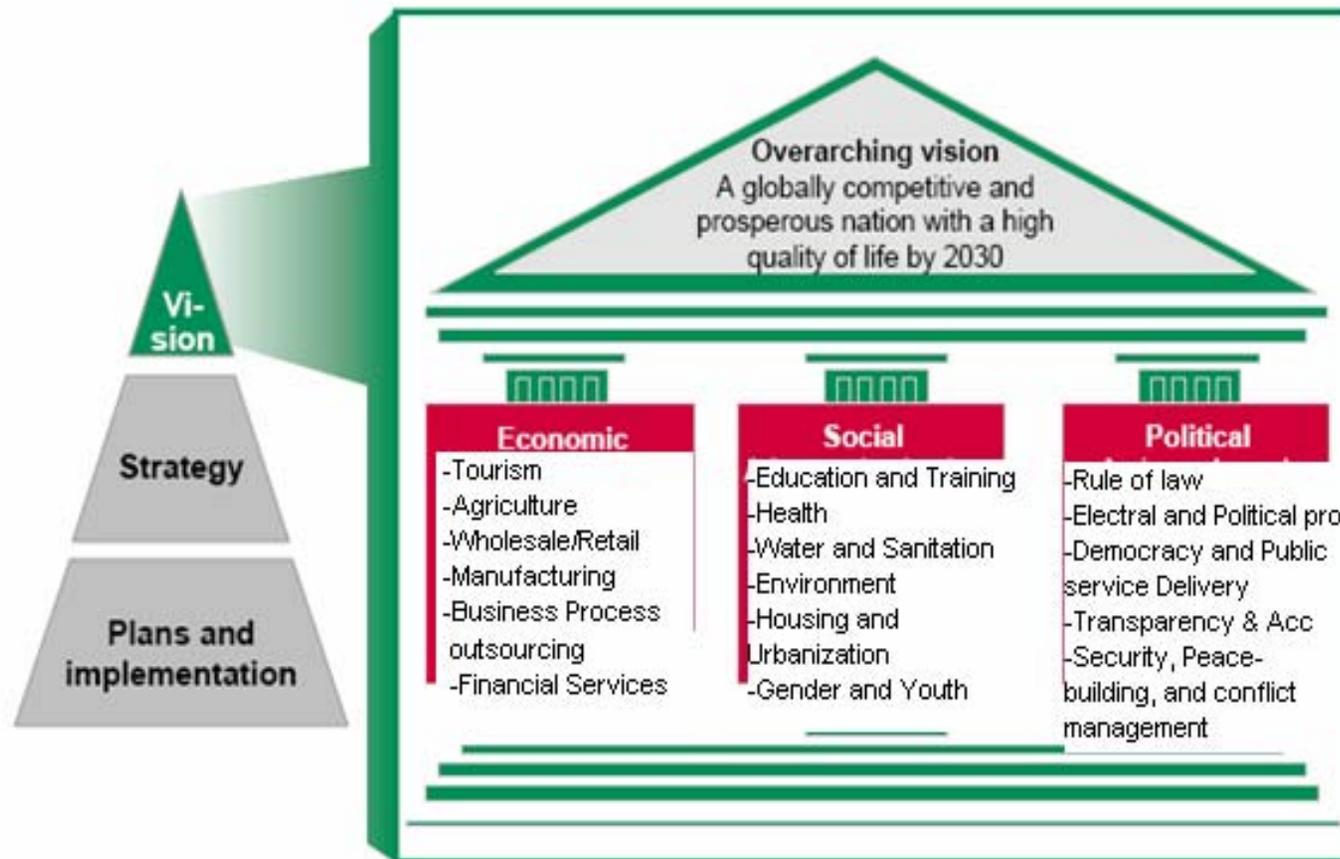


Source: NESC Vision workshop, January 13-14 2006, Naivasha, Kenya



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KENYA VISION 2030



Source: NESC Vision workshop, January 13-14 2006, Naivasha, Kenya



THE SOCIAL STRATEGY

- Education and Training
- Health
- Water and Sanitation
- Environment
- Housing and Urbanization
- Gender and Youth



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WATER AND SANITATION

The Flagship projects under Water and Sanitation for 2012 are to:

- Construct 2 multi-purpose dams with storage capacity of 2.4 billion m³ along rivers Nzoia and Nyando;
- Construct 22 medium-sized multi-purpose dams with a total capacity of 2 billion m³ to supply water for domestic, livestock and irrigation use in the ASAL areas;
- Construct a 54 km canal from Tana River to Garissa (Rahole canal)
- Rehabilitate and expand urban water supply and sanitation in the key satellite towns identified under the economic pillar.
- Rehabilitate and expand the major irrigation schemes (Bura, Hola, Kano Plains, Nzoia, Perkera, Kerio Valley, Mwea, Taita Taveta, Ewaso Nyiro North and Ngurumani)



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ENVIRONMENT

The Flagship environment Projects for 2012 are:

- The Water Catchment Management Initiative – rehabilitating the 5 water towers (i.e. Mau Escarpment, Mt. Kenya, Aberdares Range, Cherangany Hills and Mt. Elgon);
- The Solid Waste Management System Initiative – relocation of the Dandora dump site and development of solid waste management systems in 5 municipalities and in the economic zones;
- The Plastic Bags Initiative – tightening the regulations to limit production and usage of environmentally-detrimental plastic bags,



ROLE OF VETIVER SYSTEM

- *Catchment Protection*



- Vision 2030 FP
- Construct 2 multi-purpose dams with storage capacity of 2.4 billion m³ along rivers Nzoia and Nyando;
- VS Role
- Incorporating VS will help in protecting the catchment and therefore reducing the chances of dam siltation



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ROLE OF THE VETIVER SYSTEM

- *Infrastructure Stabilization*



VS – Applied to protect against landslides, stabilize road sides, dikes, etc



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ROLE OF THE VETIVER SYSTEM



- Vision 2030 FP
- Rehabilitate and expand the major irrigation schemes (Bura, Hola, Kano Plains, Nzoia, Perkera, Kerio Valley, Mwea, Taita Taveta, Ewaso Nyiro North and Ngurumani)
- VS Role
- River bank, pond, irrigation channel protection



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ROLE OF THE VETIVER SYSTEM

- Vision 2030 FP
- The Solid Waste Management System Initiative – relocation of the Dandora dump site and development of solid waste management systems in 5 municipalities and in the economic zones
- VS Role
- VS used to protect dump site and to absorb leachate

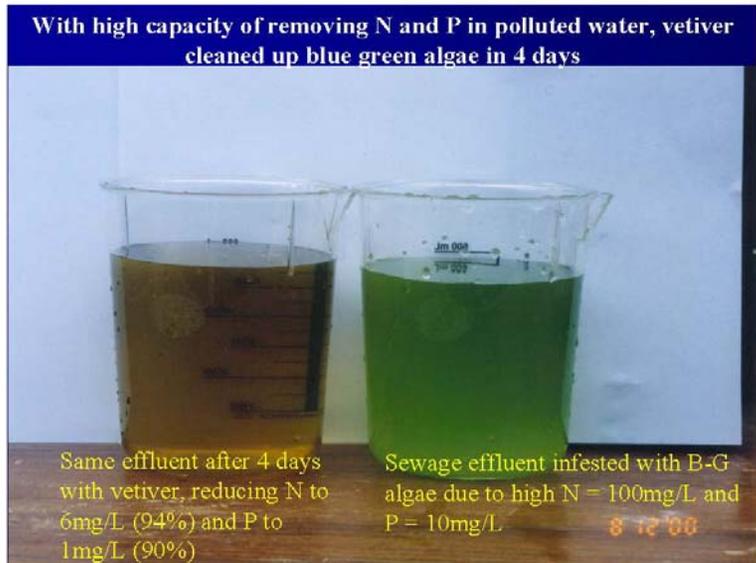




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ROLE OF THE VETIVER SYSTEM

- *Waste Water Management*



VS Role

VS can be used in municipal effluent treatment in the selected towns

Vision 2030 FP

Rehabilitate and expand urban water supply and sanitation in the key satellite towns identified under the economic pillar.





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Vetiver bed for wastewater treatment





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Vetiver being used to absorb effluent discharge from a toilet





ROLE OF THE VETIVER SYSTEM

Alternative to plastic paper bags:

Use of vetiver baskets and containers will to limit production and usage of environmentally-detrimental plastic bags,





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APPLICATIONS IN KENYA

On Farm

- Coastal province – Voi, Sagalla, Udanyi, Taita, Taveta, etc
- Nyanza Province – Nyando, Kisumu, Kisii, Siaya, etc
- Rift Valley Province - Nakuru, Njoro, Naivasha, Kitale, West Pokot, etc
- Western Province – Mumias
- Eastern Province – Machakos, Kitui, Embu, etc

• Infrastructure

- Taita sisal estate – dam protection
- Bamburi cement factory – Ponds and canal stabilization
- Wei Wei project – irrigation canal protection

• Water Quality improvement

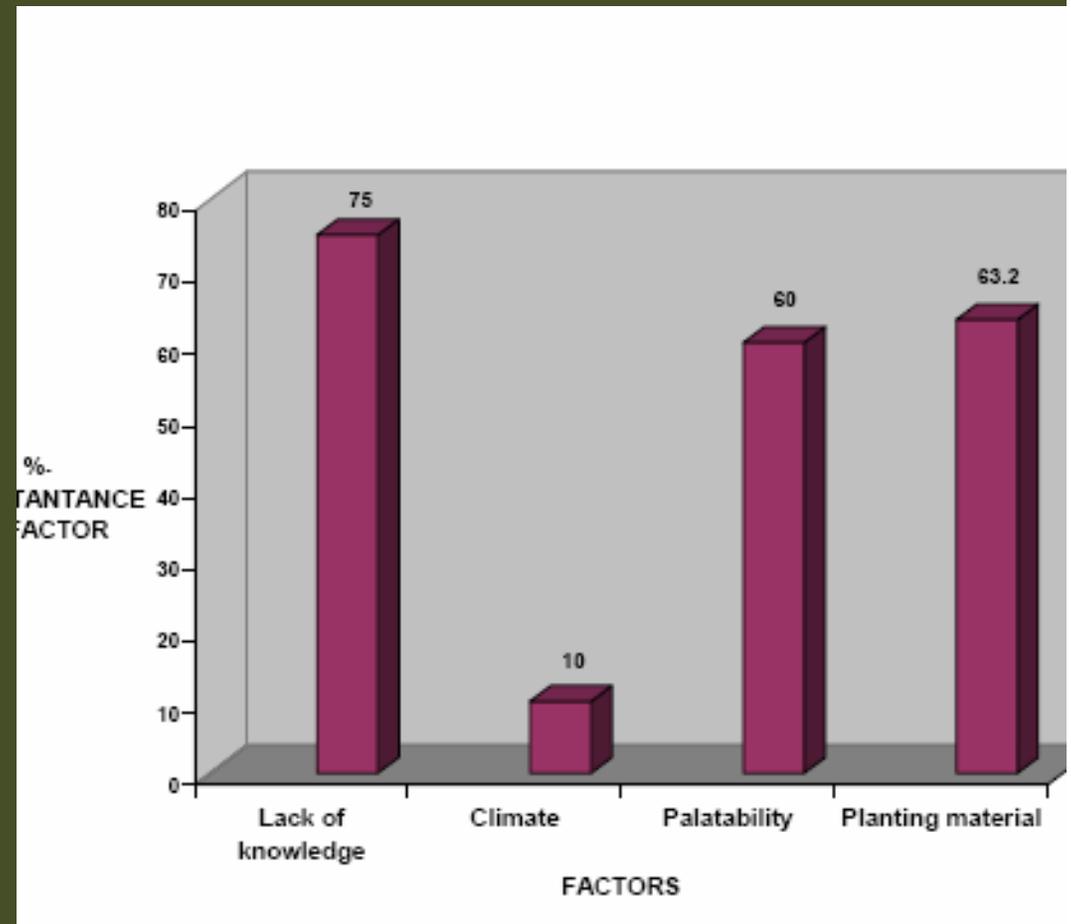
- Mombasa - waste water treatment (Green water solution)
- Bamburi – Water treatment and soil reclamation
- Nakuru – Waste water treatment
- Nanyuki – Waste water treatment



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Challenges

- Sensitization of government and other stakeholders
- Availability of sufficient vetiver planting material
- Support from government and other relevant organizations
- Networking
- Attitude towards the Bio-engineering technologies
- Adoption of the of the vetiver system





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Conclusion

- **Vetiver system is a proven technology that is working in over 100 counties**
- **It has a vital role to play in the Kenya Vision 2030 strategies especially in Water , Sanitation and Environment**
- **This can be achieved through Wastewater treatment, cleaning of up of solid waste dump sites, Soil erosion control, steep slopes protection, river bank protection, watershed rehabilitation and protection, replacement of the plastic paper bags.**



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**THE END
THANK YOU FOR YOUR
ATTENTION**