



# **Vetiver System Contribution Towards Wetland Rehabilitation in Ethiopia:**

*The Case of Wichi Wetland and Micro Watershed, Metu District*

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**By**

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Paper presented at the workshop entitled: The Vetiver System for Water and Soil Conservation, Environmental Protection and Land Rehabilitation in Ethiopia

A workshop organized by Sustainable Land Use Forum

March 16-18, 2009

Addis Ababa, Ethiopia



# Presentation outline

- Introduction
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Integrated Wichi Wetland and Watershed Management Project
- Wetlands and upslope linkages
- Environmental problems associated with Wichi Micro Watershed
- Actions taken to combat the threat and arrest the environmental degradation
- Vetiver as a means for rehabilitating wetland system
- The outcomes from Vetiver promotion
- Challenges
- Conclusion and recommendation



# 1. Introduction

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- This presentation focus on Vetiver System contribution towards wetland rehabilitation
- Wetlands are:  
**ecosystems found at interface between land and water or land and water together at the same time and place**
- Wetlands exist every where on the planet from polar through temperate to the tropics.



# 1. Introduction (continued)

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- Ethiopia has diversified wetland ecosystems distributed throughout the country
- They have various socio-economic and environmental values
  - they are bases for socioeconomic development (WATER, FOOD, etc. )
  - Wetlands are “SUPERMARKETS” of biodiversity
  - Wetlands are sinks of CARBON in the watershed, etc



# 1. Introduction (continued)

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○Wetlands occupy more than 5% of Illu Aba Bora Zone as well as Wichi Micro Watershed,

○Among the major threats of wetlands in Illu Aba Bora and other parts of Ethiopia are:

- Soil erosion from farm lands
- Wetland drainage and
- Overgrazing and trampling by livestock

EWNRA introduces Vetiver as a solution to this problem

## Some wetland types from Illu Aba Bora Zone





## 2. **Integrated Wichi Wetland and Watershed Management Project**

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o Integrated Wichi Wetland and Watershed project is designed to address:

**wetland–watershed management problems for biodiversity/environmental protection and sustainable living of present and future generations**

o Implemented between 2005 – 2008 with active participation and involvement of local communities and woreda level development actors



## 2. Integrated Wichi ... continued

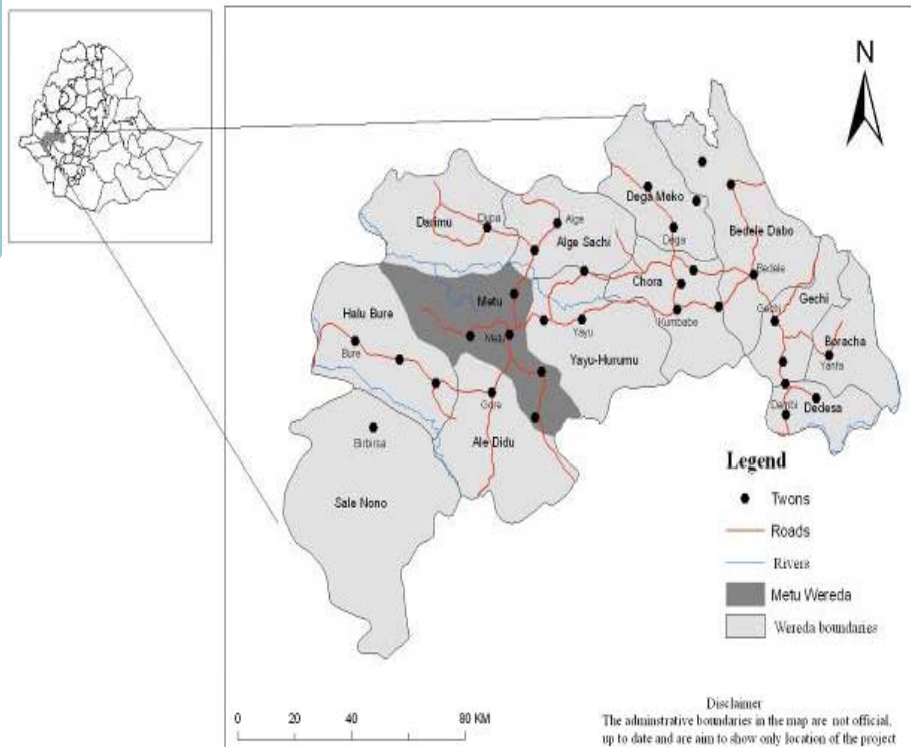
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- The project was funded by SIDA through SLUF
- Major focus of the project was **on wetland rehabilitation using Vetiver System** as one of key project components



## 2. Integrated ---Project (continued)

### Location and Partial View of Wichi Wetland



Location of Wichi Micro Watershed within SW Ethiopia

Partial View of Wichi Micro Watershed

### 3. Linkage between wetlands and Upslope

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- Wetlands and adjacent upslope are linked to each other physically, ecologically and socio economically
- Any action in the upslope has an impact on the wetland





## **4. Problems prevailed within Wichi micro watershed prior to project intervention**

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### **4.1 Wetland scenario**

- Initially Wichi Wetland was used for reed harvesting and rich in biodiversity
- Drainage started in Wichi in 1985 following the country wide drought
- Drainage has opened opportunity for other type of wetland use - grazing



## 4. Problems ....continued

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- Population increase resulted in agriculture expansion through deforestation in the upslope hence increased siltation in the wetland
- Coffee expansion in the upslope forced people to look for another alternatives for cropping—wetlands were the options available for them
- Overgrazing – year round and over stocking
- Loss of biodiversity



## 4.2 Upslope degradation

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- Agricultural expansion in the expense of forests,
- Soil and water erosion increased due to poor soil management practices
- Decline in crop productivity,
- Loss in biodiversity, etc



## 4.3 Impact from the aforementioned actions on the wetland

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- Drying up of the wetland due to the drainage action
- Siltation increased within the wetland as a result loss of water holding capacity of the wetland
- Water quality is affected due to high siltation
- Wetland soil compaction due to continuous grazing – decline in water holding capacity





## 4.3 Impact... continued

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- Runoff from upslope increased affecting the wetland
- Increased out flow from the wetland due to soil compaction, hence decline in water availability in the wetland
- Loss of biodiversity followed
- Totally wetland degradation intensified



## 5. Actions taken by the project to address the problems

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- Construction of physical soil and water conservation structures within the catchment in long term to contribute towards wetland recovery as well
- Planting of Vetiver on the constructed physical soil and water conservation structures





## 6. Vetiver in Illu Aba Bora Zone

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### 6.1 History of Vetiver

- Vetiver was introduced to Ethiopia in early 1970 by Indian Scientist to Coffee Plantation Enterprise
- It was introduced to Illu Aba Bora in 1989 by MfM for soil and water conservation work,
- EWNRA engaged in promoting Vetiver since 2003



## 6.2 Why Vetiver in Wichi?

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- To address the environmental problems manifested within the micro watershed mainly wetland and upslope degradation due to soil erosion and siltation.
- Vetiver planting is considered to be a relatively more effective method of biological soil and water conservation
- Vetiver has the capacity to protect farm lands from soil erosion and runoff - improve soil fertility, retain moisture in the soil over a longer period of time or on sustainable way.



## 6.2 Why Vetiver ... continued

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- This has a direct impact on land productivity and thus on the improvement in crop yields.
- Vetiver grass is believed to be a versatile grass that can serve various purposes - eg. leaves for thatching roofs, making mats, feed at early stages etc.



## **6.3 Vetiver raising, distribution and planting within Wichi**

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- EWNRA engaged in Vetiver promotion since 2003 through implementing Meko Gorbay micro watershed project,
- Before introducing Vetiver to Wichi discussion and agreement was made with local communities,



## 6.3 Vetiver raising,... continued

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- Raising Vetiver within project nursery for 10-12 months,
- EWNRA has raised and distributed more than 2 million planting slips within Wichi Micro Watershed over four years,

# Vetiver in Sor Nursery before planting - Metu

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Well grown Vetiver in Sor  
Nursery ready for planting



Partly up rooted Vetiver  
seedlings ready for transporting  
for planting out in the field



# Vetiver in Agricultural Fields – Wichi Micro Watershed





## Vetiver planted on a waterways – Wichi







**In summary:**

**-1018 hectares of land was treated through constructing 820 kms of Fanya juu, 70.80 kms of soil bund, 4.65 waterways and 25.5 kms Cut-off drian**

**More than 2,000,000 Vetiver tillers and 131,250 tree seedlings -raised and planted**





## **7. The outcomes from promoting Vetiver Within Wichi**

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### **7.1 Wetland rehabilitation**

**A number of improvements are being observed in the wetland ecosystem following project intervention**


## 7.1 Wetland rehabilitation (continued)

*Increase in water quantity within the wetland ecosystem*



*Water as seen in the wetland in May 2007  
after the main dry months of the year*





## **7.1 Wetland rehabilitation** (continued)

### **Decline in siltation within the wetland ecosystem**

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- Less silt in the wetland as a result of improvement in water quality flowing from the upslope
- Increased water holding capacity of the wetland
- As a result presence of water within the wetland ecosystem all the year round

## 7.1 Wetland rehabilitation (continued)

### *Improvement in biodiversity within the wetland*

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## 7.1 Wetland rehabilitation (continued)

### Wetland productivity increased

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- Increased moisture availability within the system
- More organic matter within the system
- Increase in wetland species (decline in weed infestation)



## 7.2 Upslope

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- Soil erosion reduced and moisture conserved
- Crop productivity improved
- Stable soil and water conservation structures across the micro watershed



## 7.2 Upslope (continued)

### Maize Field with Vetiver grown on the ridges







## 7.3 Other benefits observed and reported from Vetiver System

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**Vetiver has many additional benefits and some of the benefits include:**

- Vetiver leaves are used as thatching material for construction and maintaining local huts,
- Leaves are also used for construction of various types of shades for various use – for livestock, grainier, wildlife guarding huts, for out door toilets, etc
- Leaves are twined for making ropes, etc.

# Vetiver used for thatching as in Wichi

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## Benefits of Vetiver (Continued)

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- Vetiver leaves are dried and used for staffing to make locally made mattresses,
- Fresh leaves are used for covering floors on main religious ceremonies and public holidays,
- Used as ornamental plant around home steady
- Vetiver walls are also serve as fire protection lines

## *as an ornamental plant*

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**Vetiver leaves are also used for making woven raincoats and household utensils**



## 8. Challenges

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- Severe financial limitation has restricted EWNRA to distribute sufficient Vetiver planting materials to the local community based on their demand,
- Vetiver needs a large area for raising seedlings for dissemination, and
- Vetiver leaves are not easily palatable once matured





## 9. Conclusion and recommendation

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- Vetiver should be promoted in larger scale across the country where agriculture is practiced on sloppy and mountainous landscapes.
- Vetiver has a significant contribution in wetland rehabilitation in case of Valley bottom wetlands and could be promoted
- Vetiver has various benefits other than conservation and this has to be noted and considered for Vetiver promotion in greater scale



**Thank you for Your Attention**