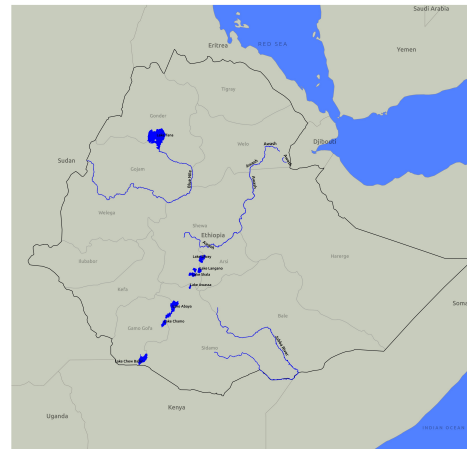


## Demosite description

### Lithology / Geochemistry

The geology of the area is dominated by a huge volcano system named as Guna mountain shield volcano. The common rock type for this material is basalt



12°00'N, 37°15'E



From Y. Z. Negussie and M. Zalewski, 2014

## Main description:

- Ribb watershed is located in Lake Tana Sub Basin, NW part of Ethiopia, in Amhara Regional State. Ribb watershed has a total drainage area of 1790 km<sup>2</sup> and the main Ribb river is about 129.7 km long, flowing towards the west until it reaches Lake Tana.
- The watershed demonstrates severe land degradation. The problem has been long aged and deep rooted, as the watershed is one of the aged agricultural areas. The long aged agricultural activities resulted in progressive depletion on resources through haphazard deforestation, overgrazing and over cultivation and hence severe soil erosion and land degradation (fig.1).
- This project aims to establish a UNESCO Biosphere Reserve at Lake Tana -For People & Nature.

Conserve Ecohydrological processes in natural ecosystems

✗ NO

Enhance Ecohydrological processes in novel ecosystems

✗ NO

Apply complementary Ecohydrological processes in high impacted systems

✓ YES

## Ecohydrology Principles and Solutions

### EH IMPLEMENTATION PRINCIPLES

- \* Distribution of ecosystems and their relevant processes
- \* Ecological engineering

### EH SOLUTIONS

Restitution of eroded soils by application of biodegradable geofibers and plantation of pioneering plants (fig 2).



PHYTOTECHNOLOGY

Creation of woodlots (shelterbelts).



PHYTOTECHNOLOGY

Construction of a sedimentation-biofiltration system (SBS) in the city of Debre Tabor to absorb micropollutants and nutrients and to convert them into less toxic forms.



ECOHYDROLOGICAL INFRASTRUCTURE

## Lifezones

Life Zone  
Tropical  
Premontane  
Moist Forest

PPT (mm/yr)

1295

T (°C)

25

PET ratio: 1,14  
Elevation: 2500 m  
Humidity: humid



Fig.1- Eroded soils (from Polish Aid, 2012)

## Major Issues

- \* Toxic algal blooms in Lake Tana
- \* Land degradation due to agricultural activities in upper catchment and in the littoral zone

## Social-Ecohydrological System

Catchment Ecohydrological sub-system

### EH Objectives

- Water: 4 circles (2 filled, 2 empty)
- Biodiversity: 4 circles (2 filled, 2 empty)
- Services: 4 circles (2 filled, 2 empty)
- Resilience: 4 circles (2 filled, 2 empty)

Are inputs to:

### EH Methodology

- \* Modelling and quantification of the hydrological processes (runoff & sediment) in Ribb Watershed
- \* Water sampling for monitoring of seasonal variability toxic algal bloom
- \* Identification and prioritization of critical areas

Set conditions for:

### Objectives

- \* To reduce encroachment of agriculture to lake Tana shore
- \* To reduce land degradation and flood in the watershed

Set conditions for:

Catchment Sociological sub-system

### Stakeholders

- \* Researchers (ERCE, Polish Academy of Researchers Sciences, Bahirdar & Debre Tabor Universities)
- \* Ministry of Water Resources
- \* Academy
- \* Organization for Rehabilitation and Development in Amhara (ORDA)
- \* Ministry of Water, Irrigation and Energy
- \* Amhara agricultural research institute

Participate in:

## ACTIVITIES

- \* Assessment of toxic algal blooms and their toxicity
- \* Involvement of local societies in sustainable development plans
- \* Restoration of shore line vegetation and demarcation of buffer zone
- \* Establishment of aquaculture around lake Tana shore for reducing agricultural encroachment into the lake shore
- \* Shelterbelt and ecotone development in Ribb watershed
- \* Rehabilitation of degraded and badlands in Ribb Watershed using biodegradable geotextiles

## Results

### MAIN EXPECTED OUTCOME

Reducing wind and aerial erosion and increasing productivity of the agricultural landscape

### LATEST RESULTS

- No results yet.

[CLICK HERE TO SEE THE REFERENCES](#)



Yohannes Z. Negussie | Maciej Zalewski

Ministry of Water, Irrigation and Energy, Addis Ababa and European Regional Centre for Ecohydrology  
yhnnszerihun@gmail.com | mzal@biol.uni.lodz.pl

Developed by:



A Initiative of:

