Eastern Nile Watershed Management Toolkit - Quick guide

Eastern Nile Watershed Management Toolkit

Scope of the tool

EN Watershed Management Toolkit overall objectives are to develop a sustainable framework for the management of the four sub-basins focusing on reducing vulnerability to shocks, enhancing sustainable livelihoods, achieving food security and alleviating poverty. The Kit Provides access to knowledge and information on Watershed Management, Simple analytical tools for erosion and sediment analysis and Guide for SWC practices for practitioners.

It is an excel database with macros and VB codes for the interface. Information and knowledge resources are organized into five major sections, namely:

- Erosion and Sediment Analysis, comprising sediment budget analysis tool for different years, management scenarios and subbasins, sediment rating curve calculation spreadsheet and annual sediment budget
- Morphological Analysis and Stream Classifications, with application of guidelines and international standards related to stream and stream corridor assessment such as morphological stream classification, stream bank stability analysis, scour calculation
- Watershed and BMP Tools & Techniques, with an overview of practices selected through review of implement projects, consultation of experts and locally available guidelines.
- ENWM Knowledge Products, with access to documents and products of Eastern Nile Watershed Management program

Main functions and structure

The main interface or front page of the toolkit is well developed to help users easily navigate through each feature and tools. The model is divided into five sections.



Figure 85: EN Watershed Management Toolkit main interface

Erosion and Sediment Analysis tools



Figure 86: EN Watershed Management Toolkit - Erosion and Sediment analysis tools

Under this component we have sediment budget analysis tool for different years, management scenarios and subbasins. Currently, the tool contains sediment rating curve calculation spreadsheet and annual sediment budget for Abay sub-basin from 1981 up to 2000. The subsections provided are the following:

- Sediment Impact assessment: comprises also sediment rating curves and Equilibrium slope calculations
- Sediment budget for Abay Blue Nile for different years and for different scenarios
- Sediment budget for Baro Akobo Sobat Nile for different years and for different scenarios
- Sedimentation of existing dams, with data about the main four dams in the Nile basin
- Sedimentation of proposed dams
- Erosion analysis and soil losses
- Sedimentation in irrigation schemes
- Sediment sampling and graduation curves



Figure 87: Sedimentation Balance diagram of Watershed management toolkit

Morphological analysis and stream classification tools

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Design Sheets Stream Restoration Design Process Rosgen Level 1: Stream Classification ValleyTypes Level II Classification & Criteria Stream Type Classifier Sheet Normal Depth Calculator Bank Stability Analysis Natural Channel alignment Calculator	Stream Type Classifier 1.0.1 For each other in the stream of th				
Non-prismatic Channel Calculator Channel Forming Event & Design Discharge	Stream Type Classifier was developed for ENTRO as part of Watershed Management Toolkit. The key developmmet team were. Dr. Yosif Ibrahim (Project leader, ENTRO) Zerihun Alemayehu (Addis Ababa University) Ok				

Figure 88: EN Watershed Management Toolkit – Morphological Analysis & Stream classification interface

This section of the toolkit thus contains all the tools related to stream and stream corridor assessment such as morphological stream classification, stream bank stability analysis, scour calculation, etc. The subsections provided are the following:

- Stream restoration design processes
- Rosgen Level 1 of Stream classification
- Valley types
- Level 2 of Stream classification and criteria
- Stream type classifier sheet
- Normal depth calculator
- Bank stability analysis
- Natural channel alignment calculator
- Non prismatic channel calculator
- Channel forming event and design discharge



Figure 89: Bank stability analysis of Watershed management toolkit

Watershed and BPM tools



Figure 90: EN Watershed Management Toolkit – Watershed and BMPs tools interface

The tools provided in the watershed section focus on the technical (bio-physical) aspect of the watershed management practices. Their different technical practices applied in watershed

management such as, afforestation, different agricultural practices, terraces, sediment control structures, etc.

Effective control or reduction of sediment, which is regarded as the number problem in the Eastern Nile region, will require implementation of best management practices or BMPs in the watershed.

This section of the toolkit will contain selected BMPs especially applicable in EN region condition. The selection of the BMPs will be through review of implementation projects, consultation of experts and locally available guidelines.

The user can easily select these BMPs from the menu and can use it to design or analyze how these tools will be effective for a given watershed. The tools will also include typical engineering drawing and cost estimation templates.

The subsections provided are the following:

- Bank erosion protection techniques
- Grade stabilization techniques
- Riprap design
- Check dam design standards
- Terrace design guidelines
- Afforestation
- Retention and detention basins
- Sedimentation control at intake structures
- Sediment dredging and removal techniques
- Evaluation procedures for WSM practices



Figure 91: Riprap design on Watershed management toolkit

ENWSM and Knowledge Products

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EN Watershed Managment Toolkit					
Erosion & Sediment Analysis	Morphlogical Analysis & Stream Calssifications	Watershed & BMPs Tools	ENWSM Knowledge Product	Pilot WSM Interventions	
Knowledge Products					
Thematic	Atlas		Decomentay Video		
Project Profiles			Workshops, Consultation Sessions & Field Tour		
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Figure 92: EN Watershed Management Toolkit – Knowledge products interface

There are a lot of documents and products those are developed under Eastern Nile Watershed Management program. These documents and products are the backbone for most of the tools for this WM toolkit. Thus, this section of the toolkit is dedicated to provide users a quick access to these document and products. The section contains:

- Thematic atlas
- Project profiles
- Documentary video
- Workshops, Consultation Sessions and field tour

Pilot WSM Intervention



Figure 93: EN Watershed Management Toolkit – Pilot WSM interface

There are number of pilot watershed management intervention projects that undertake and also being implemented in the EN region. This section of the tool kit will help users to have basic information about this intervention, see the progresses, results or even assess their effectiveness using the tools provided from the Watershed BPMs tools.