

THE NEED FOR A WATERSHED APPROACH TO RESTORE LAND AND ITS HYDROLOGIC FUNCTION IN AFRICA



RESEARCH PROGRAM ON
Water, Land and
Ecosystems



Maimbo Malesu, Alex Oduor, Elsabijn Koelman, Ronald Ngetich, Emmanuel Fondo and Francis Nyambariga

CHALLENGE

Land degradation continues to ravage the drylands of rural Africa, driven by an overuse of timber fueled by firewood production, charcoal burning, pottery, and brick and furniture making. The result is lands that are exposed to massive sheet, rill and gully erosion, including landslides and solifluction (or the gradual movement of wet soil down a slope). The problem is exacerbated by poor farm husbandry practices that compound the negative effects of the hydrologic functions within the watershed.

Key messages

- 1 A multi-stakeholder and multi-disciplinary approach is needed to address these challenges, where the strengths of each institution is recognized and upheld
- 2 It is essential to have strong community involvement in order to assess current land uses and to measure the land capability within each watershed
- 3 The watershed management approach should include activities such as reforestation, rainwater harvesting, agroforestry and improved land use
- 4 The private sector and financiers need to support the watershed management approach by creating the financing mechanisms for upscaling the approach
- 5 If the watershed is well planned and managed, ecosystems benefits are accrued that culminate in reduced poverty levels, increased employment and higher incomes as well as improved health

Key outputs

- 1 Highly trained and improved manpower for the communities (farmers, artisans) and extension personnel
- 2 Improved hydrologic functions of the watershed
- 3 Increased crop and livestock yields
- 4 Enhanced livelihoods and income generated

Results

- 1 Watersheds conserved in the Tigray region of Ethiopia which has culminated in enhanced flow of water and pasture and reforestation
- 2 Sub-catchment management plans are being developed with WRUAs (Water Resource User Associations) in Kenya
- 3 Micro and macro catchment techniques using soil bunds are being used by the government and NGOs in Mali, Niger and Burkina Faso
- 4 Conservation Agriculture through large scale in-situ water harvesting techniques including demi-lunes and zai pits is being practiced
- 5 Farmer Managed Natural Regeneration (FMNR) is widely practiced in the Sahel region
- 6 Irrigation Master Plan for Rwanda and Food Security Master Plan for Turkana County in Kenya developed

RESPONSE

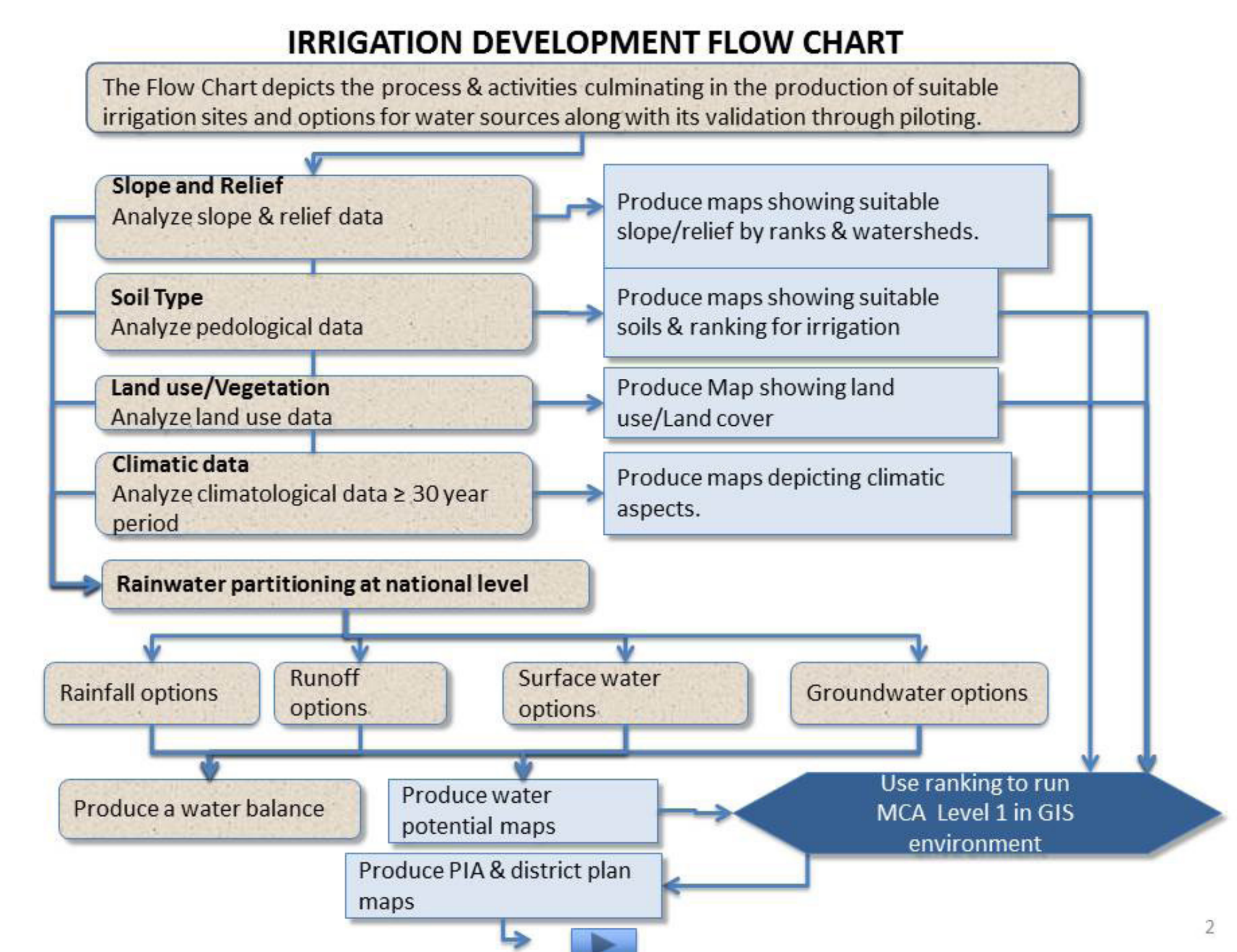
The Drylands Development (DryDev) Project is a five-year program implemented by ICRAF and sponsored by the Dutch Ministry of Foreign Affairs. DryDev works with a range of actors to produce water resources management plans across the Sahel and Great Horn of Africa that include; Kenya, Ethiopia, Niger, Mali and Burkina Faso. The project aims at providing direct development support to farmers through farm-level water and soil management, watershed restoration, value chain and institutional development. It aims to do this by influencing reforms and investment decisions.

APPROACHES USED IN WATERSHED MANAGEMENT

APPROACH 1

Options-by-Context

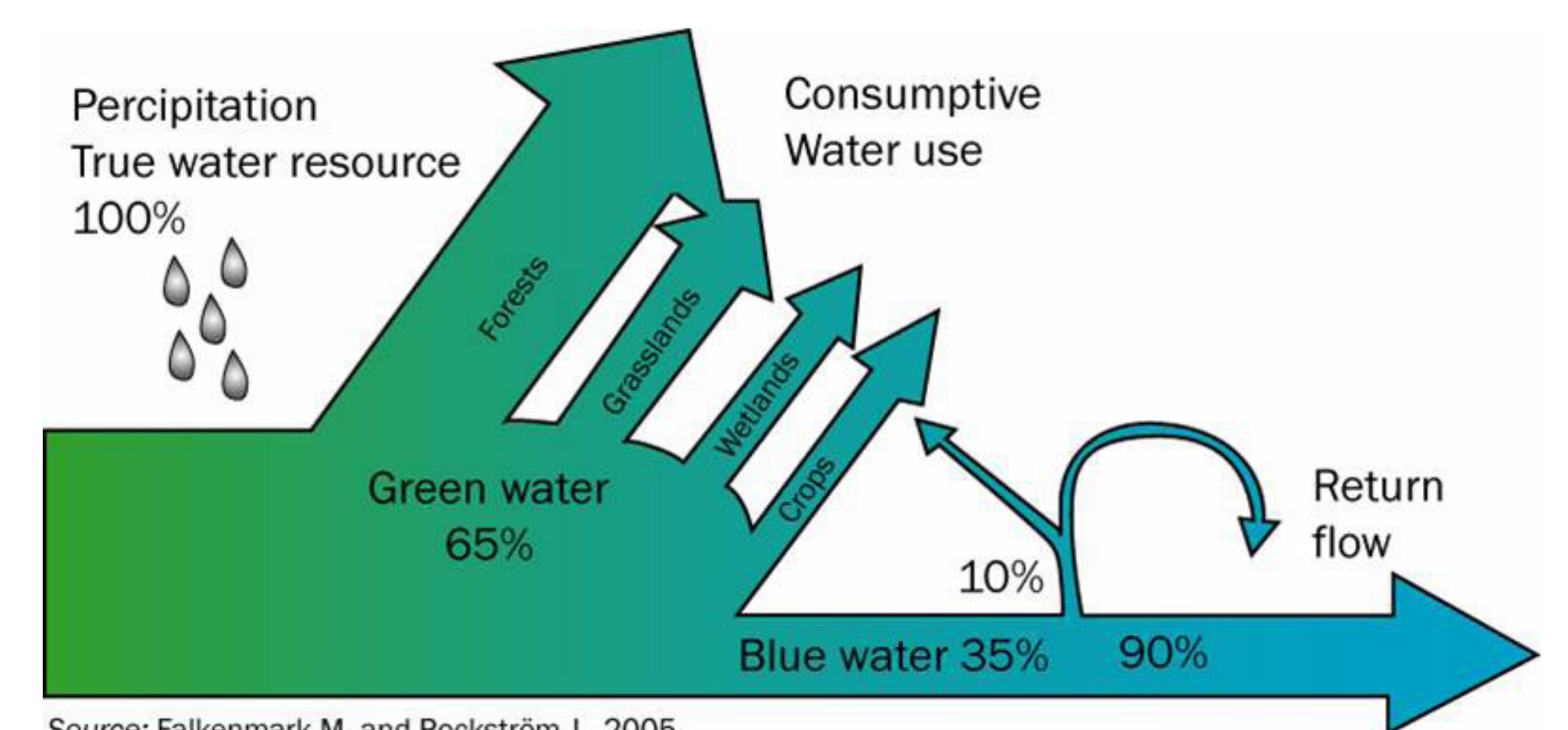
This is a tool that was developed by ICRAF and UNEP in 2005 where singular and multi-criteria analysis are carried out using engineering and agronomic tenets in GIS environment as shown in the figure below.



APPROACH 2

Green water partitioning

Greenwater partitioning takes cognizance of consumptive water uses by trees, grasslands, wetlands and croplands. Empirically, greenwater constitute 65% of precipitation – with trees taking up 50% of this given their bio-pump efficiency owing to their lateral / deep rooting system. Grasslands, wetlands and croplands take up 25%, 15% and 10% respectively.



Source: Falkenmark M. and Rockström J. 2005.

APPROACH 3

Inter-disciplinary implementation

The DryDev program recognizes the technical strengths of all partners involved and creates a platform where they are able to jointly carry out implementation plans.



Ministry of Environment, Water and
Natural Resources



Ministry of Foreign Affairs

