Resource Investment Optimization System (RIOS)

PURPOSE AND OBJECTIVE

• RIOS is a spatial modelling tool that uses local data inputs to generate maps that inform the design of watershed-based natural infrastructure investments.

• The tool optimizes watershed investments for multiple benefits to protect clean water supplies, mitigate flood risk, and achieve additional biodiversity and social goals.

SOFTWARE AND DATA INPUT REQUIRED

• RIOS requires Microsoft Windows; an optional data pre-processing tool requires ArcGIS 9.3.1 or higher. Additionally, access to a GIS tool like ArcGIS or Quantum GIS is needed to prepare data and explore results.

• Users are required to provide the best locally available biophysical, economic, and social data inputs. The User’s Manual suggests publicly available regional and global datasets.

INFORMATION GENERATED

• Maps, in the form of GIS raster files, show the optimal location for natural infrastructure investments to maximize ecological return on investment related to user-specified goals and constraints (e.g., erosion control, nutrient retention, flood mitigation, biodiversity).

EXPERTISE & TIME INVESTMENT REQUIRED

• The tool requires basic knowledge of ecosystem services and hydrology and an ability to prepare spatial data inputs and interpret outputs.

• 1–6 months required, depending upon complexity of analysis and time spent preparing data inputs.

EXAMPLES OF COMPANY USERS

• Public-private partnerships have explored scenarios of watershed investment with RIOS to improve water supplies for municipal use (Agua Tica, Costa Rica, and Nairobi Water Fund, Kenya); hydropower and Nairobi Water Fund, Kenya; flood risk mitigation (Monterrey Water Fund, Mexico); and water supply replenishment (TNC with Coca-Cola and FEMSA, Ecuador and Colombia).