

New Series – Case Study of Use of GIS by AAI

Part 3 – Case Study from Tanzania

In Tanzania, the National Irrigation Development Plan was formulated in 1994. However, it has become necessary to revise the Plan, due to the low implementation rate of the Plan and due to the fact that it became necessary to ensure the compatibility of the Plan with other priority plans such as the Tanzania Development Vision, the Agriculture / Livestock Farming Policy, and the Agricultural Sector Development Strategy. In 2001, the Government of Tanzania requested the Japanese Government to assist with the revision of the National Irrigation Development Plan and formulate the National Irrigation Master Plan. Therefore, a series of surveys was conducted in order to develop the Irrigation Master Plan, identifying pilot areas, formulating an action plan, and identifying bottlenecks in the implementation process. For this development study, in preparation for formulation of an Irrigation Master Plan, we developed a distribution map of irrigation potential areas, using the GIS, based on water and land resources and socio-economic situations.

The distribution map of irrigation potential area was created by overlaying the water resources, land resources and socio-economic situation potential maps. Details of the three potential maps are as follows:

Potential Map	Summary of Creation Method
Water resources	Evaluate water resource potential by creating a national level runoff map from specific runoff data of 143 points around the country.
Land resources	Evaluate land resource potential by overlaying land use map, conservation area distribution map, topography and soil map.
Socio-economic situation	Evaluate socio-economic potential based on information such as population density, road density, areas experiencing food shortages, and distances from a tarred road.

By overlaying each potential map generated in the above manner, we created a map that shows three levels of irrigation potential from areas blessed with three resources (water, land and socio-economic) to areas that are disadvantaged in terms of those resources. Conservation areas were excluded from the analysis given the fact that they are not target areas for development.

In our attempt, we produced this map as a case study showing national level distribution of irrigation potential, making a maximum use of the available and usable GIS data at the point of development survey, and supplementing this with GIS manifestation of data obtained from related statistics. The map shows the distribution potential by different patterns and is considered to be an ingredient in understanding the national level trend of potential. In order to evaluate potential at individual sites, it is necessary to conduct further analysis using more detailed topography and soil maps. However, there was a case where the national level potential map was displayed at an agricultural festival event and there was a complaint made from villages living in areas classified as having low potential. Borders of GIS generated zones can be changed by reviewing criteria and adding and updating data. However, once information is displayed as a map, there is a danger of it being seen as absolute and fixed. I strongly felt the necessity of being aware of this fact. Map generators may need to devise ways for countering this danger by perhaps making borders fuzzy.

For creation of this potential map, we sought assistance from the University of Dar el Salaam, considering the solid ground of national level geographic information. However, as organizations such as the Ministry of Agriculture use different coordinate systems and projective methods for GIS analysis, it was difficult to link this achievement with further development. In other words, it is essential to shift to more unified management of GIS in order to promote information sharing. During this development study there was a workshop on this subject as part of the movement towards better information sharing. We hope that this movement will accelerate and that it will soon be easier to share information between different organizations.

