



ETHIOPIA

-GENERAL INFORMATION-

As of November 8, 2006

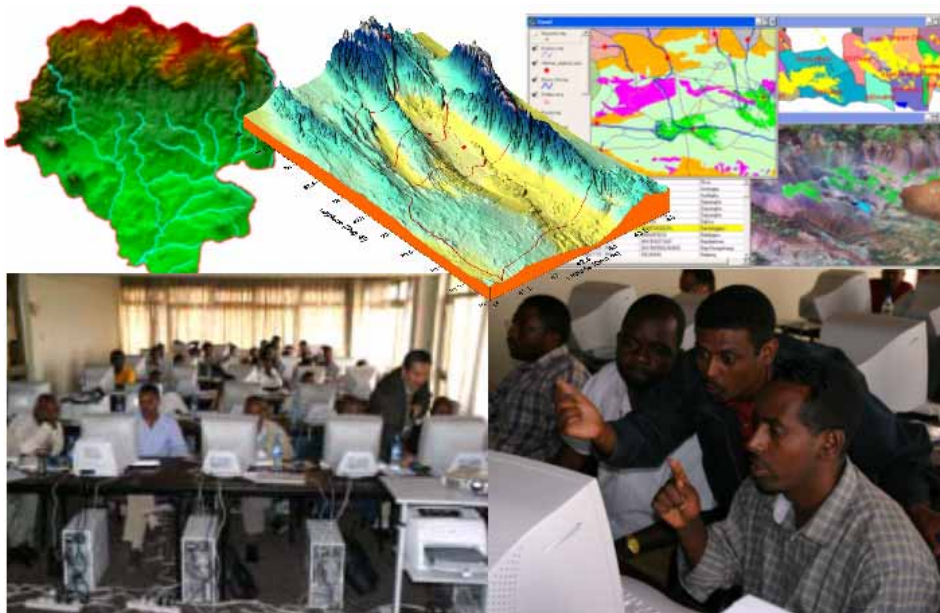


JAPAN

**International Workshop for African Countries
Series of Training Programs on Groundwater Management**

Geographic Information System

Duration: February 12, 2007 – March 9, 2007



Ministry of Water Resources - Japan International Cooperation Agency

Ethiopia Water Technology Center (EWTEC)
Addis Ababa, Federal Democratic Republic of Ethiopia

Invitation

Concerned Authority

*Ghana, Kenya, Lesotho, Malawi, Mozambique, Nigeria, Rwanda, South Africa,
Sudan, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe*

Groundwater is a vital resource for the source of water supply or irrigation schemes. In Ethiopia more than 90% of its rural water supply and about 80% of urban water supply schemes are dependant on groundwater as their sources.

In Africa the coverage rates of water supply and sanitation remain much lower than other regions and still a large number of people have no means to access to the safe water. Since the Johannesburg world summit of environment, various efforts have been done to attain the MDG (Millennium Development Goal) in which the number of people who can not access to the safe water are supposed to be reduced into half by 2015.

In December 2003 Pan-Africa Implementation and Partnership Conference on Water was held in Addis Ababa. During the conference a number of subjects were discussed in order to attain the MDG. Among others two important issues to implement development works, i.e. human and institutional development and the sources of funding, were drawn particular attention in the conference.

In this context it is our great pleasure to announce that Groundwater Development and Water Supply Training Phase-2 Project (the Project), which has been created by joint efforts of Ministry of Water Resources and Japan International Cooperation Agency, is going to organize the 1st International Workshop on Geographic Information System (GIS). Interested individuals with relevant qualifications are cordially invited to attend the Workshop.

The Project provides various training programs in the fields of groundwater development and water supply to respond to the needs of the sector in Ethiopia, and also provides the above-mentioned International Workshop for African countries, which is organized regularly every year as a series of workshops on groundwater management and GIS.

We trust that this training program will help contribute to the human resource development of your organization and eventually to attain the MDG of your country. We are looking forward to seeing eager participants from various countries in Africa.

With Best Regards

Asfaw Dingamo

Minister

Ministry of Water Resources

Federal Democratic Republic of Ethiopia

Naoki Saito

Resident Representative

JICA Ethiopia Office

Japan International Cooperation Agency

I. INTRODUCTION OF THE PROJECT

The *Groundwater Development and Water Supply Training Phase-2 Project (The Project)* was formulated in March 2005 as the second phase of the previous 7 years Japan-Ethiopia technical cooperation project which was purported to the human resources development in the water supply sub sector. The Ministry of Water Resources of Ethiopia and the Japan International Cooperation Agency (JICA) have jointly established the *Groundwater Development and Water Supply Training Center* in Addis Ababa and provided various training programs in the fields of groundwater development and water supply since 1998. Today, the training center was renamed as the *Ethiopia Water Technology Center (EWTEC)* to be a hub center of the Project. EWTEC provides various training programs in water sector. In addition to that, EWTEC also carries out Research and Development activities together with conducting international workshops on Groundwater Management for African countries.

Basic Courses: 8 – 12 weeks

Groundwater Management, Drilling Technology, Drilling Machinery Maintenance Technology, Water Supply Engineering (Basic course), Electro-Mechanical maintenance Technology

Advance Courses: 4 – 5 weeks

Groundwater Modeling, GIS for Groundwater Management, Remote Sensing, Water Supply Engineering (Planning & Design / Operation & Maintenance),

Supplementary Courses: 2-4 weeks

Rope Pump Manufacturing, Diagnostic Investigation of Well, Rehabilitation of Well, Artificial Recharge, Appropriate Technology, Project Management, Maintenance Workshop Management, Electro-Mechanical maintenance Technology

Research and Development Activities

1. Butajira – Ziway Areas development study

- 1) To elucidate groundwater flow mechanism through the type locality of Rift Valley Pediment Slopes to make an appropriate groundwater development and management plan in the areas
- 2) To develop and disseminate various types of appropriate technologies to effectively use the water resources so as to make the communities resilient against chronic drought

2. Dissemination of Rope Pump as an appropriate technology for rural water supply

- 1) To conduct rope pump manufacturing training course for local artisans
- 2) To distribute 500 rope pumps in various regions

Implementation and implementation support for rural water supply scheme

1. Implementation of pilot project
2. Implementation support for Japan's Grant Aid and other projects in rural water supply scheme (support for human resources development programs)



II. SUMMARY OF THE TRAINING COURSE

(1) Outline

The Ministry of Water Resources in cooperation with JICA is organizing the 1st International Workshop on *Geographic Information System (GIS) Application for Groundwater Management* for hydrogeologists, geologists and in some cases civil engineers who are engaged in groundwater development and management activities in central or regional governmental offices in Ethiopia and other African countries. The workshop will start from February 12 and end on March 9 (four weeks) and this unique training program aims at providing practical training on GIS application in water resources management using various available materials, all kinds of data and software including extensions. The participants will learn how to apply the GIS technology for data acquisition, integration, editing, analyzing and outputting to support groundwater development and management by processes from basic maps creation to groundwater modeling data preparation.

The training program is divided into five modules as follows:

1) Fundamentals of GIS

- * GIS definition and composition
- * History of GIS
- * Characteristics of GIS data
- * Concept of Spatial analysis by GIS

2) Methodology of GIS Data Processing

- * Spatial query
- * Attribute data editing
- * Attribute data linkage and integration
- * Spatial data processing: union, summarizing clipping and others
- * Spatial data editing
- * Spatial data type changing

3) GIS Data Preparation

- * GIS data format conversion
- * Concept of map projection and projection conversion
- * Raster data to vector data: Georeferencing and Vectorization
- * Spatial data creation (point, polyline and polygon)
- * GIS data integration: attaching the attribute data into spatial data

4) Creation of Thematic Maps

- * Different color type maps (Graduated and Unique color maps)

- * Various chart maps
- * Application of various available DEM
- * 2D and 3D topography maps
- * Contour maps
- * Section maps

5) Data Preparation for Groundwater Modeling

- * Fundamentals of groundwater modeling (GWM)
- * GWM creation practice
- * GWM data format
- * GWM data creation from existing materials (point, polygon, image and so on)
- * River Route and Water Shed Area delineating

To achieve the above objectives, JICA will dispatch a qualified and highly experienced lecturer, ***Dr. Lei Peifeng***, from Kokusai Kogyo Co., Ltd in Japan and prepare an appropriate number of personal computers for practical training. The useful textbooks, reference and presentation materials will also be prepared for the participants. During the training program, various available software such as Global Mapper (GM), MicroDEM (MD), SURFER, ArcView and its Extensions Spatial Analyst, 3D Analyst and so on will be used for data processing, spatial analysis, map creation, and output presentation.

***NOTE:** Though other usual training courses are conducted at EWTEC, this “GIS Application” will be held at a hotel, and the participants will also stay in a hotel due to the capacity constraint of EWTEC as another international training course of “Groundwater modeling”.*

This international GIS application course is designed and strengthened on the basis of the training course carried out during February 22 to March 21, 2006, for trainees in Ethiopia. Rather than basic conception, the course is emphasized in skills of GIS application for water resources management. In order to make all participants get improvement in this technique field, the content and hour assignment of the lecture will be flexible according to the response of most participants. For those experienced participants, several additional contents including necessary materials have been prepared, which might be though a little too hard for all trainees to grasp within the course. While the participants with relatively little experience in GIS or even digital technology can expect individual instruction from the lecture and/or course assistant staff.

(2) Curriculum

Duration of the training program for this GIS application course will be from ***February 12 to March 9, 2007***, and the daily program is scheduled tentatively as follows:

Date		Lecture Hour			
		09:30 - 10:30	11:00 - 12:00	14:00 - 15:00	15:30 - 16:30
Feb. 11	Sun.	Arrival of Participants			
Feb. 12	Mon.	Registration, Orientation	Opening Ceremony (From 11:30)	General Instruction and Materials Preparation	
Feb. 13	Tue.	GIS Definition	Why GIS	GIS production examples	History of GIS
Feb. 14	Wed.	Characteristics of GIS data	GIS Data Acquisition		GIS Data Quality Control
Feb. 15	Thu.	Start GIS software ArcView	Spatial Query and Extracting		Attribute data editing(1)
Feb. 16	Fri.	Attribute data editing(2)	Spatial Data editing (1) : Union	Spatial Data editing (2) : Summarizing	Spatial Data editing (3): date type changing
Feb. 17	Sat.				
Feb. 18	Sun.				
Feb. 19	Mon.	Spatial Data editing (4): Shape changing	Comprehensive Exercise (1)	GIS data format conversion	
Feb. 20	Tue.	Map Projection Fundamentals and Main Projections		Projection Conversion	Georeference (1) Simple case
Feb. 21	Wed..	Georeference (2) Using ArcView	Georeference (3) Using GM	Point Type Data Inputting	Point Theme Creation Pick up form image
Feb. 22	Thu	Line and Polygon creation (Tracing, Vectorizing, Format Conversion, and Data Type Conversion)			Comprehensive Exercise (2)
Feb. 23	Fri.	Graduated Color Map Creation	Unique Color Map Creation	Pie Map Creation	
Feb. 24	Sat.				
Feb. 25	Sun.				
Feb. 26	Mon.	Bar Chart Map Creation	Creating Others Chart Map	Digital Elevation Models (DEM) and 2D Topography Maps (Using MicroDEM)	
Feb. 27	Tue.	3D Topography Maps Creation by Using MicroDEM		Various 3D Topography Maps and their Decoration	
Feb. 28	Wed.	DEM Extraction and Exporting	Changing DEM to ArcView Grid	Hills Shade Map Creation	Grid Projection Conversion
Mar. 01	Thu.	ArcView Grid and Tin based Topography Map Creation and Decoration			
Mar. 02	Fri.	Contour Map and Vector Map Creation		Section Map Creation	Comprehensive Exercise (3)
Mar. 03	Sat.				
Mar. 04	Sun.				
Mar. 05	Mon.	Fundamentals of GWM	Exercise of Groundwater Simulation Model Creation		
Mar. 06	Tue.	GWM Data Format Checking		GWM Grid Making and Data Arrangement	
Mar.07	Wed.	GWM Data Preparation from Point and Contour Themes		GWM Data Preparation from Image Files	
Mar.08	Thu.	River and Watershed Delineation		Comprehensive Exercise (4)	
Mar. 09	Fri.		Closing Ceremony		
Mar. 10	Sat.	Departure of Participants			

III. GUIDELINE FOR APPLICATION

(1) Qualification of Participants

The participant is required to fulfill the following conditions and qualification:

- 1) Not to exceed about forty (40) years old
- 2) BSc degree in geology, hydrogeology and civil engineering, MSc degree in the same fields are favorable
- 3) More than five (5) years working experience in relevant field (groundwater development and management)
- 4) To have knowledge and experience of computer operation (Microsoft Windows XP, MS-Office)
- 5) To be fluent in English language

(2) Invited Countries

The following 14 countries are invited based on the preliminary survey: Ghana, Kenya, Lesotho, Malawi, Mozambique, Nigeria, Rwanda, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe

(3) Number of Participant

Total number of participants to be invited to the training program is fifteen (15) from the countries mentioned above. In principle one participant will be accepted from one country, but it is recommended that the invited authorities submit application forms of more than one candidate with priority list. Ten (10) Ethiopian are also invited (total 25 participants).

(4) Submission of Application Forms

The authority who wants to recommend candidates must submit the following documents at one time to JICA office in his/her country on or before **January 10, 2007**. The authority can submit the application to EWTEC directory if JICA office is not available (by fax first, then send original documents, ANNEX-3).

- 1) Official nomination letter from the authority (with priority, if more than one candidate)
- 2) Official request form which is called "A2A3 Form" (ANNEX-4)
- 3) Country report (ANNEX-2)
- 4) Medical certificate

(5) Important Instructions

The participant should respect the following instructions:

- 1) To abide by the time table, rules and regulations applied in this training program
- 2) To abide by the laws and regulations applied in Ethiopia
- 3) No to bring any member of his/her family or relatives
- 4) Not to extend or shorten his/her stay in Ethiopia before and/or after the end of the training program

(6) Certificate

The participants who successfully complete the training program will be awarded a certificate.

IV. EXPENCES & ALLOWANCES

1. International Participants

JICA will provide the following for the participants from neighboring countries:

- 1) Air ticket between the capital of his/her country and Addis Ababa
- 2) Transportation between the hotel and the Bole International Airport in Addis Ababa
- 3) Medical insurance if participants are medically treated in Addis Ababa (costs related to pre-existing illness will not be covered)
- 4) Daily accommodation with breakfast, lunch for working days and daily per diem **one hundred seventy two (172) Birr (equivalent to 20 US Dollars)**
- 5) Stationeries and a bag necessary for the training program according to EWTEC regulation

NOTE: Participants should arrive at Addis Ababa by the night of February 11, 2006. The most suitable flight will be reserved by EWTEC. Payment of air tickets will be made in Addis Ababa by EWTEC and each air ticket will be issued at the Ethiopian Airline Office in each country.

2. Ethiopian Participants

(1) JICA will provide the following for the **participants from the regions:**

- 1) Land transportation cost between his/her region and Addis Ababa according to MoWR regulation (Not airplane)
- 2) Daily transportation between the hotel and the training venue
- 3) Daily accommodation with breakfast, lunch for working days and daily per diem **eighty six (86) Birr**
- 4) Stationeries and a bag necessary for the training program according to EWTEC regulation

(2) JICA will provide the following for the **participants who live in Addis Ababa:**

- 1) Transportation cost for working days **eighty six (86) Birr** per day
- 2) Lunch for working days
- 3) Stationeries and a bag necessary for the training program according to EWTEC regulation

The followings must be covered by the participant or his/her authority:

- 1) Cost for issuing air ticket at the Ethiopian Airline Office in his/her country (if it happens)
- 2) Cost for entry visa to Ethiopia (If the supporting letter is required, please notice that to EWTEC)
*If there is no Ethiopian Embassy in his/her country, upon-arrival-visa can be arranged in Addis Ababa. (visa fee must be covered by the participant at the airport)
- 3) Extra insurance for travel, medical and/or others such as pregnancy, dental treatment, pre-existing illness, etc.
- 4) Domestic transportation cost in his/her country
- 5) Airport tax in his/her country
- 6) Other costs which are not mentioned in the article above

V. MISCELLANEOUS

(1) Clothing in Addis Ababa

It is the dry season in February and March and no rain is expected in Addis Ababa. The climate is relatively hot in the daytime and cool at night. Some warm cloths such as cardigans and sweaters are recommended to be brought by the participants.

(2) Health in Addis Ababa

Addis Ababa is situated on 2,400m highland. This is why a newcomer to Addis Ababa may feel dizzy or slight headache when you do physical exercise. Usually, people adapt to this environment in a few days time.

(3) Internet

The internet café is available in the hotel and its surrounding area. Broadband or ADSL are not popular in Ethiopia so the transmission speed is very slow.

ANNEX

1. Information Table
2. Items of Country Report
3. List of JICA Office in Africa
4. A2A3 Form

ANNEX-1: Information Table

Course Title	GIS Application for Groundwater Management
Duration	February 12, 2007 to March 9, 2007
Number of Participant	15 international participants and 10 Ethiopian participants
Invited Countries	Ghana, Kenya, Lesotho, Malawi, Mozambique, Nigeria, Rwanda, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe
Language	English
Qualification of Candidate	The candidate must be nominated officially from his/her organization and he/she must have the following background: 1) Less than 40 years old 2) BSc in geology, hydrogeology or civil engineering, MSc holders in the same fields will be given higher priority. 3) More than 5 years working experience in relevant field 4) Knowledge and experience of PC operation (Windows XP, MS-Office) 5) Fluent in English language
Course Objective	To provide basic knowledge and practical training on GIS using various available software. With the acquired knowledge the participants will be able to apply the GIS technology for appropriate groundwater development and groundwater resources management.
Training Institution	Ethiopia Water Technology Center (EWTEC) Address: P.O.Box 5744, Addis Ababa, ETHIOPIA Tel. (251-11) 4431125 (Operator), 4431126 (Head of the Center), 4431127 (JICA Expert) Fax. (251-11) 4431128 E-mail: ewtec@ethionet.et, HP: http://homepage.mac.com/shukran/gdwstp/ *Due to the capacity constraint of our training center, this training program will be held at a hotel where the participants stay.
Accommodation	Desalegn Hotel, Addis Ababa Tel. (251-11) 6624524, Fax. (251-11) 6623884
Expenses to be Covered	Air ticket, daily allowance, accommodation and medical insurance will be covered by JICA. For detailed information please refer to the article in the foregoing text.
Documents for Application	Official nomination letter, A2A3 Form, Country report, Medical certificate
Closing Date for Application	On or before January 10, 2007 *The application should be submitted to JICA office in his/her country. *If JICA office is not available, fax the application to EWTEC first, then send the original documents to the mailing address mentioned below.
Mailing Address for Application submission	Mr. Masahiko Ikemoto (Project Coordinator) c/o JICA Ethiopia Office, P.O.Box 5384, Addis Ababa, ETHIOPIA Tel. (251-11) 4431125/7, Fax. (251-11) 4431128

ANNEX-2: Items of Country Report

.(1) Name of applicant

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.(2) Country name

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.(3) Description of your organization

. 1) Organization chart

. 2) Roles and responsibilities in water sector

. 3) Problems which your organization is facing at present

. 4) Present situation in groundwater resources management affairs

. 5) Description of your department in the organization

. 6) Description of your responsibilities in the department

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.(4) Expectation from the training program

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.(5) Address and contact number

. 1) Name of organization

. 2) Postal address of the organization

. 3) Telephone & Fax (Office)

. 4) Telephone & Fax (Home) preferable to be written

. 4) Mobile phone preferable to be written

. 5) E-mail if you have it

ANNEX-3: List of JICA Office in Africa

Office Name	Addresses
JICA Ghana Office	Millennium Heights Building 4 th Floor, 14 Liberation Link, Airport Commercial Area, Accra, GHANA P.O.Box 6402, Accra-North, GHANA Tel. (233-21) 760781, 760782, 766080, Fax. (233-21) 760954
JICA Kenya Office (Rwanda) (Uganda)	The Rahimtulla Tower 10 th and 11 th Floor, Upper Hill Road, Nairobi, KENYA P.O.Box 50572-00200, Nairobi, KENYA Tel. (254-20) 2724121/22/23/24, 2724877, Fax. (254-20) 2724878
JICA Malawi Office	Raza House, Area 13, Plot No.100, City Center, Lilongwe 3, MALAWI P.O.Box 30321, Capital City, Lilongwe 3, MALAWI Tel. (265-1) 771644, 771554, 771945, Fax. (265-1) 771125
JICA Mozambique Office	Av. 24 de Julho No 7, 5o andar, Escritorio A, B e F, Maputo, MOZAMBIQUE P.O.Box 2650, Maputo, MOZAMBIQUE Tel. (258-1) 486357, 486358, Fax. (258-1) 486356
JICA Nigeria Office	2 nd Floor AP Plaza, Adetokunbo, Ademola Crescent, Wuse II, Abuja, NIGERIA P.M.B. 5090, Wuse, Abuja, NIGERIA Tel. (234-9) 5232869, Fax. (234-9) 5235431
JICA South Africa Office (Lesotho) (Swaziland)	Lobby 2, 1 st Floor Bank Forum Building, Cnr. Fehrsen & Veale Streets, New Muckleneuk, 0181 Pretoria, SOUTH AFRICA P.O.Box 14068, Hatfield 0028, Pretoria, SOUTH AFRICA Tel. (27-12) 3464493, Fax. (27-12) 3464966
JICA Tanzania Office	3 rd Floor, Barclays House, Ohio Street, Dar es Salaam, TANZANIA P.O.Box 9450, Dar es Salaam, TANZANIA Tel. (255-22) 2113727/28/29/30, Fax. (255-22) 2112976
JICA Zambia Office	Plot No.11743A Brentwood Lane, Longacres, Lusaka, ZAMBIA P.O.Box 30027, Lusaka 10101, ZAMBIA Tel. (260-1) 254501, 254508, 254883, Fax. (2601-1) 254935
JICA Zimbabwe Office	8 th Floor, Intermarket Life Towers, 77 Jason Moyo Avenue, Harare, ZIMBABWE P.O.Box 4060, Harare, ZIMBABWE Tel. (263-4) 252500/01/02/05, Fax. (263-4) 790635
JICA Ethiopia Office	Woreda 18, Kebele 36, House No.676/05, Addis Ababa, ETHIOPIA P.O.Box 5384, Addis Ababa, ETHIOPIA Tel. (251-11) 5504755, Fax. (251-11) 5504465