

APPENDICES

APPENDIX 1 Activity Report

on

The First International Conference on Geothermal Energy in the East African Rift Region (ARGeo C-1)

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Geological Survey of Ethiopia

First International Conference on Geothermal Energy in the East African Region

ARGeo-C1

The ARGeo-C1 was organized by GSE in collaboration with the Ethiopian Electric Power Corporation (EEPCO), Ethiopian Electric Agency (EEA), Ethiopian Environmental Protection Authority (EPA), Ethiopian Rural Energy Promotion and Development Center (EREPCD), Ethiopian Geoscience and Mineral Engineering Association (EGMEA) and International Geothermal Association (IGA).

It was held at the United Nations Conference Center in Addis Ababa, Ethiopia from November 24 to December 2, 2006. The theme of the conference was "Geothermal Energy: An Indigenous, Environmentally Benign and Renewable Energy Resource".

During the conference there were various relevant programs including: (i) a pre-conference field trip (November 24 to 26, 2006); (ii) technical meetings during the conference (November 27-29, 2006); and (iii) a post-conference field trip (November 29-December 2, 2006).

(i) The Pre-Conference Field trip (November 24 to 26, 2006)

A three-day pre-conference field trip was held from 24 to 26 November 2006 where the Finfine thermal well area and public bath in Addis Ababa were visited at the first stop. In Ethiopia, there is a long history of use of geothermal waters and steam for bathing and curative purposes, often with attributes embedded in religious beliefs. In line with this tradition, Addis Ababa was founded in 1887, at the initiative of Empress Tayitu, near the site of the Finfine thermal springs. Hundred Seventeen years later in 2004 the thermal springs were commercially developed for a public bath.

This visit was followed by a travel along the highway to the northeast, part of the way into the northern sector of the Main Ethiopian Rift (MER). The next day there was a visit to the Aluto volcanic center and the geothermal field including the fluid gathering system, the pilot power plant, and well nos. 3, 6, 8 and 4. On the third day, there was a visit to the large cluster of coalesced volcano tectonic collapse structures that host the 256m deep L. Shalla and the area of hydrothermal activity on the western shore of the lake. There were about 40 local and foreign participants during this field trip.

(ii) The Technical Meetings during the Conference (November 27-29, 2006)

The conference was held for three days at the United Nations Conference Center, in Addis Ababa from 27 to 29 November 2006. The conference had a total of 200 conference participants from more than 15 countries from the continents of Africa, Asia, Europe, North and South America. During the conference about 80 scientific papers were presented in eleven technical sessions that include both oral and Poster presentations.



**Pre-Conference field participants at the Aluto-Langano Geothermal Pilot power plant, Ethiopia.
(November 25, 2006)**

Session I: Opening Session: In the opening session, the chairperson of the Organizing Committee of the ARGeo-C1, Dr. Meseret Teklemariam, delivered a welcome address to the distinguished and invited guests, Ambassadors, Ministers and participants of the Conference. Then she invited His Excellency Ato Alemayehu Tegenu, the Minister of Mines and Energy to officially open the conference. During his opening speech, the Minister stressed that this first international conference is aimed at furthering the purposes of the greater knowledge, development and utilization of the rich geothermal resources of the East African Rift region. He also invited all participants to share their experience in the vision of enriching African life with increasing use of clean and affordable geothermal energy and to collaborate in working toward geothermal energy assuming its proper role in that scheme.

Following the opening speech by the Minister of Mines and Energy, the Secretary of the Organizing Committee of the ARGeo-C1 and Master of the Opening Ceremony, Ato Solomon Kebede, announced the whole program of the technical session to the participants.

During the opening program of the conference, three keynote speeches were given by international geothermal experts on various subjects: (i) History, Present Utilization, and Future Prospects of Geothermal Energy Worldwide by John Lund ; (ii) Factors Critical to Economic

Feasibility by Gordon Bloomquist and (iii) Crustal Structural Setting of Geothermal Resources in Africa by Getahun Demissie.



ARGeo-C1 participants at the UN-ECA Conference Center, Addis Ababa, Ethiopia.

(November 28, 2006)

Session II: This session was chaired by His Excellency, Ato Alemayehu Tegenu, Minister of Mines and Energy. Presentations were mainly focused on the Ethiopian Energy Scene. Ato Amenti Abraham, Chief Geologist of the Geological Survey of Ethiopia (GSE) gave a brief introduction on GSE and its activities during this session. This was followed by various presentations on Energy Policy, Energy Master Plan and status and trends of the rural electrification of Ethiopia.

Session III: In this session, several papers were presented by international experts on direct uses, Economic benefits of mineral extraction from geothermal brines, and geophysical exploration, drilling, well completion and testing of deep aquifers in Sweden. Besides, experts from the Federal Institute for Geosciences and Natural Resources (BGR) of Germany (GEOTHERM program) and from the United Nations University-Geothermal Training Programme (UNU-GTP) of Iceland discussed their activities and contribution to the geothermal energy resource exploration and development in the East Africa Region.

Session IV: Presentations were focused on subjects of regional interest mainly on the overview of the Geothermal Resource Exploration, Utilization, and potential in the East Africa region and their challenges to develop the resource. In these presentations, it was reported that most of the East African countries are dependent on traditional biomass fuel (70- 90%) that Causes deforestation and environmental degradation. Renewable energy sources (hydro, geothermal, solar) represent a small portion of total energy production averaging 2%.

Sessions V and VI: In these sessions, a number of Ethiopian geothermal experts presented more than ten scientific papers on the status of Geothermal Exploration and Development in various geothermal prospect areas of Ethiopia. Emphasis was given on the geoscientific and reservoir engineering studies of the two more advanced explored geothermal fields of Ethiopia: Aluto-Langano and Tendaho geothermal fields. This was followed by geoscientific studies of Corbetti, Dofan-Fantale, TuluMoye and Abaya Geothermal Prospect areas.

Session VII and VIII: A number of Kenyan researchers from the Kenyan Electric Power Generating Company (KENGEN) shared their experiences and knowledge by presenting papers on the Kenyan geothermal prospect areas that include Olkaria, Bogoria, and Eburu. Besides, experts from Ormat international Company shared their experiences of technology transfer of Olkaria III geothermal Power Plant Facility.

Session IX: Presentations were mostly focused on other ARGeo countries such as Djibouti, Tanzania and Uganda. Experts from Djibouti, Tanzania and Uganda presented papers on the status of geothermal resource exploration in their respective countries. The chemistry of fluid and well testing of the Assal geothermal field, Djibouti were discussed in detail by experts from Djibouti and Iceland respectively.

Session X: Various international experts from Iceland, Mexico, Yemen and Hungary shared their knowledge and experiences by giving presentations on their respective countries.

Poster Sessions: These sessions were followed by Poster presentations. About 15 Poster presentations were displayed and explanations were given by various researchers from different parts of the world.

Closing Ceremony: The conference was officially closed on November 29, 2006 at 4:00 PM by the General Manager of the Ethiopian Electric Power Corporation (EEPCo) - Ato Mihret Debebe. During his closing speech, he mentioned that Ethiopia is committed to develop geothermal resource energy as an alternative energy resource mainly to augment energy supply from Hydropower plants and improve the generation mix. He also stressed that experts from Ethiopia and other African Countries were able to gain knowledge and experiences from pre-conference field trip and the discussion and presentations held during the last three days of the conference.

Following the closing speech by Ato Mihret, a senior Expert from Geological Survey of Uganda (GSU), Mr. Godfrey Bahati, declared that the GSU will host the second international conference on the Geothermal Energy in the East Africa Region (ARGeo-C2) in Kampala, Uganda in the year 2008.

Round-Table Discussions by the Financiers: Following the Closing Ceremony, a round table discussion was also held on the status and the way forward of the African Rift Development Facility Project (ARGeo-C1). Representatives from the Executive and implementing agents of the project, from the World Bank and UNEP led the discussion. These included: Mr. E. Fernstrom (ARGeo Task Manager, World Bank), Mr. B. Jamet (Project Manager, United Nations Environmental Protection), and Mr. K. Shimazaki (GeoFund, World bank).

Post Conference Field Trip (November 30-December 2, 2006): It was regretted that the post-conference field trip to the Tendaho geothermal field had to be canceled due to unforeseen logistical problems that arose. However, a special truncated post conference field trip was then arranged for eight participants including the Project Manager of ARGeo from UNEP, BGR experts from Germany and other experts from USA, Iceland and France.

During this special trip, the Tendaho geothermal field (including discharging wells) and surface manifestations in the surrounding area were visited. Experts also saw the various equipments available in the Tendaho geothermal Camp site including the Massarenti deep drilling rig and its accessories. After their visit to the Tendaho geothermal field and camp site, detailed discussions were held on the current activity and plan for the future of the Tendaho geothermal field.



Post-Conference field trip participants, at the Tendaho geothermal field (Well TD-5), Ethiopia (December 1, 2006).