

The First International East African Rift Geothermal Conference

TECHNICAL PROGRAMME

Sunday 26 November

04:00 – 06:00 PM **Registration**
06:00 – 08:00 PM **Ice-Breaker Party**

Monday 27 November

SESSION I: OPENING CEREMONY

8:00 – 8:30 AM Registration
8:30 – 8:35 AM Programme introduction (*Master of Ceremony*)
8:35 – 8:40 AM Welcoming address – *Meseret Tekelemariam*, Chairperson of Main organising Committee
8:40 – 8:50 AM Opening address – *H.E Ato Alemayehu Tegenu*, Minister, Ministry of Mines & Energy

Keynotes

1. 8:50 – 9:15 AM History, Present Utilization, and Future Prospects of Geothermal Energy Worldwide (*John W. Lund*, PE, Director of the Geo-Heat Centre, Oregon Institute of Technology, USA)
2. 9:15 – 9:40 AM Factors Critical to Economic Feasibility. (*Gordon Bloomquist*, Washington State University Energy Program, Olympia, Washington, USA)
3. 9:40 – 10:05 AM Crustal Structural Setting of geothermal Resources in Africa (*Getahun Demissie*, GeoMET Plc and EGMEA)

10:05 – 10:30 AM Coffee Break

SESSION II: THE ETHIOPIAN ENERGY SCENE

- Chairperson** *H.E Ato Alemayehu Tegenu*, Minister, Ministry of Mines & Energy
4. 10:30 – 10:45 AM Mineral, underground –energy and water resources of Ethiopia. *Amenti Abraham*, Chief geologist, Geological Survey of Ethiopia (GSE)
 5. 10:45 – 11:00 AM Energy policy of Ethiopia (*Melis Teka*, Ministry of Mines and Energy)
 6. 11:00 – 11:15 AM Energy master plan and its direction development in Ethiopia. (Ethiopian Electric Power Corporation)
 7. 11:15 – 11:30 AM Status and trends of the Ethiopian rural electrification fund (*Amare Hadgu*, REF, Project Coordinator, Ethiopian Rural Energy Development and Promotion Centre)
 8. 11:30 – 11:45 AM The Question of Sovereign Guarantee for the Development of Electricity Generation in the Ethiopian Context (*Mollalign Abebe* Ethiopian Electricity Agency)
 9. 11:45 – 12:00 AM Geothermal energy development in Ethiopia for electrical power generation: prospects and status (*Wolde-Ghiorgis Woldemariam*, Department of Electrical and Computer Engineering, Faculty of

12:00 – 12:30 PM Technology, Addis Ababa University, Addis Ababa, Ethiopia)
Discussion

12:30 – 14:00 PM Lunch Break

SESSION III: GENERAL

Chairperson Ludvík S. Georgsson, Peter A. Omenda

11. 2:00 – 2:15 PM Direct heat utilization of geothermal resources (*John W. Lund*, Geo-Heat Centre, Oregon Institute of Technology, Klamath Falls, Oregon, USA)
12. 2:15 – 2:30 PM Economic benefits of mineral extraction from geothermal brines (*Gordon Bloomquist*, Washington State University Energy Program, Olympia, Washington, USA).
13. 2:30 – 2:45 PM Geophysical exploration, drilling, well completion and testing of deep seated aquifers (*Leif Bjelm*, Dept. of Engineering Geology, Lund University, Lund, Sweden)
14. 2:45 – 3:00 PM Application of Magnetotellurics for Geothermal Exploration (*Tesfakiros Haile*, Phoenix Geophysics Limited, Toronto, Ontario, Canada)
15. 3:00 – 3:15 PM UNU-GTP and geothermal training for Africans (*Ingvar B. Fridleifsson and Ludvik S.Georgsson*, United Nations University Geothermal Training Programme).

3:15 – 3:30 PM Discussion

3:30 – 3:45 PM Coffee Break

SESSION IV: SUBJECTS OF REGIONAL INTEREST

Chairperson Jamet B. , Abdu Mohamed Houmed

16. 3:45 – 4:00 PM Geothermal Energy potential in the East African Rift System (*Meseret Tekelmariam*, Geological Survey of Ethiopia)
17. 4:00 – 4:15 PM Developing new sustainable geothermal resources, a challenge for the East African countries, EAC (*Salpeteur I.⁽¹⁾ Sanjuan B. I⁽¹⁾, Tournaye D.⁽²⁾* (BRGM, France)
18. 4:15 – 4:30 PM Accelerating geothermal energy development in East Africa through Public private partnerships (*Lucien Y. Bronicki*, Ormat Technologies, Inc., USA)
19. 4:30 – 4:45 PM Lithospheric-scale three-dimensional modelling: Application to the East African Rift system and Plateau (*G. Woldetinsae¹, H.-J. Götze², R. Hackney² and S. Schmidt²*, (1) Geological Survey of Ethiopia (2) Institute für Geowissenschaften, Geological Surveys, Addis Ababa, Ethiopia; and Christian Albrechts Universität zu Kiel, Germany)
20. 4:45 – 5:00 PM An inventory of existing equipment, operating and maintenance staff for geothermal research in ARGeo countries (*Knutur Arnason* , Iceland Geosurvey and *Gestur Gíslason*, Reykjavík Energy)

5:00 – 5:15 PM Discussion

Tuesday 28 November

SESSION V: ETHIOPIA ,– Main Ethiopian Rift and Afar

Chairperson Getahun Demissie, P. Ndonde

21. 8:30 – 8:45 AM An overview of the geology of Aluto-Langano and Tendaho geothermal prospects, Main Ethiopian Rift & Afar (*Solomon Kebede*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)
22. 8:45 – 9:00 AM Geochemistry of Aluto-Langano and Corbetti geothermal field, Main Ethiopian Rift (*Berhanu Gizaw*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)
23. 9:00– 9:15 AM Geophysical survey of Aluto-Langano and Corbetti geothermal field, Main Ethiopian Rift (*Befekadu Oluma*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)
24. 9:15 – 9:30 AM Pattern of earthquake stress release in Afar and the neighbourhood (*Atalay Ayele*, Geophysical Observatory, Addis Ababa University, Addis Ababa, Ethiopia)
25. 9:30 –9:45 AM Analysis of the junction of the East African Rift and the Cretaceous-Paleogene rifts in northern Kenya and southern Ethiopia (*Mariita N.O.*, Division of Geothermal Development, KenGen, Olkaria, Naivasha, Kenya; and Tadesse K., Department of Geological Science, University of Texas at El Paso, El Paso, TX, USA).

9:45 – 10:00 AM Discussion

10:00 – 10:15 AM Coffee Break

SESSION VI: ETHIOPIA Aluto, Tendaho, Dofan-Fentale, Tulu Moye and Abaya Geothermal Fields

Chairperson Molla Belaineh, Godfrey Bahati

26. 10:15 – 10:30AM Well testing & reservoir engineering studies of Aluto-Langano and Tendaho geothermal fields, Main Ethiopian Rift & Afar (*Yiheyis Amdebrhan*, Geological Surveys of Ethiopia, Addis Ababa, Ethiopia)
27. 10:30 – 10:45 AM Recent work on the Aluto-Langano wells (*Dick Benoit*, Geothermal Development Associates Reno, Nevada, USA)
28. 10:45 – 11:00 AM Effect of solid deposition on geothermal utilization and methods of control (*Merga Tassew*, Ethiopian Electric Power Corporation, Addis Ababa, Ethiopia)
29. 11:00 – 11:15 AM The geology and surface hydrothermal alteration in Dofan-Fentale and Tulu Moye areas (*Tadesse Mamo*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)
30. 11:15 – 11:30 AM Geochemical study of Tendaho and Fentale geothermal fields (*Asfaw Teclu* and *Salahadin Ali*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia).

31. 11:30 – 11:45 AM Geochemical study of the Abaya geothermal prospect (*Kibret Beyene*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia).
32. 11:45 – 12:00 AM Geophysical survey of Tendaho geothermal field (*Yohannes Demissie*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)
33. 12:00 – 12:15 PM Structural setting at Fentale and Dofan geothermal prospects (*Berhanu Bekele*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)
34. 12:15 – 12:30 PM MT soundings at Abaya geothermal processes, south Ethiopia (*Mohammednur Desissa and Yohannes Lemma*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)

12:30 – 12:45 PM Discussion

12:45 – 2:15 PM Lunch Break

Poster

1. Geothermal drilling activity in Ethiopia (*Abrham Muluneh*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)
2. Environmental concerns for geothermal development in Ethiopia (*Molla Belaineh*, Geo-Systecs Natural Resources PLC, Addis Ababa, Ethiopia)
3. Deep structure, residual gravity field and rigidity of the Ethiopian rift, Afar and Turkana (*G. Woldetinsae*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)
4. Social and cultural impacts of rural area development (*Bob Thomasson*, P.E., Reno, Nevada, USA).
5. Methods to evaluate flow and scaling in geothermal systems with reference to the case: Aluto Langano power plant, Ethiopia (*Mulugeta Asaye*, Ethiopian Electric Power Corporation, Addis Ababa, Ethiopia)
6. Evaluation of recent temperature and pressure data from wells in Tendaho geothermal field, Ethiopia (*Akalewold Seifu*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)
7. Geology and Geothermal Resources in the Northern Lake Abaya Area, Ethiopia (*Tadiwos Chernet*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia)
8. Overview of technical cooperation with the International Atomic Energy Agency, IAEA (*Zenaw Tessema*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia).
9. Systematic groundwater investigation in selected sites of the Ethiopian Rift: towards an understanding of the hydrogeology of the Rift and adjacent highlands. Transect MAWARI project; AAU - French Ministry of Foreign Affairs (*Tamiru Alemayehu*, Department of Earth Sciences, Addis Ababa University, Addis Ababa, Ethiopia).
10. Origin, Genesis and Distribution of Fluoride in the Ethiopian Rift and Development of Defluoridation Technologies. Fluoride MAWARI project; GSE-AAU-Jimma University-French Ministry of Foreign Affairs (*Berhanu Gizaw*, Geological Survey of Ethiopia, Addis Ababa, Ethiopia).

SESSION VII: KENYA – General, Olkaria, Olkaria III, Bogoria and Eburu Geothermal Fields

Chairperson Lucien Y. Bronicki, Abdi Farah Chideh

35. 2:15 – 2:30 PM Geothermal Potential of the Kenya Rift: energy estimates based on new data (*Peter A. Omenda and Silas M. Simiyu*, Olkaria Geothermal Project, Kenya)
36. 2:30 – 2:45 PM Opportunities for direct utilization of geothermal resources in Kenya (*John K. Lagat*, Kenya Electricity Generating Company Ltd., Naivasha Kenya)
37. 2:45 – 3:00 PM Olkaria East Reservoir response to 25 years of production (*Cornel Ofwona*, Olkaria Geothermal Project, Naivasha, Kenya)
38. 3:00 – 3:15 PM Use of chemical tracer tests in reservoir management – a case study of Olkaria East Reservoir, Kenya (*James M. Wambugu*, Kenya Electricity Generating Company Ltd., Olkaria Geothermal Project, Naivasha, Kenya)
39. 3:15 – 3:30 PM Olkaria III, A successful technology transfer to Kenya with 5Yr of operation (*Earnest Mabwa*, Olkaria III Geothermal Power Plant Facility).

3:30 – 3:45 PM Discussion
3:45 – 4:00 PM Coffee Break

40. 4:00 – 4:15 PM Environmental Management at Olkaria Geothermal project, Kenya (*Benjamin Kubo*, Olkaria Geothermal Project, Naivasha Kenya)
41. 4:15 – 4:30 PM Olkaria III, an example of fast track field development and power plant construction (*Zvi Reiss*, Ormat International, Inc., USA)
43. 4:30 – 4:45 PM Integration of the Olkaria III geothermal project in the environmental and social framework of the surrounding Area (*David Citrin*, USA)
44. 4:45 – 5:00 PM Geothermal mapping using temperature measurements (*Martha Mburu*, Kenya)

5:00 – 5:15 PM Discussion

6:30 – 10:00 PM Dinner (Ethiopian cuisine), Ethiopian Music and dance show

Wednesday 29 November

SESSION VIII: KENYA – Arus & Bogoria prospects, Eburu Geothermal Field

- Chairperson Anis Abdallah Kamra, Leif Bjelm**
45. 8:30 – 8:45 AM The Osserian geothermal project, geothermal energy at work in an agricultural setting (*Nir Wolf*, Ormat International, Inc.)
46. 8:45 – 9:00 AM Geochemical surface exploration of Arus and Bogoria geothermal prospects (*C. Karingithi & J. Wambugu*, Kenya)
47. 9:00 – 9:15 AM Transient electromagnetic and magnetotelluric imaging of Eburru geothermal field, Kenya (*Peter Murabula Wameyo*, Kenya Electricity Generating Company, Geothermal Development Project, Naivasha, Kenya)
48. 9:15 – 9:30 AM The Principal Law for Geothermal Resource Development in Kenya (*Florah M. Mwawughanga*, Kenya Electricity Generating Company Ltd., Nairobi, Kenya)

9:30 – 9:45 AM Discussion
9:45 - 10:00 AM Coffee Break

Posters

1. GIS in geothermal resources development (*Johnson Mungania*, Kenya Electricity Generating Company Limited, Olkaria geothermal Project, Naivasha, Kenya)

SESSION IX: DJIBOUTI, TANZANIA and UGANDA – Geothermal Fields

Chairperson Ochmann N. Martha Mburu

49. 10:00 – 10:15AM State of knowledge of the geothermal provinces of the Republic of Djibouti. Mohamed (*Jalludin M., CERD, Centre d'Etudes et de Recherches de Djibouti, ex-ISERST*).
50. 10:15 – 10:30 AM Chemistry of Geothermal Fluid, Scale deposit and salinity in Assal drilled wells (*Abdu Mohamed Houmed, Geothermal department, Djibouti electrical power company, EDD*).
51. 10:30 – 10:45 AM Well tests in Assal, Djibouti and possible continued exploration (*Halldór Ármannsson**, *Ómar Sigurðsson**, *Matthías Matthíasson*** and *Knútur Árnason**, *ÍSOR, Iceland GeoSurvey, Reykjavík, Iceland; **VGK engineering, Reykjavík, Iceland)
52. 10:45 – 11:00 AM Geothermal as an alternative source of energy for Tanzania (*P. Ndonde, Tanzania-Germany*).
53. 11:00 – 11:15 AM Geothermal energy exploration in Uganda, country update 2006 (*Godfrey Bahati, Uganda*).
54. 11:15 – 11:30 AM Isotope hydrology in the exploration of three geothermal areas in Uganda (*Godfrey Bahati, Uganda*)
55. 11:30 – 11:45 AM Geochemistry of Rwenzori Hot Springs, Western Uganda (*Vincent Kato¹ & Michael Kraml²*, ¹Department of Geological Survey and Mines, Entebbe, Uganda; ²Federal Institute for Geosciences and Natural Resources, Hannover, Germany).
56. 11:45 – 12:00 AM Microearthquake Survey at the Buranga Geothermal Prospect, Western Uganda (*OCHMANN N.², LINDENFELD M.², BARBIRYE P.¹ and STADTLER C.²*, ¹- Uganda Department of Geological Survey and Mines (DGSM); and ²- Federal Institute for Geosciences and Natural Resources, BGR)
57. 12:00 – 12:15 PM The Afar triangle: a future “gulf region” for world geothermal energy? (*Jacques Varet⁽¹⁾*, BRGM, France)

12:15 – 12:30 PM Discussion

12:30– 2:00 PM Lunch Break

Poster

1. Pilot project for energy and mining economic beneficiation from Assal, Djibouti (*Abdi Farah Chideh*, Ministry of Energy and Natural Resources, Republic of Djibouti)

SESSION X: EXPERIENCES OF OTHER COUNTRIES – Iran, Turkey, Iceland, Russia, Hungary, Iran, Costa Rica and Mexico Geothermal Fields

Chairperson John W. Lund, Earnest Mabwa

58. 2:00– 2:15 PM Comparison of Schlumberger measurements and TEM measurements with field examples from the Öxarfjörður geothermal field, NE-Iceland (*Ludvík S. Georgsson¹ and Ragna Karlsdóttir²*, ¹UNU Geothermal Training Programme, Orkustofnun, Grensasvegi 9, Reykjavik, Iceland; ²ISOR – Iceland Geosurvey, Grensasvegi 9, Reykjavik, Iceland)
59. 2:15 - 2:30 PM Physical, chemical, biological and socio-economic effects of geothermal application. case study: Kızıldere geothermal power plant , Turkey (*B. Hilal ÇADIRCI¹, Ahmet Kıvanç KUTLUCA^{2,4}, Ayça ÇAKIN^{2,3-1}*Ege University, Department of Biology, ¹Izmir Institute of Technology, ²Department of Chemistry, ³Department of City and Regional Planning)
60. 2:30 – 2:45 PM Geothermal energy use in Russia: progress and future (*Svalova V.B.*, Institute of Environmental Geoscience, Russian Academy of Sciences, Moscow, Russia)
61. 2:45 – 3:00 PM Pilot plant geothermal project for multiple integrated uses in Hungary (*Franciska. H. Karman¹, Mihaly Kurunczi², Bela Adam³ and Roland Varga²*, ¹Chemical Research Centre of Hungarian Academy of Sciences, Budapest Hungary, ²Hungarian Thermal Energy Society, Sandorfalva, Sovenyhazi u. 1. Hungary ³Hidro-Geodrilling Ltd., Budapest, Zsigárd, Hungary)
62. 3:00 - 3:15 PM Transient analysis of a geothermal snow-melting system on a typical bridge (*Sohail Porkhial*, Azad University; *Omid Asgari*, Sharif technical university; and *Mohammad Reza Shirzadi*, KNTU Technical University, Iran)

3:15 – 3:30 PM Discussion
3:30 - 3:45 PM Coffee Break

Poster

1. The identification of a geothermal prospect in Yemen (*Anis Abdallah Kamra*, Geothermal Consultant)
2. Sustainability and exploitation policies at the Miravalles geothermal field (*Eddy Sanchez-Rivera and Osvaldo Vallejos Ruiz*, Geothermal Recourses Service Center, Miravalles Geothermal Field, Costa Rica)
3. A deformation measuring network in the Mexicali Valley, Baja California, Mexico (*Ewa Glowacka*, Mexico)

SESSION XI : POSTER SESSION

3:45 – 4:30 PM Poster session (posters will be posted throughout the congress but during this time it will be supported with explanation of presenters)

SESSION XII: CLOSING SESSION

4:30 – 4:50 PM Closing ceremony

SESSION XIII: Round table discussion on ARGeo: Status and the way forward

4:50 – 5:30 PM