East Africa Geothermal Update: 
Expanding Capacity

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About the U.S. Energy Association

- Nonprofit NGO founded in 1924
- Over 160 members from across the US energy sector
- Partnerships with USDOE, USAID, USTDA, State Department
- Mission: “To promote the sustainable supply and use of energy for the greatest benefit of all.”
About the World Energy Council

• Founded in 1923 as the world’s principal network of energy leaders and practitioners

• UN-accredited global energy body, representing 3000 members from 94 countries
The U.S. – East Africa Geothermal Partnership (EAGP)


- Launched in September 2012, funded through September 2019

- Goal: to build capacity and accelerate geothermal development in East Africa with a priority focus on Kenya, Ethiopia and Djibouti
Energy Growth Opportunities in Sub-Saharan Africa

- Underserved Demand:
  - ~600M people in sub-Saharan Africa lack access to electricity
  - Generation capacity comparison (MW per 1M people):
    - USA: 3,360
    - Sub-Saharan Africa: 91 (Power Africa, 2015)

- High Tariffs
  - Average LCOE in sub-Saharan Africa: $0.13 (World Bank, 2013)

- Growing Market:
  - 6 of the 10 fastest growing economies are in sub-Saharan Africa (International Trade Administration, 2015)
Geothermal Development in Africa

- East African Rift geothermal potential exceeds 15,000 MWs
- Exploration began over 30 years ago
- < 1000 MW installed

Map Source: Renewable Energy World
Country Update: Djibouti

- 22 geothermal prospects identified
  - Surface studies completed at Assal-Fiale, Assal-Gale-le-Goma, Lac Abbé, Sakhalei, Daggadé, Obock, and PK-20 Ambade

- IFI-funded exploration underway
  - JICA - Hanle
    - Surface studies and drilling plan completed, civil works to begin next month, test drilling in mid-2018
  - World Bank - Lac Assal/Fiale
    - Surface study completed

- ODDEG Exploration
  - EAGP and Petrotec - Gale-le-Goma
    - 1st slim hole successfully completed
Country Update: Ethiopia

• Geothermal Resources Development Proclamation issued in 2016

• Public exploration
  ▫ Aluto Langano
    • World Bank funding drilling program
  ▫ Tendaho
    • GSE leading surface exploration efforts
  ▫ Alalobeda
    • EAGP supporting GRMF grant negotiations for drilling

• Private concessions
  ▫ Corbetti Geothermal
    • Head of terms PPA agreed, negotiating PPA and Implementation Agreement with GoE
  ▫ Ormat
    • Secured GRMF funding for drilling programmes at Wondo Ganet, Boku, and Daguna Fango
  ▫ Cluff Geothermal
    • Secured GRMF funding for surface studies at Butajira
    • Secured GRMF funding for drilling programme at Fantale
Country Update: Kenya

- World Bank supporting development of new National Geothermal Strategy

- IPP agreements in place for 3 x 35 MW at Menengai, delays plague the projects

- KenGen developing additional 653 MW+ of geothermal by 2022
  - Olkaria V (2 x 79 MW) – under construction
  - Olkaria I Unit 6 expansion – funding secured from EIB and German development bank
  - Olkaria VII (2 x 70 MW) – planned for PPP development in 70 MW phases. Structured through SPV, private partner provides capital investment
  - Modular wellhead generator initiative – in various stages of procurement

- Greenfield exploration underway at Eburru/Badlands, Bogoria-Silali

- IPP greenfield projects in development at Olsuswa, Akiira, AGIL/Longonot
Regional Update: Tanzania and Uganda

- **Uganda**
  - Structural mapping and conceptual modelling underway at Buranga, Pamyimur, Katwe and Kabiro supported by DFID EAGER

- **Tanzania**
  - TGDC has secured funds from African Development Bank and GRMF to drill 3 slimholes at Ngozi in 2018
Regional Update: African Geothermal Center of Excellence (AGCE)

- Concept launched in 2015
- Hosted by Kenyan Government
- Focus on professional technical training
- Curriculum has been developed and a Technical Advisory Team put in place
- Interim Project Coordination Unit (IPCU) planning for 2018 launch of AGCE training
Regional Update:
New Zealand African Geothermal Facility

• Launched in August 2017 as partnership between New Zealand Government and African Union Commission

• $10M NZD in funding from NZ Government

• 5 year project life cycle with 11 target countries

• Includes technical assistance, advice, development and training
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