



# **Geothermal Direct Use**

**IRENA** 

05/05/2022













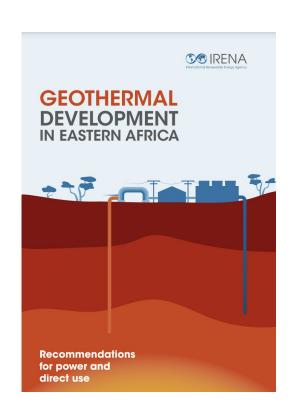
### Introduction

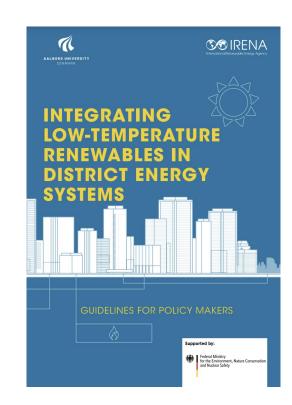


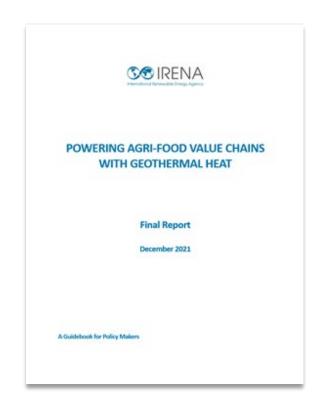
# Accelerating geothermal heat adoption in the agri-food sector

Key lessons and recommendations





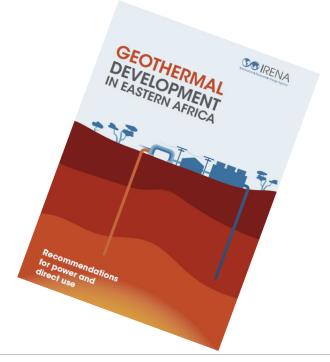




https://irena.org/

http://www.globalgeothermalalliance.org/

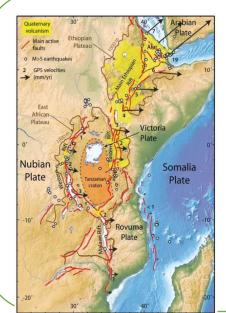
## **Geothermal Development in Eastern Africa – Direct Use**



- □ Provide the updated status of geothermal development, both electricity and direct use
- ☐ Identifies the key barriers to geothermal development
- □ Provides recommendations for accelerating development of geothermal electricity and direct use

- ☐ Outcomes of the Regional Workshop on Geothermal Financing and Risk Mitigation in Africa
- ☐ Assessment: experience in Comoros, Djibouti, Ethiopia, Kenya, Tanzania, Uganda and Zambia







## **Enabling direct use**



Use	Installed capacity (MWt)	Annual energy use (TJ/yr = 10¹² J/yr)
Greenhouse heating	5.3	185
Agricultural drying	0.3	9.9
Fish farming	0.2	6.5
Bathing and swimming	8.7	275.5
Other uses (laundry operations and milk pasteurisation)	4	125
Total	18.5	602.4

#### **Increased interest in DU in EAR**

- ☐ Kigali Statement of ARGEO-C7 called for the mainstreaming of DU
- ☐ Technical workshop on the Geologic Development and Geophysics of the Western Branch of the Greater East African Region most resources are low and medium temp. suitable for DU
- ☐ Several social, economic and environmental benefits of DU



# Policy, institutional and Regulatory Frameworks

Policy support for geothermal direct use is largely yet to be developed

# **Legal and Regulatory Framework**

#### **Ethiopia - Geothermal proclamation No.981/2016**

Grade I resources: Suitable for power and combined

heat and power

Grade II resources: Suitable for direct use

Issued by regional/National government

Provides for incentives

#### **Kenya - Energy Act 2019**

Recognizes the role of Direct use of geothermal energy

Renewable Energy Resource Advisory Committee (RERAC)

# **Institutional support**

#### Kenya

Kenya Electricity Generating Company Geothermal Development Company

#### **Djibouti**

ODDEG is responsible for geothermal development

#### **Tanzania**

Tanzania Geothermal Development Company

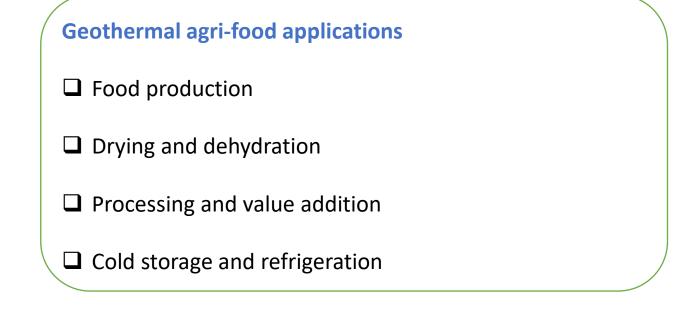
#### Uganda

**Geothermal Resource Department** 

## Powering Agri-food Value Chains with Geothermal Heat: Guidebook for policy makers



**Upcoming Capacity Building in Eastern Africa** 



#### Increased interest in DU in EAR

- ☐ Global Geothermal Direct Use case studies
- ☐ Analysis of global best practices
- ☐ Tools for quantifying socio-economics of DU and heating tariff determination
- ☐ Recommendations for successful implementation of DU

# **Priority Action Areas**

#### **Eastern African recommendations**

Dedicated enabling frameworks

 Policies, roadmaps, licensing

# **Key factors**

Coordination of development activities and energy and non-energy stakeholders

**Financing** 

- co-location with

power plants

- Demonstrate

financial viability

- Dedicated Financing

mechanisms

Shallow geothermal resources have lower costs and risks

Awareness Creation

- Feasibility studies
- Demo projects
- methodologies to measure impact
  - Stakeholder engagement

Alignment with development goals

- Industrial development, rural development
- Local govt programmes

#### **Recommendations from Global case studies**

Identify geothermal sources and map their co-location with energy demand in the agri-food sector

**Policy** 

recommendations

Facilitate new product streams and processes by nurturing innovation and sustainability principles

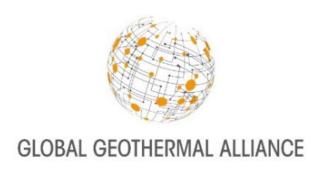
Build capacity and create awareness on the potential, benefits and opportunities Establish enabling policy, legal and regulatory frameworks to address

barriers

Identify
supportive
stakeholders across
different sectors align
cross-sectoral policies
to create
synergies

De-risk investments in geothermal agri-food and facilitate participation of commercial banks in financing

Consider various operation setups, business and ownership models in project development





# Thank you!











