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# Cultural uses and values placed on geothermal resources by Kenya's Luo of Homa Hills: Views from a socio- anthropological perspective

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# Introduction

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- Local populations have been using geothermal resources to meet various socio-economic needs.
- Classical approach to geothermal development along the Eastern Africa Rift Valley has until now focused on the drilling of geothermal resources at depth, for national grid electricity needs.
- The Geothermal Village – a local development approach cannot ignore the related cultural aspects of the geothermal populations on site.



# Geothermal energy

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- Promoted as a sustainable, clean, environmentally friendly renewable energy source alternative for climate change mitigation/adaptation due to minimal emission of greenhouse gases and reduced carbon emissions into the atmosphere (Nyairo & Levi, 2014; Oduor 2010; Barasa, 2016).
- Most geothermal sites along the EARV , including the Homa Hills site, are therefore generally targeted for large-scale geothermal development to produce energy that serves industries, cities and towns.
- The approach of mega geothermal initiatives had a tendency to ignore cultural aspects related to geothermal resources. This cannot be the case for local developments



# Defining the Homa Hills geothermal resource

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- Geothermal resources are defined and described variously depending on the person communicating.
- The Homa Hills geothermal prospect comprises of 3 manifestations (with average temperatures of about 80<sup>0</sup> C) in 3 main administrative locations near the shores of Lake Victoria.
  - Abundu in Kanam A location
  - Kakdhimu in Kakdhimu East location and
  - Ayombo in Kokoth Kataa location.

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# Defining the Homa Hills geothermal resource (*contd*)

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## **Geo-scientific Perspective:**

- An active volcanic site in tertiary and Pleistocene times; characterized by carbonatitic, rhyolitic, andesitic, and highly folded basaltic Nyanzian lava (Lagat, 2010).
- A geothermal site characterized by intense faulting, seismic activities, and high heat flow (Baker and Wohlenberg, 1971).
- A site with presence of shallow underground geothermal resources associated with intrusive magmatic/dyke along fractures (Lagat, 2010).



# Defining the Homa Hills geothermal resource (*contd*)

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## Local population's perspective :

- The Luo of Homa Hills call geothermal resources *bala* or *bala matedo*, meaning “geothermal resource” or “the geothermal resource that cooks.”
- They simply describe them as *hono – Dholuo* for something extraordinary (because of the hot water or steam from below the surface of the earth, whose supply never runs out). To them, only God can explain its existence.
- Its waters drain into Lake Victoria and results in the tasty fish found in the locality.
- A particularity mentioned of the resources is “boiled egg” or “rotten egg” smell (due to H<sub>2</sub>S content of the gas emission).



# The Luo of Homa Hills: Some ethnographic background info

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- The local population living around the HH geothermal resources is the Luo.
- Key economic activities: Fishing, cattle keeping and crop cultivation.
- Religion: A large proportion are Christians, but there is a considerable population size holding indigenous religious beliefs.



# Cultural uses and values placed on the resources

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- Values placed on geothermal resources is tied to the respective uses of the resources.
- Uses are closely linked to economic activities as well as religious affiliation/beliefs and are tied to certain values
- This study categorises the said values accorded to these geothermal resources among the Luo into 8 categories thus:
  - spiritual and/or psychological
  - culinary
  - social
  - economic
  - sanitary/hygienic/medicinal/health-related
  - touristic/educational and
  - political
  - meteorological



# a) Spiritual and/or psychological value:

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- Considered as holy places by some of the locals. So prayers are conducted there.
- For them ; these are sacred places where God's presence is found. Spiritual powers that an individual afflicted by misfortunes can go to tap into through prayer and performance symbolic activities eg. burning and leaving behind the individual's clothes as a sign of having left behind the troubles; thus presenting a psychological value.
- Geographical features related to the geothermal sites such as the surrounding hills with caves serve as meditation sites for prayer and deep connection with God, thus have spiritual and psychological value.
- Locals say the spiritual and psychological values are also held by other people who come to the sites from as far as Tanzania and other parts of Kenya.



## b) Culinary value:

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- Used for cooking; eg to boil groundnuts, maize, sweet potatoes and eggs.
- Source of a healthy, natural kind of salt that does not contain any additives or chemicals, therefore, a substitute to bicarbonate of soda.
- Residual salt together with the salty water from the resources are used in cooking, mainly to soften traditional vegetables, as a food preservative and to add flavour to foods like fish, thus making food tastier.
- Such food is also used in social events such as weddings and funerals.



## c) Social value:

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- For men and boys, bathing at the geothermal sites to clean oneself is largely a social event as they meet, converse and joke while they bath. In this use, the resources provide a kind of a natural spa.
- The culinary value also ties in with social value as besides the fact that the delicious foods resulting from being cooked using natural products from the geothermal sites is used in social events, eating in itself tends to be a social event among the Luo.



## d) Economic value:



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- In the olden days, the soil from the geothermal sites was used for barter trade during famine whereby the locals would take it to Kisii in exchange of foodstuff such as maize and beans.
- The geothermal water acts like a salt to the fish at the point where it flows and enters the lake, increasing the breeding rate of the fish, thus an economic value to the traditionally fishing local population inhabiting Homa Hills and its environs.
- The salt from the geothermal sites is mixed with smashed coffee husks, *omena* (*Dholuo* for sardines) and maize husks then crushed together to make layers' mash used as animal and chicken feeds.
- The sand and soil from the geothermal sites is used to build walls of traditional huts, whereby it is mixed with the salty water to prevent the walls from cracking. This use presents both aesthetic and economic values of geothermal resources.



## d) Economic value (*contd*):

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- The 4 special kinds of geothermal soils also called *bala* are variously sold within and without Homa Bay county, therefore providing a source of livelihood; the said 4 soils thus being:
  - *Nyar Kisii* (usually taken to Kisii land and used for feeding cattle and softening maize stalks);
  - *Nyar Loka* (taken to Homa Bay to be used for cooking vegetable and feeding cattle);
  - *Otoyo* (mixed with *ndawa* - a type of traditional cigarette common among the Luo) and
  - *Band odeyo* (also taken to Kisii land and mixed with poultry feed).
- There are instances where the resulting delicious food cooked using the natural products from the geothermal sites (eg the natural, residual salts) is sold in places such as hotels and restaurants, thus bringing in an economic value element to the use of geothermal resources.



## d) Economic value (*contd*):

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- Livestock graze on *oridi* (a special type of ever-green and fresh grass) that grows around the geothermal sites (also called “geothermal grass” by EARV geologists).
- Livestock also drink the water at the sites; the nutrients in the geothermal water act as vitamins to livestock when they drink it.
- These nutrients also help increase the milk production in lactating livestock.
- Water from the geothermal sites is used to both soften and add flavour to animal feed such as dried maize stalks.
- Livestock fed on animal feed with additives (products) from geothermal resources and that drink water from the said resources are said to be free of worms and exhibit good health.



## e) Sanitary/Hygienic/medicinal/health-related value:

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Bathing in the geothermal water to treat skin conditions:

- It kills germs or worms, such as those found in livestock's stomach.
- Is used to treat foot and mouth disease in cows by making them wade through it.
- Giving livestock whose placenta is stuck after delivery the geothermal water to drink flushes out the placenta.



## e) Sanitary/Hygienic/medicinal/health-related value (*contd*):

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- Used to treat constipation so has a direct medicinal value.
- Aloe vera that thrives well around the geothermal sites is used to treat skin conditions, cuts, stomach aches, eye infections, manage drooling, fertility issues, etc.
- Used as a disinfectant for smelling wounds.
- When poured into pit latrines dissolves the waste so that the levels of the content in the toilets goes down drastically. This also has an economic value as it enables the latrines to be used for longer before the need to dig another one arise.



## f) Touristic/educational value:

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- Though not well developed as an economic activity, the area also has been a tourist attraction site, with students, tourists and other visitors coming to the place for sight-seeing/touristic and educational purposes.



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## g) Political value:

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- The religious leaders of the indigenous faith groups are generally revered by the community. and it is common for them to be referred to in respect as “*japolo*” (directly translating to “man of heaven”; loosely translated to “man of God”) by members of the local population.



## h) Meteorological value:

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*Bala* is sometimes used in weather forecasting/prediction because the the indigenous knowledge of the local population indicates that:

- When the water is very hot, the locals know that the rainy season is about to set in.
- When it is about to rain, there are pores from where a lot of water comes out and the geothermal water flow spreads widely and extends to areas where the water is usually not there.
- When there is drought, the water comes out in small quantities.



# Conclusion

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- To reduce on conflicts/tensions between developers and local populations, it is important for a geothermal initiative whether large or small scale to consider and incorporate these kinds of values attached to geothermal resources by local populations right from the conceptual stage.
- Whether we agree or not with some of the cultural beliefs, practices and values related to the use of the resources, particularly the ones that have a religious connotation.



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Thank you

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