# Could Cheese Be the Missing, Hard, Stable Currency to Fortify Self-Sufficiency of Pastoralist Communities?

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The XXIV International Grassland Congress / XI International Rangeland Congress (Sustainable Use of Grassland and Rangeland Resources for Improved Livelihoods) takes place virtually from October 25 through October 29, 2021.

Proceedings edited by the National Organizing Committee of 2021 IGC/IRC Congress

Published by the Kenya Agricultural and Livestock Research Organization

# Could Cheese Be the Missing, Hard, Stable Currency To Fortify Self-Sufficiency of Pastoralist Communities?

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**Key words**: Antibiotic abuse; Maasai; milk; pastoralism; poverty reduction

## Abstract
Traditional pastoral existence in Africa has always necessitated close, sustainable interaction with a harsh natural environment. Pastoralists, such as the indigenous Parakuyo Maasai of Tanzania traditionally depend on fresh cow's milk as a staple. They are among the few African ethnic groups that still live as small, socially intact associations close to nature. Unfortunately, fresh milk is difficult to store and inevitably, times of plenty fluctuate with the times of hunger that threaten cultural retreat. Milk storage is particularly challenging in an arid climate without refrigeration and at such times, survival takes precedence over prosperity. We describe an ongoing pilot project that has attempted to address these hardships, facilitate traditional subsistence and the economic autonomy of the Parakuyo Maasai. We proposed that a simple solution is cheese production. The "Maasai-cheese" project (www.vsf.at) was implemented in 2011 and instructs sustainable cheese production on the Maasai boma using locally sourced assets, combining Austrian experience of cheese production with Maasai experience of arid dairy farming.

Anticipated gains for the Maasai are becoming realised:

(i) Family incomes can be assured during hardship. During the dry season Zebu cattle do not produce enough milk that can be sold or exchanged. However, cheese produced and matured earlier can be sold at this time;

(ii) Antibiotic abuse in cattle can be drastically decreased. When cheese is a valuable commodity there is a strong disincentive to treat cattle with antibiotics, which prevent fermentation.

(iii) Cheese is a sought-after commodity in Africa. This pilot initiative is being well received as the demand for cheese in Africa is enormous. In particular, technical know-how has been a limiting factor until now.

## Introduction
Pastoralism – extensive livestock production in rangelands – is one of the most sustainable food systems on the planet. It plays a major role in safeguarding natural capital across a quarter of the world's land area. Traditional pastoral existence in Africa has always necessitated close, sustainable interaction with a harsh natural environment.

Maasai are among the few African ethnic groups that still live as small, socially intact associations close to nature. Their life-style thereby places great value on cattle, land for grazing and excess milk that may be exchanged for other goods. Milk and fermented milk products remain their main sources of nourishment. Today for the Maasai milk has become a marketable commodity that contributes to their regular family income. However, milk storage is particularly challenging in an arid climate without refrigeration (Schoder et al. 2013).

Over the past decade the political establishment has been able to incorporate a negative stereotype of pastoralists. Today pastoralists, such as the Maasai, are seen to be environmentally destructive, sources of animal diseases, enemies of wild life and practitioners of economically unviable lifestyles. Increasingly, the Maasai are becoming victims of land conflicts and are being made up their traditional lives and move to the cities for day-paid jobs. This principally satisfies the economic interests of investors, who buy land to mine gold in the form of large areas that can be used as commercial hunting grounds or large-scale farms (McGahey et al. 2014).

## Methods and Study Site
We describe an ongoing pilot project that has attempted to address these hardships, facilitate traditional subsistence and the economic autonomy of the Parakuyo Maasai. We propose that one simple solution might be cheese production.

The “Maasai-cheese” project (www.vsf.at) was successfully implemented in the Tanzanian homeland of the Maasai (Fig. 1) in 2011. It instructs sustainable cheese production on the Maasai boma using locally sourced assets, combining Austrian experience of cheese production with Maasai experience of arid dairy farming.

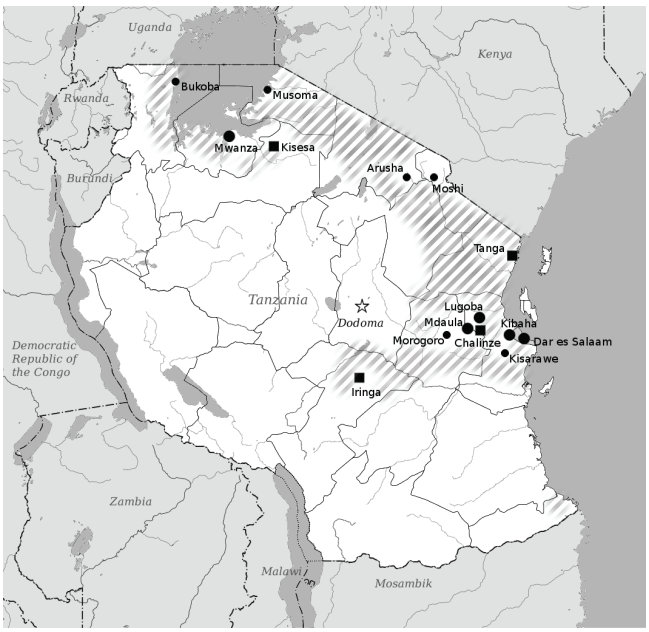

Fig. 2 Tanzanian homeland of the Maasai

**Study area**

Tanzania has a total land area of 945,000 km². Only 100,000 km² (9.5 %) are arable, of which 51,000 km² (4.8 % of total land area) are cultivated. The residual area is almost exclusively used for livestock grazing under extensive pastoral and agro-pastoral systems (The Tanzania Government Portal 2013). The study area falls within the Maasai homeland, with latitudes from 01°00 to 08°15′S and longitudes from 34°45′ to 38°15′E. It comprises the following eight regions and 13 districts: Arusha region (Monduli and Ngorongoro districts), Iringa region (Iringa rural district); Kilimanjaro region (same district); Manyara region (Kiteto and Simanjiro districts); Morogoro region (Kilosa and Mvomero districts); Mbeya region (Mbarali district); Pwani region (Bagamoyo district) and Tanga region (Handeni, Kilindi and Lushoto districts) as indicated in Figure 1. A total of 24 Maasai villages were visited. The study area covers 13,486 km2, of which 8,141 km2 (60.3 %) are plains. The major mountainous territories include the Eastern Arc Mountains, namely the East and West Usambara and the Nguu Mountains (Tanga region); the North and South Pare Mountains (Kilimanjaro region); the Nguru, Uluguru, Ukaguru, Udzungwa, Malundwe, Mahenge and Rubeho Mountains (Morogoro region); and the Udzungwa Mountains (Iringa region), covering a total area of approximately 5,350 km2, or about 39 % of the total land in the study area (UNESCO 2016). The altitude of the study area (excluding mountain peaks) ranges from 267.3 m in Lugoba village (Pwani region) to 2,184 m in Enguserosambu village (Ngorongoro district, Arusha region; DAFT LOGIC 2016). The climate varies greatly within Tanzania. According to metrological data, the distribution of rainfall in the project area is both unimodal (central parts of the study area comprising the Manyara region) and bimodal (northern parts and coastal areas, comprising the Arusha, Kilimanjaro, Tanga and Pwani regions). In the areas of unimodal rainfall, the rainy season extends from December to April with peak rainfall during March and April (188.5 mm), whereas the bimodal areas are characterized by long rains (known as *Masika* in Swahili) lasting from March to May and ranging from 140 to 255 mm, with peak rainfall in April, and short rains (known as *Vuli* in Swahili) from October to December, peaking at 125 mm in November. The maximum mean temperatures range from 23 °C to 31 °C, peaking in February, and the minimum mean temperatures range from 10 °C to 23 °C, the lowest in July (Sarwatt and Mollel 2006).

## Results

Anticipated gains for the Maasai are becoming realised. These can be grouped as follows:

(i) Family income increases significantly and can be assured during hardship: During the dry season Zebu cattle do not produce enough milk that can be sold or exchanged. Cheese produced and matured earlier can be sold at this time.

(ii) Antibiotic abuse in cattle can be drastically decreased: Cheese has become a valuable commodity and there is a strong disincentive to treat cattle with antibiotics, which prevent fermentation.

(iii) Cheese is a sought-after commodity in Africa: his pilot initiative is being well received as the demand for cheese in Africa is enormous.

## Discussion [Conclusions/Implications]

We are encouraged that projects of this nature may continue to support and reintegrate traditional African cultures sustainably, without handouts, and foster fair use of natural resources.

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