

# More than just a terrace: A PAST PERSPECTIVE ON THE MULTIFUNCTIONAL AGRICULTURE OF KONSO, ETHIOPIA

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Terracing can be visually stunning. Your eye is drawn to follow the lines, contours and colours of what is visible today. But the focus on the framed picture of the here and now, whilst beautiful, tells little of how this terraced landscape came to be. It misses the evolution of these terraces over generations and the interconnectedness of the terraced landscape with other parts of the agricultural system.

Most farming systems are multifunctional in nature with roles and functions that are social, economic and environmental in nature but these have also changed over time. Using an archaeological example from Konso, Ethiopia, the EU-funded projects of Archaeology of Agricultural Resilience in East Africa (AAREA) ([www.aarea-project.eu](http://www.aarea-project.eu)) and tRRACES: Resistance and Re-silience of ancient agricultural soils, are exploring how understanding these changes across time and space can help us to unpick the mechanisms that drive an agricultural system's growth.

## Konso

Located in southwest Ethiopia, the Konso highlands are an impressive terraced landscape that is also a UNESCO World Heritage Site, covering some 200km<sup>2</sup>, primarily with drystone walled terracing and walled towns. Based on genealogical evidence these terrace systems are thought to have been in existence for around 500 years. With much of Ethiopia's agricultural land being situated above 1500m, terraced agriculture is economically significant, but equally the steepness of the topography, in combination with the high erodibility of the soils, means maintaining soil fertility is a perpetual problem. Terracing offers a way to get the most from this topography in terms of managing soil erosion and maintaining higher yields.

## Traditional view of terracing

However, Cruz Ferro-Vázquez, Co-Investigator of the tRRACES project, says "It's a mistake to assume that whole of the area was terraced at the same time, and just conjecture to suggest that the function of the terracing has remained the same."



Caption: Terrace system in Yunnan, China.  
Photo: Jialiang Gao, [www.peace-on-earth.org](http://www.peace-on-earth.org) (Original Photograph)  
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Based on ethnographic research and traditional knowledge it has generally been assumed that a system of bench terracing had been employed, whereby soil was dug out and put upslope, with a retaining terrace wall being built into the hole below. However, previous work by Tesfaye Beshah in 2003 found that although the Konso terraces were still maintained none of the current community had been involved with the building of the terraces. The AAREA project set out to understand how exactly the terraces had been constructed initially, and used subsequently.

#### Archaeological information

Although the area and the terrace system have been subject to previous anthropological, geographic and agronomic research, the recent research undertaken by the AAREA and tRRACES projects has been the first work that attempts to understand the construction of the terraces. Archaeology has the advantage of being able to 'reverse engineer' the terrace construction by recording the order in which sediments are deposited and structures are built.

As well as stratigraphic information obtained through archaeological excavation, samples were also taken for soil micromorphology and geochemistry. These techniques allow the changes in the soil structure and composition to be assessed over time giving an indication of how the soils have formed and their likely provenance.

The archaeological data from Konso has revealed a strikingly different story of development. The terraces were not originally built to increase the amount of cultivatable land, but were a complex system of sediment traps. The main agricultural land was in the valley bottoms, in areas called yela, where alluvial soils were captured. Whilst soils were certainly eroding from the surrounding slopes, the initial construction of the terraces was to keep this material back from the more valuable yelas below. The yelas are still regarded as important today, but the link between the terraces and yela, and understanding the initial reason for terrace construction had been lost until this current work was undertaken.

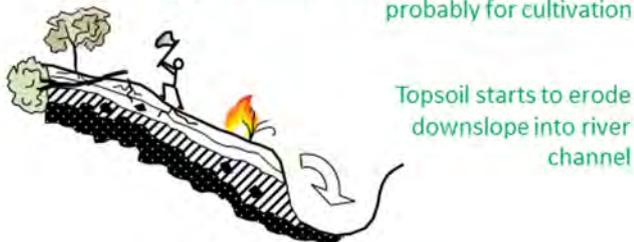


**Hillside terraces (left) and the yela sediments traps (right - foreground) in the Sahayto area of the Konso Highlands (Photo: Cruz Ferro-Vázquez)**

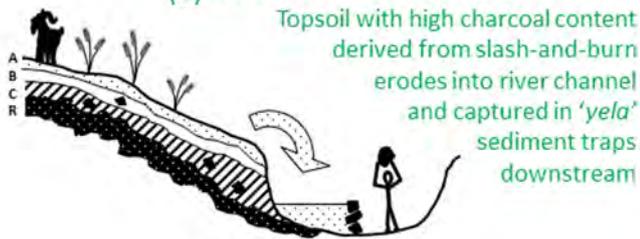
(1) Pre-disturbance hillside



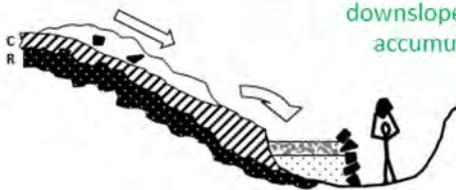
(2) Vegetation clearance by slash and burn, probably for cultivation



(3) Deforestation of hillside causes erosion. Topsoil with high charcoal content erodes into river channel and captured in 'yela' sediment traps downstream



(4) Severe soil erosion leads to loss of all topsoil and most subsoil. Exposed saprolite and bedrock starts to erode downslope, some of which accumulates in the yela.



(5) Need to protect yela fields from stoney colluvium leads to construction of terraces at base of slope, some founded directly on exposed saprolite. Further hillside terraces built progressively upslope, eventually helping to create new soils. Yela continues to be heightened by controlled accumulation of material from the slope and the river.



The present and the future – taking a landscape perspective

If we broaden our perspective from the terraces and associated yelas in the river valley, to the historical grazing grounds of the Konso people, then we can start to see how activities in the wider landscape may also affect the terrace system in the future. Construction of government irrigation schemes for increased arable activity in the historic grazing grounds around the Sagen River has led to mass migration and daily commuting from the Konso area. This change in agricultural activity led to the lack of maintenance of terraces and yelas in the main Konso area. Archaeologically we can see that the Konso terraces have been abandoned before, so this event is not 'new', but arguably the more important point is recognising that the landscape is a system, and if one element changes it will affect other elements. "It remains to be seen whether the move to the Sagen irrigation scheme is a wise decision, it comes about from a complex equation, one that requires us to recognise that moves of essentially this type have almost certainly occurred multiple times in the past", says Cruz Ferro-Vázquez.

Konso - a multifunctional farming system

The terraces that are visible today have been cited by the FAO as offering important "lessons from the past", however, to project this relatively static image of the landscape from the past into the future is too simplistic. Agriculture operates within a complex system today and did so in the past, and this system operates over a landscape scale with many interlinked elements. The archaeological evidence has demonstrated that both a close-up and wide-angled perspective of these processes, in the past as well as in the present, is important for understanding the mechanisms that drive a system's evolution. It's important too to recognize that the function and role of these terrace systems have changed through time and will continue to do so in the future.

The full research that this article is based on is currently in press with the Journal of Environmental Management.