



## Footbridges for Kenya

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### Summary

Seasonal riverbeds in the south of Kenya swell up to torrential rivers during the rainy season and make them impassable. The Masai communities get cut off from important facilities, denying them access to schools, markets, hospitals and fresh water for several weeks.

As a sustainable solution to this problem, a universal bridge system was developed in a bachelor thesis at the Swiss Federal Institute of Technology in Zürich (ETHZ) in 2011. The variation analysis led to a wooden truss construction, where preassembled elements can be erected piece by piece over the river without the need of a crane.

This specific system has been successfully built twice with the help of the local community, allowing an active interaction and knowledge transfer. Due to the need of more footbridges in this region several bridges are being planned to improve the quality of life of the Masai communities.

**Keywords:** Footbridges, Kenya, flooded riverbeds, truss construction, wood, bachelor thesis, poverty alleviation, Masai communities, development projects, knowledge transfer

### 1. Introduction

Kenya is situated in the middle east of Africa and has a very rich culture with other 40 ethnic groups. The south west of Kenya is inhabited by one of the most popular and biggest tribes, the Masai. The Masai belong to the Nilotic ethnic group and originally have a semi-nomadic lifestyle. In the past years their semi-nomadic lifestyle has been changing more and more to settled housing. This change is being encouraged by the Kenyan government with instituted programs to abandon their traditional lifestyle. Furthermore this development is a logical consequence of the Masai being confined by nature reserves such as the well-known Masai Mara.

Kenya lies just over one degree south of the equator and therefore has a tropical climate. Along the coastline it is hot and humid and the inland has a more temperate climate. Kenya has two main rainy seasons a year. The longer one occurs from April to June and the shorter one from October to December. The rainfall can be very heavy and usually happens in the afternoons and evenings.

Therefore year for year seasonal riverbeds in the south of Kenya swell up to torrential rivers during the rainy season and make them impassable. The heavy rainfalls cannot infiltrate the fine-grained soil and lead to superficial flow [Figure 1]. The Masai communities get cut off from important facilities, denying them access to schools, markets, hospitals and fresh water for several weeks. And this is during a time where malaria infections reach their climax.

This situation forces them into taking a chance of crossing the torrential rivers. With poor swimming capabilities they often risk their life for getting to the other side. A simple bridge can help the communities and significantly reduce the risk of drowning in the floods.

The local community directly addressed this problem to the non-profit organization Econosphere Projects (EP) in 2010, which themselves sought for help in Switzerland. EP is introduced in chapter 2.2 and the whole history of the development of this project is shown in chapter 2.