

Designing an All-terrain Wheelchair in Kenya; A Case Study of Design for Social Impact in Low-Resource Settings

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ABSTRACT

In 2015, the United Nations outlined 'inequalities for people with disabilities' and 'poverty' as two of the seventeen most significant challenges facing humanity. On top of this, the World Health Organisation recognises that around 68 million people do not have access to an appropriate wheelchair, primarily due to the majority of individuals in need of a wheelchair living in low-resource settings with lack of access to appropriate and affordable mobility interventions. Individuals in this situation are prone to falling into a disability-poverty cycle, which can lead to them being unable to support themselves or their family, both financially and physically. There is thus significant need for low-cost and durable wheelchairs that can be used both indoors and outdoors, can function on varied terrain, and can be manufactured and repaired from locally available resources. Developing appropriate assistive technology, such as wheelchairs, to be manufactured and maintained within the local context of a low-resource setting, requires alternative design principles and designerly ways to those used when designing in, or for, more resourced regions of the world.

This case study offers an empirical account of the design of an all-terrain wheelchair called 'SafariSeat', which has been designed, tested, manufactured and turned into a sustainable enterprise in East Africa. The wheelchair has been developed with intentions to reduce inequality and help alleviate poverty in low-resource communities by improving users' health, wellbeing and participation in society, whilst creating and facilitating local jobs to support communities. Having developed SafariSeat with a human-centred design approach, a local mindset, and prioritisation of usability and affordability, this case study reflects on the applied design principles, practices and processes whilst providing contextual insights for other designers seeking to work in a similar way. The case study covers the topics of designing in a low-resource context, moving from prototype to production line, user testing and outreach, finding a local team, enhancing product value and increasing impact. The case study of SafariSeat explains challenges encountered whilst designing in a low-resource setting, and highlights how local collaboration and partnerships can help create of a more sustainable design solution that is framed and validated by those with lived experience in the context.



Figure 1. The design and manufacture team in their Kenyan wheelchair workshop.