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Tracing divergent livelihood pathways in the drylands: A perspective on two spatially proximate locations in Laikipia County, Kenya

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ABSTRACT

This study traces livelihood pathways within two spatially proximate locations in the dryland setting of Laikipia County, Kenya. Both sites, Thome and Wiyumiririe, were opened up for settlement at roughly the same time, belong to the same administrative unit, and fall under the same national policy remit. Whilst Kenya's policy for arid and semi-arid lands tends towards a 'one-fits-all' solution across geographical regions, the objective of our study, therefore, is to identify and explain the conditions for site-specific variations in livelihood pathways. Building upon a combination of remote sensing analysis, community group discussions and expert interviews the study aims at establishing locally contextualised entry points from which to enhance viable livelihood pathways in the drylands. Our findings show that Thome's contiguity with areas of open access and its position next to a wetland, the Ewaso Narok swamp, has led to heightened insecurity and ongoing conflicts over land-use rights, with livelihoods tending towards an unsustainable use of the environment. Wiyumiririe, in contrast, benefits from a strong government presence as well as good access to several service centres, with its community having sustainably enhanced land-productivity and secured alternative off-farm incomes.

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1. Introduction

Drylands rank among the geographically largest, biologically least productive and demographically fastest growing biomes on earth (MEA, 2005). Livelihoods in these semi-arid and arid regions have evolved under variable, unpredictable and extreme environmental conditions (Huber-Sannwald et al., 2012). Within the Millenium Ecosystem Assessment (MEA) it has been stressed that livelihood activities in these regions tend to be more dependent on available ecosystem services than elsewhere. Land-use affects the drylands primarily in the form of land cover modifications, i.e. via subtle and gradual changes within one land-cover class (Lambin and Geist, 2006). Examples include vegetation loss due to overgrazing or thorny bush encroachment due to the abandonment of agricultural land. However, while human activities and environmental dynamics are deeply entwined, "drylands suffer from an exceptionally wide gulf between knowledge and policy or practice, as shown in many interventions that have not succeeded" (Mortimore et al., 2008, p 73).

There is one major reason for this gap in knowledge and practice that challenges the twin objectives of achieving sustainable land-use and improved livelihoods. Many local land-users in dryland areas are marginalized, not only by distance and topography, cultural and lingual barriers or access to resources, but also institutionally in that they are often not party to the policy decisions affecting their livelihoods (Whitfield and Reed, 2012). As a consequence of this multidimensional marginalization, site-specific environmental knowledge and the aspirations of resident populations remain largely unconsidered within expert assessments and management strategies. This is surprising in view of the increased emphasis on the importance of participatory approaches (Kok et al., 2007), which recognize that rural communities should not be imagined as homogenous actors facing similar opportunities and challenges. In other words, even within a small geographical region a high degree of socio-ecological diversity may exist. Nevertheless, external stakeholders often tend to simplify the relationship between land-users and environmental health, where blame for biophysical degradation is often placed on local users (Forsyth, 2003). While such unidirectional explanations still inform policy-making, they have meanwhile been challenged by studies stressing the need to integrate scientific analysis with locally-contextualized understandings (Reed et al., 2007; Stringer and

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Reed, 2007).

Reynolds et al. (2007) have outlined an integrative analytical framework for the identification of problems and the implementation of opportunities in the drylands. Their 'Dryland Development Paradigm' states that issues such as land degradation can neither be framed in terms of a single measure nor solved through a universal policy principle. Rather, a key objective is to examine the close interaction between biophysical and socio-economic factors, which is inherently uncertain and indeterminate. This makes it difficult to establish robust scientific projections of land-use and land-cover trajectories without allowing "people to explore problems in their own words" (Reynolds et al., 2007, 850). Put differently, it is necessary to consider the practices, values and aspirations of local stakeholders. This focus encourages scholars to complement the numerous accounts of negative trends, most prominently on desertification, with studies foregrounding how local people harness their endogenous capacities and capitalise on scientific advances to successfully implement viable livelihood options in the dryland regions of the world. Whilst there are few in-depth analyses, Adeel and Safriel (2008) provide some general insights on a number of positive case scenarios from the global drylands.

In building upon such empirical evidence, Safriel and Adeel (2008) introduced the Dryland Livelihood Paradigm (DLP). This paradigm presents a new take on the much-discussed poverty-degradation spiral in drylands and specifies two possible livelihood pathways with two scenarios each. The first of these pathways portrays dryland communities falling into poverty, often accompanied by conflict and violence. In its first scenario increased population density becomes a problem when it begins to inhibit the ability of a land-use system to meet livelihood needs, resulting in overexploitation, disputes over resources and increased impoverishment. In a second scenario, communities maintain a steady state of production, yet still remain in poverty due to their multidimensional marginalization. In contrast, the second pathway allows communities to establish livelihoods that are both economically and environmentally viable. In its first scenario people adopt strategies to improve the productivity of their land, especially through investments in technological innovations that foster sustainable practices of resource use. The second scenario describes a transition that makes people independent of the agro-ecological potential of their land, for example through off-farm employment.

We adopt the DLP in examining two spatially proximate study sites that were opened up for settlement at roughly the same time. Both sites are located within Laikipia County, a rural area northwest of Mount Kenya. They thus belong to the same administrative unit, and also fall under the same national policy remit. Kenya's policy for arid and semi-arid lands still tends towards a 'one-fits-all' solution across geographical regions (Odhiambo, 2013). With the case example of two spatially proximate areas, the objective of our study, therefore, is to identify and explain the conditions for site-specific variations in livelihood pathways. Through a combination of remote sensing analysis, community group discussions and expert interviews we aim at establishing locally contextualised entry points from which to enhance viable livelihood pathways in the drylands.

2. Study area: Socio-ecological setting and settlement history

The two study sites of Thome and Wiyumiririe Sub-location are located in Laikipia County (Fig. 1). The County covers an area of about 9700 km^2 in north–central Kenya, encompassing a plateau of undulating low hills at elevations between 1500–2600 m a.s.l. It straddles the equator and lies between latitudes 0°52′N and 0°17′S and longitudes 37°0′E and 36°0′E. From its eastern boundary on the leeward slopes of Mount Kenya (5199 m a.s.l.) it stretches southwest to the slopes of the Nyandarua Ranges (otherwise called Aberdare Ranges) with Mount Satima (3999 m a.s.l.) as its highest peak (Nyandarua County), west to the Rift Valley escarpment (Baringo County) and to the arid plains in the north (Samburu and Isiolo Counties). Annual rainfall patterns are bimodal, with the 'long rains' falling between April and June, and the 'short rains' between October and December. However, rainfall is generally erratic and may fall at any time of the year. Both the Nyandarua Ranges as well as Mt. Kenya exert a strong influence on rainfall distribution, ranging from between 750 and 900 mm in the southern part of the County to 300 mm in the lower, northern part (Gichuki et al., 1998). Precipitation also varies in duration along the same gradient. Daily temperatures vary with altitude and season; with a mean temperature of 24 °C, the mean minimum and maximum temperatures are 10 °C and 35 °C respectively (Kohler, 1987). The spatio-temporal distribution and intensity of precipitation is a key variable that influences the agro-ecological potentials of the area. Most of the County falls within the semi-arid and arid agro-ecological zones, with small areas on the foot slopes of the mountains classed as sub-humid (Sombroek et al., 1980).

By the beginning of the twentieth century large swathes of Laikipia were used as pastoral grounds by the Maasai. At that time much of Laikipia was covered with fire-modified Acacia bushland and grassland, which succeeded what was once largely Afromontane cover (Taylor et al., 2005). The community managed land-use system changed with colonization, as the British forced the pastoralists out in the early 1900s and occupied the area, establishing large-scale ranches for beef production under European land management procedures. With Kenya's independence in 1963 came huge pressure to re-settle landless peasants from other, more densely populated areas of the country. This demand for land was met through government endorsed land re-distribution programmes, which in Laikipia led to a radical transformation of land-tenure as several ranches were bought and sub-divided into smaller plots. Such was the demand that many of the prospective settlers purchased land without once having visited its location (Kohler, 1987). As a result largely of in-migration, population numbers in the County increased from approximately 60,000 in 1960 to 399,227 in 2009 (KNBS, 2009). With the agricultural potential of purchased land differing greatly across Laikipia, a settlement pattern that varied both spatially and temporally emerged. Migrants settled more favourable areas first, eventually forming an arc around the eastern, southern and western boundaries of the County (Wiesmann, 1998). Differences in ecological zones have implications for the potential of agricultural use in each area. Wiyumiririe Sub-location was one of the earliest areas to receive migrating settlers. It has a relatively favourable agro-ecological potential, a high population density, it is close to areas of in-migrant origin, and it is located along one of the few major roads in the County. Thome Sub-location, on the other hand, has a lower agro-ecological potential, a low population density, poor road access, and initially received lower numbers of settlers.

Thome, located at an altitude of 1800 m a.s.l, and Wiyumiririe, located at 2200 m a.s.l, are situated within 40 km of each other. Yet, despite their geographical proximity there are some conspicuous ecological differences. This is typical in highland–lowland contexts, where distinct ecological changes occur across vertical gradients within proximate distances. The FAO classification of agro-ecological zones is designed to show the viability of major food crops and population-supporting capacities for the tropics (Sombroek et al., 1980). According to this classification, Thome falls within the upper midland semi-arid Zone 5 with a mean annual rainfall of 600–700 mm, while Wiyumiririe falls into the lower highland semi-arid Zone 5 with 800–900 mm. Flury (1988) further

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