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Pastoralists' perceptions on development measures to increase resilience in drylands of Northern Kenya: the case of Borana pastoralists in Moyale

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Abstract

When representing land-use systems in arid and semi-arid lands (ASALs) as social-ecological systems we stress the interrelationship between the social and the ecological system components, and recognize that the land- users are central to the system's performance and development. Production environments in ASALs are characterized by high temporal and spatial variability in resource availability, which is taken into account in the production principles of the land-use systems geared towards resilience. Due to various climatic, ecological, economic and policy related factors, the poorer class of the land-users face increasing household vulnerability. This means that they either can no longer conduct measures geared towards resilience at household and also community level, or that these measures are not any more effective.

In the study in Marsabit and Turkana county in Kenyawe assessed how land-users belonging to poor and medium wealth classes perceive changes in their livelihood systems. We present results obtained from livelihood and asset analyses, strategy discussions and semi-structured and narrative interviews. Results focus on changes in the households' asset base and on the perceived reasons for increased vulnerability. Furthermore we present the development measures at household and community level that are proposed by the land-users to increase the resilience their livelihood systems. We emphasize that the conceptualization of these measures must take the perspective of the land-users into account; this means that they need to be discussed, planned, implemented and monitoredtogether with the land-users to achieve sustainable impact.

1. Introduction

When representing land-use systems in arid and semi-arid lands (ASALs) as social-ecological systems we stress the interrelationship between the social, economic and the ecological system components, and recognizes that the land-users are central to the system's performance and development. Production environments in ASALs are characterized by high temporal and spatial variability in resource availability, which is taken into account in the production principles of the pastoral land-use systems that are geared towards resilience.

A resilience assessment focuses on identifying those components and interrelationships in a social-ecological system that allow the livelihood system to maintain its function despite stresses and shocks.As pastoral systems are adapted to rainfall variability, they are able to absorb disturbancesfrom rainfall variations to a certain degree, and still maintain their function. The function of a pastoral system is to provide livelihood to pastoral households by making use of livestock as a production asset to produce livestock-based outputs. The input consists mainly of natural resources that include vegetation and water, whose availability shows high variation both in space and time. The livelihood outcome should meet the (relatively stable) household requirements over time. Hence the principle of a pastoral production system is to derive a stabilized outcome from

a highly variable environment. The ability of actors in asocial ecological system to influence the resilience of the system is called their adaptive capacity. Adaptive capacity has to do with their capacity to learn and innovate, which then depends on their capital endowments.

Due to various climatic, ecological, economic and policy related factors, the poorer class of pastoral land-users face increasing household vulnerability. This means that they either cannot perform measures geared towards resilience at the household and also community levelanymore, or that these measures are no longer effective.

The aim of this paper is to assess how pastoral land-users belonging to poor and medium wealth classes perceive their current livelihood systemsin Marsabit and Turkana counties in Kenya. We focus on their perceptions of theirasset endowments and how these have changed over the years. Furthermore, we established which measures they think will be the most suitable to improve their livelihoods and how such measures can be supported by development agencies.

2. Material and Methods

Turkana and Marsabit counties are located in the northern part of Kenya and fall within arid and semi-arid agro-ecological zones, and as such can be classified as drylands. They receive an annual rainfall of up to 300 mm in the arid areas and up to 600 mm in the semi-arid areas. However, due to high ambient temperatures, the evapo-transpiration can reach 3000 mm per year, thereby causing a moisture deficit for the better part of the year. Rainfall follows a seasonal pattern and is bi-modally distributed with usually one or two rainy seasons per year. In a year with good rainfall in Marsabit County, there are 4 months of rainy season (e.g. April/May and November/December) and 8 months of dry season. However the probability of failure of one of the two rainy seasons is high.

In November 2014, in the frame of a contract for GIZ, 6 researchers conducted fieldwork for a total of 150 days covering pastoral, agro-pastoral and fishing communities in Turkana and Marsabitcounties including territories where Rendille, Gabra, Borana and Turkana ethnic groups make their livelihoods (Kaufmann et al., 2015). In this paper, we present the results obtained from the pastoral communities in Turkanacounty and the Borana pastoral community in Marsabit county. Data were collected forlivelihood and asset analyses (4 group sessions with Borana pastoralists inMoyale sub-county of Marsabit and 6 group sessions in Turkana county), strategy discussions (2 in Moyalesub-county and 6 in Turkana county) and semi-structured and narrative interviews (6 interviews in Moyalesub-county and 11 in Turkana county). Data were collected from households of poor and medium wealth. Poor households were defined as those that depend on external support for at least 6 months of a year. Medium households are those that generally generate a sufficient livelihood, but may also depend on external support during crisis periods.

The livelihood analysis was done by using a matrix where livelihood activities, use of assets and resources, and outcomes of the respective activities were documented. Moreover, current constraints, opportunities and possible supportive measures were discussed. In the household asset analysis, the results on relevant assets, resources, and capital endowments were used to discuss the importance of each item with regard to successful practice of different livelihood activities and the ability to withstand the effect of droughts, so that the household is resilient. Furthermore, participants were asked to engage in dialogue regarding which assets are lacking for the successful conduct of livelihood activities and to identify which external support measures they think could help

them to build up/gain those assets. A spider diagram was drawn to reveal details regarding access to and ownership of relevant assets by different social groups and to discuss change over time. This triggereddiscussionsabout the factors that led to changes in the access to different assets, and on possible external supportive measures to build up/gain important assets.Narrative interviews were carried out for an in-depth analysis of household accounts of families who have recently lost their livelihoods. Narrative questions were asked to get the whole story of how the livelihood was lost. Additional semi-structured questions were asked to emphasize specific factors that led to the destitution of livelihoods, and factors that would have allowed for the creation of coping strategies to maintain these households.

The group sessions and individual interviews were recorded with audiorecorders, while detailed hand-written notes were also taken. All notes were transferred into a digital format and aselected interviews and sessions were fully transcribed and translated into English. The remaining sessions could be listened to again when need for clarification or more details arose. The information obtained betweenthe different tools was structured and sorted according to the topics. When possible, it was also summarized and presented in tables.

3. Results

Change in households' asset base and reasons for increased vulnerability

The assets and resources of the Boranaand Turkana pastoral groups are divided into household assets like livestock, labour, and capital, andcommunal assets such as resources that areaccessed by community members like pasture, water, and markets. The wealth of a household is largely determined by ownership of animals, both in diversity of species and in livestock numbers. Wealth status has some influence on the access and use of communal resources. Households with smaller herds make less use of communal assets like pasture and water. However this is not only a quantitative restriction but also a qualitative one. Their animals have restricted access to better quality pasture, as their herd sizes are too small to be sent from the settlement to the satellite camp where animals have access to better pasture.

Change in asset structure of Borana pastoral land-users in Moyale sub-county

Asset structure and change in assets was assessed with poor and medium households separately. Quantification was obtained using the 10 stone method which offers a proxy for the perception of change by the land-users. Ten stones indicate very good access to a resource or high availability of the asset for the household. The figures are given as percentages. The assessment of the change in the asset availability was similar for poor and medium households (Table 1).

Asset category	Assets	2004 (%)	2014 (%)	Reasons for the change
Natural	Pasture	60	30	Recurrent drought, influx of livestock from other areas
Physical	Livestock	60	35	Recurrent drought – especially cattle affected Losing animals to raids
	Water facilities	20	50	Increase in water points
	Market access	30	20	Reduced livestock prices, few buyers and non-functional markets
Human	Labour (herders)	80	40	Formal education contributes to disinterest in livestock, increase in drug abuse among youth in settlements
Financial	Livestock sales	40	20	Poor prices of livestock due to few traders
	Credit	0	20	Credits for foodstuff from shop keepers
Social	Social network *Dabare*	40	20	Wealth of households generally decreasing, eroded social cohesion
	Fundraising (Harambee)	0	40	Increased education costs, limited income from livestock

Table 1: Change in assets of poor and medium Borana pastoralists in Moyale sub-county

Multiple and overlapping reasons drive changes inassetavailability in Moyale. For example, the availability of pasture is decreasing due to reducing rainfall and increasing competition and because of an influx oflivestock from neighboring ethnic groups and from Ethiopia.Simultaneously, the livestock population has been on the decline. Borana pastoralists largely keep cattle which have been the most affected by changes in rainfall pattern because of their poor resistance to drought and water scarcity. With fewer animals surviving from one season to another herd growth is affected, and people generally have no capacity to buy to restock. Animals are also lost when inter-ethnic conflict occurs.

The asset of water facilities has also changed. NGOs and government have installeda number of pans in recent years, but these surface water collection points are affected by inadequate/irregular rainfall. Due to this, they do not provide water long into the dry season. Therefore, the pressure on existing boreholes is high, causing water levels to go down.Sometimes people must wait overnight for the water trucks to fill up. The cost of this water is expensive.

Participants described how access to markets has changed. They indicated that market access has become poor because of the decreased number of buyers.Non-functional markets have been installedwith only physical market infrastructure and no trading activitiesorganized. Pastoralists described that traders used to come around to buy livestock but presently they no longer do. Currently, there are only few livestock traders in the area. Furthermore, livestock do not have market during extended dry periods and droughts.

The asset of labour in the pastoral system is mainly driven by herders.People who perform herding activitiesare an important asset because the pastoral production system islabour and knowledge intensive.The number of good herders have decreased and this has been attributed to three main reasons; increasing number of children attending school, ageing good herders and changed lifestyles

including drug use by herding youth. The cost of hiring herding labour has gone up while livestock numbers has gone down.

The above changes in assets, have also contributed towards a decline in the social security system referred to as *Dabare*.There are fewer households have herds that go beyond their own household needs and hence, not as many as before are able to assist others. The social cohesion is also eroded by changes in lifestyle. For medium households, fundraising (*Harambee*) for school fees has become important phenomenon especially when needs arise such as for high and college/university education fees.There is more access to credit. Households borrow foodstuffs on credit from small trading centre developing in parts of the areas.

Change in asset structure of Turkana pastoral land-users in Turkana county

In Turkana county, Turkana pastoralists have access to and make use of similar assets like in the Marsabit county. However availability of assets and changes are different from the situation in Marsabitcounty. Furthermore availability of certain assets or resources also varies to some extentdepending on the specific locations within the county.

Asset category	Asset	2004 (%)	2014 (%)	Reasons
Natural	Pasture	75	50	Drought, influx of livestock, tsetse and tick infestations, invasion by *Prosopis Juliflora*, land-use competition due to oil exploration and demarcation of wildlife reserve
Physical	Livestock	50	20	Increased drought frequency
	Water facilities	0	15	Mainly pans installed by NGOs
	Market access	5	5	No change observed
	Veterinary services	30	5	Access deteriorated especially in areas towards the Ugandan Border
Human	Labour (herders)	100	50	Youth with formal education abandoning the livestock camps
Social	Peace and security	0	20	Cross-border peace initiatives between communities
	Social networks*	15	5	Widespread poverty

(*medium wealth households reported reduction from 60 to 30)

Table 1: Change in assets of poor and medium Turkana pastoralists in Turkana county

Pasture resources have diminished, which are generally attributed to frequent droughts. The congregation of other Turkana territorial sections in specific settled areas has put additional pressure on the surrounding pastures with overuse leading to degradation. Access to pasture in some areas is hindered by tsetse fly and tick infestation.In others, access is severely limited by the extensive invasion by *ProsopisJuliflora*. Some pasture areas become inaccessible as a result of on-going oil exploration and planned wildlife reserves. In some areas, there is access to cross-border pasture facilitated by current peaceful coexistence between pastoral communities of South Sudan and Uganda. This decrease in pasture resources coupled with emerging complex livestock diseasesand frequent droughts, has led to a decline in the overall livestock population.

Water facilities have increased slightly because water pans and boreholes have been constructed by NGOs and government. However, numbers vary between different locations in the county. An

unintended consequence of theintroduction of new small water pans in many different areas leads to simultaneous pasture depletion across many areas, while also undermining security arrangements. Pastoralists have additional access to water on the Ugandan side due to their now peaceful co-existence with theseneighboring communities.

Market activities have remained unchanged.In the two pastoral study areas included in our research, access to livestock markets is still poor. The main livestock markets are still the distant Kakumaor Lokichoggio markets and the Ugandan markets. Despite establishing a sale yard at Oropoi town centre, there is no functioning livestock market developed in the place and hence, there is a lack of buyers and livestock are sold for low prices.

Access to veterinary service is uneven. In some areas (e.g. Lokipoto) where 10 years ago pastoralists had access, it has now ceased completely, in other areas (e.g. Oropoi) there is a slight increase in veterinary services.Disease surveillance, reporting and investigations (sample taking) were reportedly poor and lacking in most areas. Pastoralists experience the emergence of new (complex) diseases and face the problem of low quality ineffective and expensive veterinary drugs. There are only erratic vaccination services offered by the Kenyan government.

Unlike Marsabit, on average, there is still enough labour for livestock management. In some areas pastoralists reported a high number of herders vis-à-vis the household livestock holdings which has to be utilized in other ways that are beneficial to pastoral livelihoods.However, the land users estimated that there are only half as many herders now as there were ten years earlier. The drop in labourin other areas was generally attributed to insecurity but also to school going youth adopting modern lifestyles and abandoning the livestock camps.

In some areas, there is a marked increase in security linked to peace initiatives between the waring communities. However, there are still cases of raids occasionally reported. Generally, the demand by pastoralists to position security personnel at strategic hot spots along the international borderto improve security has not been adequately addressed by government. For example, Kenya Police Reservists (KPR) have been recruited,but only in very low numbers.SA security border post has been established along the Kenya-South Sudan border, but it is understaffed.

Over the past 10 years, a drop in social support was reported. This was attributed to increasing and widespread poverty occasioned by the complex interrelationship between the increasing frequency of droughts, livestock diseases and insecurity due to raids.

Pastoral land-users proposals for measures to enhance resilience

In the strategy focus group discussions, pastoralists indicated measures that they think are suitable to improve their livelihoods in a sustainable way to make them better prepared to deal with stresses and shocks. They gavethe below mentioned measures to strengthen their resilience at the community level which serve to improve the conditions for profitable livestock production. These measures are geared directly towards improving production through better access to pasture and water for the animals, or towards reducing losses experienced by livestock keepers that may occur from disease or from inadequate marketing possibilities that are responsible for economic losses.

The proposed measures are not new. However we want to stress that it is equally or even more important to take care regarding *how* the measures are conducted than on *what* measures are conducted. In the past, measures are often designed by outsiders (although experts in their fields)

leading to the fact that the specific contextual requirements were often overlooked. As the pastoralists act and produce in these systems, they have in-depth knowledge of these contextual conditions. Therefore we would like to stress that instead of proposing an intervention, we propose innovation processes that build on knowledge both from the pastoral land-users (internal professionals) and the development professionals (external professionals).The knowledge and experience of the land-users is important to specify the problem and co-decide which kind of measure should be tried out and how it can be conducted so that former failures are not repeated.

The measures proposed below can also be classified as organizational innovations. Technical innovations or requirements (such as drilling a borehole) should only follow the organizational processes required involving participatory decision making regarding use and management of technical innovations.

Improved rangeland management

In order to increase the availability of pasture and hence feed to their animals, pastoral land users stressed that measures are needed that:

- Secure access of different pasture areas against internal and external competitors
- Enforce resource use rules, for instance for dry season grazing areas but also with regard to livestock influxes from other areas
- Identify appropriate governance measures that synergise governance by traditional and new institutions
- Help to recover areas that suffer from*Prosopisjuliflora* invasion
- Improve water availability strategically in some grazing areas after detailed community consultations
- Monitor and evaluatetheimplementation of the rangeland use plans and their impacts

These measures should be conducted in close collaboration with pastoral land users, because sustainable rangeland management needs to build on their knowledge of the resources. It can be enhanced through participatory rangeland planning processes that can make use of information available in existing GIS systems for the respective landscapes.We recommend that external support should be deliberately targeted to strengthen local strategies for resource use including fodder use deferment and planning time to fallow some sections of rangeland to provide dry season fallback.

Community based rangeland management plans alsoformthe basis from which to identify areas where water restrictions are affecting pasture utilization. As rangeland management and use is highly affected by the presence or absence of water during specific times of the year, decisions about the installment of water sources and the kind of sources need to be made alongside decisions about the role of the respective pasture unit for the whole grazing area.

Bio-cultural Community Protocols (BCPs) present an avenue for mainstreaming community institutions (norms, values and customs) to strengthen community capacity and to promote self-organization to manage their resources. BCPs are means, by which local communities can articulate their governance and stewardship of their localities, affirm their knowledge and strategies for resource use and assert their rights under customary, national and international law. BCPs are recognized in the Nagoya Protocol on Access and Benefit Sharing (ABS), an internationally binding treaty adopted by the 10th Conference of the Parties to the Convention on Biological Diversity in

2010. In Turkana County, for example, the community may need to develop such a protocol to safe guard their interest in land and also to have in place a mechanism for sharing benefits of oil wealth.

A successful example of community based rangeland management and the use of Biocultural protocol can be visited in Garba Tula and Kinna (Isiolo County, Kenya) where a community based organization formed that integrated governance of a customary institution and new resource institutions.

Veterinary services

As livestock is the main productive asset of pastoral land-users, measures to secure animal health were given high priority by pastoral land-users, who, for decades, have experienced that veterinary services are inadequate in pastoral areas. The proposed measures that:

- Improve timeliness of service delivery through training and engage animal health workers
- Improve access to high quality animal drugs and vaccines by establishing vaccination crushes and veterinary input supply outlets at strategic places also along migration routes
- Implement regular vaccination campaigns and also emergency vaccinations in case of disease outbreaks in the wider area
- Improve disease surveillance and investigation (taking samples during outbreaks, analyse and give feedback to livestock keepers)

Basic health care, such as vaccination campaigns and fast and targeted reaction on disease outbreaks are fundamental to support pastoral producers. Classical veterinary services in which sick animals can be diagnosed and treated by qualified staff are very expensive to establish in the vast areas with low population density. Hence different set-ups need to be explored. Examples exist of private animal health workers that rotate between main watering places in order to make use of regular directed herd movements to the wells instead of requiring pastoralists to travel with their animals to settlements or towns. Other mobile service delivery systems could be explored that make use of animal migration routes, as proposed in the Turkana area. Nowadays with the widespread use of mobile phones, animal health workers can be informed about disease outbreaks. Also, payment of drugs can be organized through mobile phone based cash transfer (M-Pesa), so that, even when herders are far away from settlements, they can have access to financial resources. The improvement of the availability of quality drugs is another important issue.

Improve livestock market and value chain

Access to, and participation in well-functioning livestock markets is important for improving household revenues and household resilience. Pastoral land-users stressed that this will have an effect on their income and, if proper prices are paid, it also increases their interest in selling animals and encourage them to save or invest the capital in other forms. They proposed the following measures:

- Promote market access in areas that lack traders or markets, for instance by organising periodic and rotational markets and inviting capable traders. Incentives (subsidies) could be offered to traders to visit far-away areas
- Support producer groups to engage in livestock trading activities such as through grants to support their activities
- Facilitate new traders by providing training and credit
- Transport subsidies should be given to traders during droughts

- Promote fattening of lean animals through supplementary feeding using agricultural by-products

In the past decades, government and donors have repeatedly supported livestock marketing initiatives in pastoral areas but with the perception that market access improvement requires more modern market infrastructure such as sale yards or holding grounds. However, most often this infrastructure tends not to be used. We suppose that there was a lack in consideration of the organizational efforts needed to start new markets. Further, it is contra-productive to start many markets in different areas and to have frequent market days, as the number of already-established interested traders is limited. We propose an emphasis on the organizational aspects needed to initialize and maintain marketing activities such as through stakeholder platforms that include the different actors along the livestock value chain.

Monitoring and evaluation of measures to enhance resilience

Monitoring and evaluation (M&E) of supported measures in pastoral areas is constrained by a number of factors, e.g. far distances that make it an expensive undertaking. Current M&E is however not making use of the monitoring capabilities of the pastoral communities themselves. Pastoralists stressed, 'that supervision of the work is essential, so that if things go wrong they can be corrected'. Therefore supervision should be performed from outside but also from within in the form of participatory monitoring and evaluation. The latter could be achieved by establishing monitoring and evaluation committees from the targeted communities that report both to their communities and also to the development agency. Involving the communities in "supervision" will reduce the risk of inefficient, superficial or even corrupt interventions.

In order to achieve sustainable outcomes, we emphasize that the conceptualization of these support measures must take the perspective of the pastoral land-users into account.This means that measures need to be discussed, planned, implemented and monitoredtogether with the land-users in order to achieve sustainable impacts.

4. References

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