Over 80% of Kenya’s land surface is categorized as arid and semi-arid lands (ASALs). The main economic activity in these areas is livestock keeping mainly through pastoralism. In Kenya, pastoralism accounts for over 70% of total livestock production. However, the ASALs are very vulnerable to climate shocks (droughts and floods). The livestock sector in ASALs is greatly affected by drought and climate change. Scarcity of pasture and feed resources leading to starvation account for up to 80% of the leading causes of livestock loses in the ASALs. A study by Ogotu et al. indicates declining cattle population in the ASALs by 26.5%. This decline is mainly attributed to scarcity of grazing resources. In addition, an increasing number of poor pastoral households are at risk of losing their livestock capital and dropping out of pastoralism if feed resources remain scarce and inaccessible. This would mean less beef available in the country.

The occurrences, intensity and frequency of droughts have increased with significant impact on pastoral livelihoods. For example, pastoralists lose up to half their herds during droughts that are now occurring every 3 to 4 years. In 2016–2017 severe drought sparked sporadic resource conflicts in Laikipia County. Armed cattle herders invaded private ranches, wildlife reserves and private farms in search for pasture for their livestock. Unending drought emergencies, coverage and impacts continue to raise concerns over the effectiveness of the resilience measures put in place over the years. Kenya is...
Kenya faces major forage deficits estimated at 70% of the total annual fodder requirements of about 5.5 billion bales. The deficit is attributed to inadequate fodder production and conservation. This is coupled with overgrazing, poor land management practices and effects of climate change among others. Availability of sufficient and quality pasture and fodder is one of the key pillars of livestock production in the dryland regions of the country. With sufficient fodder and water resources, droughts do not have to result in emergency situations.

Healthy livestock steadily gets through stressful climatic conditions, and supply milk and meat to households, an important dietary component thus enhancing food and nutrition security.

The role of pasture and fodder production in enhancing the resilience of the livestock production seems to be ignored. Generally, the current policy is in support of promoting traditional range use and grazing management. Thus, where land is severely degraded current policies in fact hinder meaningful production. Furthermore, the current policy is not robust in relation to providing a favorable environment for private investment in commercial fodder production or in supporting the fodder value chain in ASALs. Herein lies a major policy gap. The absence of a policy specific to fodder value chain in ASAL counties hampers investment to spur its commercial production and conservation.

Strategic investments in pasture and fodder production and conservation through a value chain approach will ensure that livestock productivity is increased and maintained even in the wake of droughts. Increased livestock production generates a tradable surplus that can stabilize households’ incomes.

**COMMERCIAL FODDER PRODUCTION AND CONSERVATION:**
A new dawn for livestock production in the ASAL’s

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Strategic investments in pasture and fodder production and conservation through a value chain approach will ensure that livestock productivity is increased and maintained even in the wake of droughts. Increased livestock production generates a tradable surplus that can stabilize households’ incomes.
All the selected grass species gave a positive NPV and GM and a CBR above one. This means that the costs invested in range rehabilitation or the improvement of pasture through reseeding are recovered and high benefit realised. The discounted net benefit (NPV) was far above zero implying that it is worthy investing in restoring and improving pasture for enhanced future benefit, and especially if directly connected to the livestock value chain.

In addition, fodder is highly profitable and can be undertaken as an agribusiness (Table 1). This has been demonstrated by fodder farmers, especially in Baringo and Makueni counties among others.

Based on the results of a cost-benefit analysis undertaken for a commercial pasture production enterprise (Table 1), we concluded that:

- All the selected grass species gave a positive NPV and GM and a CBR above one.
- This means that the costs invested in range rehabilitation or the improvement of pasture through reseeding are recovered and high benefit realised.
- The discounted net benefit (NPV) was far above zero implying that it is worthy investing in restoring and improving pasture for enhanced future benefit, and especially if directly connected to the livestock value chain.

### Table 1. Estimate of cost and benefit for seed and hay production of four grass species per hectare

<table>
<thead>
<tr>
<th>ITEM</th>
<th>GRASS SPECIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CHRO</td>
</tr>
<tr>
<td>Gross Margin (GM)</td>
<td>108,806.20</td>
</tr>
<tr>
<td>Cost Benefit Ratio (CBR)</td>
<td>3.1</td>
</tr>
<tr>
<td>Net Present Value (NPV)</td>
<td>83,697.10</td>
</tr>
</tbody>
</table>

*CHRO = Chloris roxburghiana, CECI = Cenchrus ciliaris, ERSU = Eragrostis superba, ENMA = Enteropogon macrostachyus*
What can ASAL counties do?

i. Give feed security the same level of attention as food security because for pastoralists/agropastoralists, the two are intertwined - you cannot talk of food security when animals that they depend on for nutrition (meat, milk, blood, fat) are dying out of starvation.

ii. Reposition the fodder value chain by strengthening investments and agribusiness enterprises (individual farmers, pastoral groups or companies) in fodder and fodder seeds production in ASAL counties.

iii. Facilitate the mapping of fodder production areas in the ASAL counties for integration within the county spatial plans/maps.

iv. Review and develop supporting policy regulations and institutional framework for fodder production, conservation and marketing at ASAL county levels.

v. Strengthen collaboration among all fodder value chain actors including national and county governments, development partners, private sector, farmers, academic and research institutions to synergize efforts towards curbing the national fodder deficit.

vi. Provide funding to scale up fodder commercialization for increased fodder production and pasture land rehabilitation to ensure that the country has sufficient supplies of quality, safe and affordable fodder.

vii. Convene annual county pasture production forums and national fodder conferences to review milestones achieved, provide learning and exchange platform and ideas sharing on fodder strategic interventions.

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