Community-based Cost Benefit Analysis (CBCBA)

Findings from DFID Kenya's Arid Lands Support Programme

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Executive Summary

The present report sets out the findings of a cost benefit analysis conducted in northern Kenya in early 2016. This analysis examined seven resilience interventions delivered under DFID's Arid Lands Support Programme (ASP) between 2013 and 2016. These interventions are being implemented by seven INGOs in four counties of northern Kenya, namely Mandera, Marsabit, Turkana and Wajir. The INGOs whose work was examined are BOMA, CONCERN, Oxfam, Save the Children, Solidarites, Trocaire and World Vision. This study was conducted using the "community-based cost benefit analysis (CBCBA)" methodology, which can be used to inform decision making about development investments and programming.

Various aspects of the background context are critical to understanding both the challenges faced by the ASP target communities and the impacts of interventions to support them. Several different types of evidence are provided for each aspect of the background context, namely the testimony of both the target communities and the project staff who work with them, relevant evidence from the literature, and observations from the CBCBA analyst.

Three distinct types of data were collected as the basis for analysing the impacts of the ASP projects, namely data on qualitative benefits, quantitative benefits and costs. Quantitative evidence of benefits provides rigorous and comparable measures of benefits delivered, thus offering a powerful way to learn from project experience and inform future interventions. Yet it is important to consider these quantitative measures in conjunction with qualitative findings, in order to ensure a holistic and balanced picture of net impacts. Qualitative evidence of benefits provides an imprecise yet nuanced sense of the how each project activity has impacted the target communities. Finally, data on relevant costs is needed to allow for comparing benefits with costs and calculating benefit-cost ratios. The main costs are usually those incurred by the organisation implementing the project, but can also include in-kind costs incurred by the target communities and the costs of other interventions that directly contributed to the beneficial outcomes being quantified.

The principal findings of the data analysis are a set of benefit-cost ratios. For each project examined, headline ratios are generated based on the core assumptions made for the project in question. An alternative set of ratios is also generated by rerunning the analysis using plausible alternative assumptions. The core assumptions reflect the most likely circumstances as things stand, while the alternative assumptions frame alternative scenarios of the policy or enabling environment.

Benefit-cost ratios have several major advantages as a basis for analysis notably that they are rigorous, readily understood and easily compared. Any benefit-cost ratio value of greater than one suggests an intervention whose benefits exceed its costs, and is therefore a worthwhile investment. These ratios also permit comparisons between different projects and project activities based on the size of these ratios.

Despite the utility of benefit-cost ratios, it is important to bear in mind that taking them as stand-alone measures could be misleading. The issue is that these ratios only provide a partial picture, given the complexity of applying cost-benefit analysis to interventions supporting vulnerable rural communities. Specifically, looking at headline benefit-cost ratios on their own overlooks how these measures depend on assumptions linked to policy levers, and how they fit together with qualitative impacts of projects. The danger of taking these headline ratios as stand-alone measures is that this could lead to prioritising 'quick fix'

project activities with clear-cut but limited potential. Crucially, this could also lead to overlooking activities that grapple with difficult underlying problems yet hold great future promise. In short, taking benefit-cost ratios out of context could lead to short-term solutions and a failure to tackle critical underlying obstacles to progress.

Subjective rankings are also provided to complement these quantitative benefit-cost ratios and reduce the chances of them being taken out of context. They seek to provide a global assessment of each prioritised project activity, and are generated by the CBCBA analysts to summarise the net picture emerging from the quantitative and qualitative findings. The rankings are made using a scale of 1-5, where 1 represents a low score (i.e., low net benefits) and 5 a high score.

In the core analysis, ratio values range from 0.6 to 9.1 for the priority activities examined. When alternative plausible assumptions are used, these values range from 0.4 to 18.1. Subjective rankings vary from 1-5, spanning the entire range of possible values.

These findings reveal that some ASP activities and projects have only modest benefit-cost ratios under their core assumptions, while others have high ratios. On the surface, these findings would suggest that the choice of which project activities to prioritise is clear. Yet such rapid judgements could be misplaced. In some cases, activities with low ratios in the core analysis may look attractive when the full array of evidence is considered. For instance, they may seek to address daunting challenges where progress is urgently needed but necessarily slow. As such, they could potentially help avoid large future costs associated with economic failures, or alternatively deliver large gains if needed institutional or policy support was provided.

The findings provide powerful evidence to inform future policy and programming for the ASP target communities. However, the net picture that emerges from this analysis is also multifaceted, including quantitative and qualitative impacts, a sensitivity analysis that varies key assumptions about the future, and a subjective ranking. Drawing specific conclusions for future actions based on this analysis would require careful consideration of these findings, ideally based on frank discussions among key stakeholders.

Several high-level lessons can be drawn from the analysis. In all cases, these lessons reflect common sense, yet the numbers put these observations into stark relief.

One lesson is that there is a large premium on making interventions that maximise the benefits delivered. One way to do this is to deliver benefits that last for an extended period of time, so that the benefits may be calculated over a relatively large number of years instead of for just a few years. Another way to do this is to find ways for the benefits delivered to disseminate beyond their target beneficiaries.

Another lesson is that there is a similarly large premium on making interventions that minimise intervention costs. Again, this is an intuitive point, but one that is starkly highlighted by the numbers.

A third lesson is that the numbers do not tell the full story, and must be considered in their wider context. A slavish reliance on quantitative measures of the initial implementation of project activities could give misleading guidance to organisations planning or funding interventions that aim to build the resilience of vulnerable communities. Fortunately, a careful examination of the qualitative data reveals when project activities are important even if the early benefits delivered are relatively small.

Finally, some project activities require institutional support for only a short time, while others need longer-term support. Those requiring longer-term engagement may generate relatively

low benefit-cost ratios initially, yet promise large benefits over time. Again, careful examination of the qualitative data in conjunction with the quantitative data can reveal where such longer-term engagement is worthwhile and where it is not.

A number of other lessons learnt are discussed as well, namely (1) the ASP projects are tackling daunting problems in different ways, (2) applying cost-benefit analysis in this context is challenging but worthwhile, (3) the evidence gathered tells a coherent story, (4) two promising types of intervention are commercialising livestock production and diversifying rural livelihoods, (5) interventions should build on local traditions where possible but depart from them when necessary, (6) to ensure potential opportunities are recognised, it is best to think in terms of both actual and potential outcomes.

The final chapter discusses several recommendations for future programming that emerge from the study. Each factor is first briefly described, and then elaborated using the voices of selected interviewees who made directly relevant observations. These differing voices provide a nuanced and multi-faceted view of each issue, and constitute a rich body of data to inform evidence-based programming. Recommendations included (1) increase fodder supplies via environmental rehabilitation; (2) target cultural beliefs that are undermining welfare; (3) support the commercialisation of livestock production; (4) support promising livelihood diversification options; (5) harness neglected opportunities within schooling; (6) address the underlying causes of ethnic conflict; (7) secure community ownership of interventions.

SECTION 1

Introduction

The present report sets out the findings of a cost benefit analysis conducted in northern Kenya in early 2016. This analysis examined seven interventions delivered under DFID's Arid Lands Support Programme (ASP) between 2013 and 2016 that aimed to strengthen the resilience of target communities to climatic shocks. These interventions are being implemented by seven INGOs in four counties of northern Kenya, namely Mandera, Marsabit, Turkana and Wajir. The INGOs whose work was examined are BOMA, CONCERN, Oxfam, Save the Children, Solidarites, Trocaire and World Vision.

This study was conducted using a methodology known as community-based cost benefit analysis (CBCBA). Specifically, the study applied the CBCBA tool that was developed under the present contract. The aim of the tool is to inform decision making about development investments and programming.

The seven projects examined by this study were designed to complement the Kenyan government's Hunger Safety Net Programme (HSNP). This social protection programme is already active in the ASP target counties, providing regular cash transfers to 100,000 households in this area as well as emergency support to up to 75% of its population in times of drought. The ASP projects operate on a smaller scale, but complement the HSNP by fostering promising livelihood opportunities for the target communities.

Activity	BOMA	CONCERN	Oxfam	Save the Children	Solidarites	Trocaire	World Vision
Addressing livestock health		X		X	X	X	X
Advocacy / government support		X	X	X			X
Breed improvement (i.e., goats)		X			X	X	
Conflict resolution						X	
Disaster risk reduction planning		X	X	X	X	X	X
Fostering specific alternative livelihoods			X	X	X		X
Business skills development	X		X				
Microfinance grants / loans	X	X	X	X		X	X[1]
Pastoral field schools		X		X	X	X	
Pasture management / cultivation		X	X	X	X	X	X
Producing livestock feed supplements					X		
Water development		X		X	X		

Table 1 Listing of the project activities carried out by the seven ASP partners (for details, see Annexes 4-10)

[1] Note: World Vision provides training only regarding microfinance, but not any funds either as grants or loans.

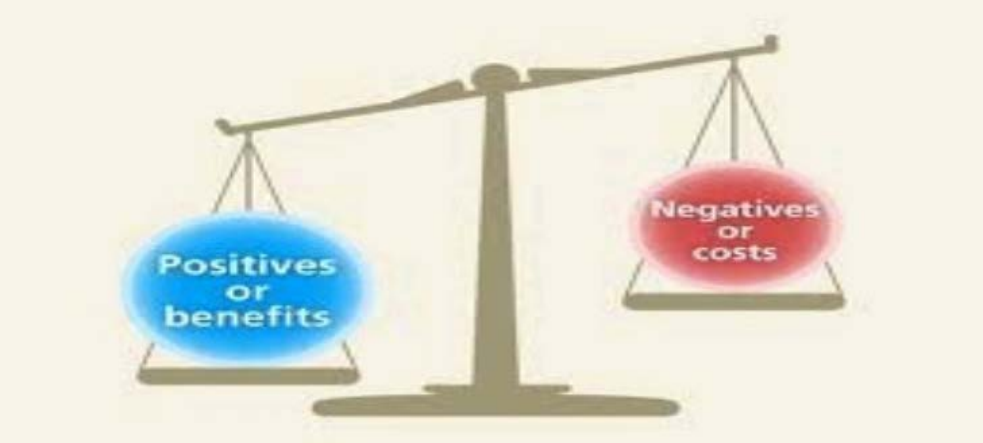
SECTION 2

Methodology

2.1 Overview of community-based cost benefit analysis

Cost-benefit analysis (CBA) is a procedure to inform decision making that involves tabulating the various costs and benefits of a given investment or intervention, then weighing them up. The image of weighing scales illustrates the essence of CBA. The key justification for using CBA as opposed to other types of analysis is that it can generate numeric performance measures that are both readily understandable and compelling to diverse audiences. Its power stems from the fact that weighing up costs and benefits is an intuitive concept that captures the way various entities (individuals, firms, governments) make decisions.

Figure 1 Image of weighing scales illustrates the essence of CBA



CBA produces simple measures to gauge the attractiveness of an investment decision, notably benefit-cost ratio (BCR) and net present value (NPV). Such measures lead to simple decision rules for whether or not to proceed with an investment or intervention, based on whether or not it delivers net benefits. Using this criterion, the basic decision rule for whether or not to proceed is BCA>1 or NPV>0. Critically, however, these measures can be used to compare competing investment options based on which promises to deliver the greatest benefits for the lowest costs.

Historically, CBA has primarily been used as a tool to help governments and businesses make decisions regarding major investments, such as infrastructure or manufacturing plant. Examples include whether or not a government should build a new bridge over a river, or whether or not a fizzy drinks producer should build a new bottling plant. In such applications, the data used in CBA tend to be either readily available from existing documentation or tangible and easily measured. These data typically involve either concrete measures of observable phenomena or rigorous estimates of future costs and benefits.

Nowadays, there is growing interest in using CBA to inform decision making in the international development space, though such work remains in its infancy. Notably, it has been used to inform resilience building or development interventions targeting vulnerable communities such as small-scale farmers. Application of CBA in these contexts differs sharply from the traditional uses of CBA. Notably, these contexts are characterised by major data gaps, even vis-à-vis basics like income, assets and expenditures. As such, demonstrating the benefits of an intervention in ways that are compelling to decision makers can be difficult, even when it is clearly highly beneficial to target communities.

CBA conducted in communities of small-scale farmers or pastoralists may be termed "community based cost benefit analysis", or CBCBA. The rationale for applying CBA in this context is that the governments, donors or NGOs seeking to help these communities must decide between competing programming options, and hence need ways to inform such decisions. CBCBA can help by learning from the experience of existing or completed interventions and generating quantitative measures of their impact. Potentially, it is a useful way to impose rigour and objectivity on investment and programming decisions.

CBCBA can be applied to different types of interventions targeting vulnerable communities in developing countries, including classical development, climate change adaptation and disaster risk reduction (DRR). Yet given the large and growing threat of climatic and disaster shocks to these communities, a key focus of CBCBA is assessing the efficacy of interventions that aim to build community resilience to these shocks.

2.2 Steps followed by the study

The CBCBA undertaken for DFID's ASP was conducted between January and March 2016. Three villages were included per project location of each ASP partner. Data collection in these locations were divided between two members of the team, who both conducted focus group discussions and key informant interviews. For further details on the methodology applied, see the "Community-based Cost Benefit Analysis Tool" developed under the current contract, which can be accessed at the following web address: http://www.evidenceondemand.info/CBCBA-tool-part-i-introduction. For further details on the analysis conducted for each of the seven ASP projects, please see Annexes 4-10.

We set out below the steps followed by the team for the CBCBA.

A. Initial consultations and document review

- Conduct initial key informant interviews with each of the 7 ASP partners and other key stakeholders.
- Gather and review relevant documentation from DFID, the ASP partners and other key stakeholders to both (1) provide relevant background and (2) identify data and analysis on which the CBCBA can build.

B. Planning primary data collection (conduct separately for each ASP partner)

- Stratify, if needed: Determine whether the partner's target population needs to be stratified in order to ensure that the population examined is roughly homogenous. For instance, if it includes one area where agro-pastoralism is the dominant livelihood and others where pastoralism is the dominant livelihood due to differences in rainfall levels between these areas, and then this would provide a basis for stratification. Where a project includes more than one stratum, select the stratum that covers the biggest part of the project's target population as the sample frame for the present study. Where stratification is conducted, adjust both the project costs and benefits accordingly.

- Select study villages: Employ purposive sampling to select three study villages in consultation with the ASP partner, based on the key factors that define how livelihood opportunities differ across the project area or selected stratum (e.g., distance from a main road or market, access to a water source). Select villages that are as representative as possible of the wider sample frame and include both 'more' and 'less' successful villages in terms of the project's target outcomes.

C. Focus group discussions (FGDs) in sample villages

- Request that village leaders help convene the FGD by inviting all interested villagers but ensuring key subgroups are represented (rich/poor, men/women, old/young, different ethnicities if relevant)
- Conduct the FGD, being sure to use open-ended questions to encourage villagers to share their experiences and observations, and ensure each question is addressed by diverse villagers. Ensure too that villagers understand the importance of providing accurate and honest information to help inform future interventions in the area. Begin by discussing they key challenges facing the village. Next, ask villagers to select the three project activities that are most significant to them, then to list the various benefits they deliver. Obtain qualitative benefits data in all cases and quantitative data where possible. Also request input on any adverse impacts. Finally, ask the FGD participants whether other interventions may have contributed to the benefits cited and if so how.
- Conduct a transect walk of the village accompanied by the ASP partner and a village leader, asking the villagers about notable observations and taking photographs.

D. Key informant interviews in the target counties

- Conduct in-depth interviews with each of the seven ASP partners and other key stakeholders.
- Identify other key informants in each project area in consultation with the ASP partners.
- Interview selected informants about the hazards facing communities, their capacity to cope, the efficacy of the ASP project activities or other project activities to build their resilience to them, opportunities for and barriers to scaling up promising activities, and needed interventions to support communities.

F. Data analysis (conduct separately for each ASP project)

- For each of the three priority project activities, conduct a qualitative analysis of the data collected. This includes summarising the qualitative evidence gathered, listing a representative selection of the comments received, and then offering critical observations.
- Identify the project benefits to quantify based on whether the FGDs managed to collect sufficient quantitative evidence about them, while avoiding controversial issues like avoided deaths. Distil this evidence to obtain conservative quantitative estimates for each quantified benefit. In each case, determine the key assumptions to utilise when conducting quantitative analysis, including expected duration of observed outcomes and expected breadth of impact. Ensure that assumptions are conservative, so that the resulting findings will be likewise conservative.
- Generate cost estimates for both the overall project and any project activities quantified by adding together (1) costs to the implementing organisation, including the relevant proportion of all administrative and overhead costs, (2)

any relevant in-kind costs incurred by communities, and (3) any costs incurred by other organisations that were also responsible for the outcomes quantified.

- Calculate benefit-cost ratios for both the overall project and each of the project activities being quantified, using the core assumptions defined. Estimates for the overall project are made by adding together any project activities quantified, then taking these values to represent the project's overall benefits. Conduct sensitivity analysis by rerunning these calculations with alternative assumptions to show other plausible outcomes. This will provide a sense of how different outcomes may depend on the enabling support provided to communities.
- Generate subjective rankings of each prioritised project activity based on the range of quantitative and qualitative evidence gathered, in order to convey a sense of the overall impact of the activity.

SECTION 3

Background context

Various aspects of the background context are critical to understanding the challenges faced by the ASP target communities. These aspects also help contextualise the project activities and understand their impacts.

The present section summarises the testimony from both the target communities and the practitioners who work with them (see Annex 1 for a representative selection of this testimony, or Annexes 4-10[2] for a full list of relevant comments from each of the seven ASP projects). Potentially, the observations of villagers could be framed as 'perceptions' rather than 'facts', even though testimony from people who directly observed phenomena could clearly also be framed as factual. By contrast, the testimony of development practitioners is perhaps less controversial, since these individuals have a formal education and also often possess wide experience, both of which contribute to ensuring they are critically minded in their assessments. Taken together, this testimony provides different types of evidence on each factor.

Several different types of evidence are provided for each aspect of the background context. First, the testimony of the various interviewees vis-à-vis this aspect is briefly summarised. Next, relevant evidence from literature is cited. Finally, observations from the CBCBA analyst offer perspective based on the overall picture emerging from the study's findings.

[2] Please note that large parts of the present report appear in annexes, in the interest of keeping the overview report concise. Yet these annexes provide elaborations integral to the study's findings. Notably, they include qualitative evidence on both the challenges facing the target communities and the benefits of the ASP project activities. Readers are urged to consult these annexes to get a sense of the evidence they contain. This evidence helps ensure that the present report maximises its learning from the projects implemented under the ASP and the data collection undertaken for the CBCBA, in te interest of informing evidence-based programming and policy.

Summary of interviewees'[3] comments	Rainfall has changed dramatically over recent years, and is now both lower and more erratic than before, which creates major problems for the target communities. 'Drought' is cited as the biggest single challenge by many interviewees, since it undermines the foundations of pastoral livelihoods, namely the availability of water and pastures.
Evidence from the literature	According to secondary data compiled for the four ASP target counties,[4] these areas are hot and dry, drought-prone, and characterised by unreliable rainfall patterns. They are categorised as having high hazard probability from drought, flooding and conflict. Climate in the area has been changing gradually, with increasing temperatures and decreasing precipitation rates. In the past several years, however, these changes have become dramatic. "Droughts have been occurring with a frequency and intensity not seen in recent memory…areas prone to drought every ten to eleven years are not experiencing drought every two to three."[5] This reduction in rainfall has increased the stresses on people living in these areas by, "rapidly depleting water, graze, and browse in pastoral areas".[6] Oxfam reports that Turkana county has gone years without a good rainy season capable of making its grazing lands grow enough grass to feed its livestock, and suggests the county needs long-term projects to enable its people to face the catastrophic events that are occurring with increasing frequency.[7]
Analyst's observations	One common type of climatic shock in the area is drought (i.e., aggregate reduction of rainfall), while erratic rainfall distribution is another. Such climatic shocks have changed dramatically over recent years, and are now both more frequent and intense. These climatic patterns could be framed as defining a 'new normal' that makes pastoral livelihoods much more challenging than before. Specific threats include adverse impacts on resources such as pastures and water supplies. The fact that camels now sometimes die during dry periods shows that the situation is becoming severe, since both the ASP partners and the target communities report that deaths of camels have historically been rare in the area. Yet climatic changes must not be viewed in isolation, but rather in terms of how they interact with local environmental changes, since environmental degradation exacerbates these changes while environmental rehabilitation mitigates them. Communities are acutely aware of changing climatic patterns, but often fail to recognise these environmental linkages. Where this occurs, they may be missing major opportunities to reduce their own poverty while also building their resilience to climatic shocks by adopting environmental rehabilitation measures. Several

3 The interviewees whose comments are summarised include both villagers who participated in focus group discussions organised for the present study and the implementing organisations involved in delivering the ASP projects.

4 Kenya Inter-Agency Rapid Assessment (KIRA). "Turkana Secondary Data Review as of March 2014", https://www.humanitarianresponse.info/system/files/documents/files/Turkana%20Secondary%20Data%20Review_20141112.pdf; Kenya Inter-Agency Rapid Assessment (KIRA). "Wajir Secondary Data Review as of July 2014", https://www.humanitarianresponse.info/en/system/files/documents/files/Wajir%20Secondary%20Data%20Review.pdf; Kenya Inter-Agency Rapid Assessment (KIRA). "Marsabit Secondary Data Review", April 2014, https://www.humanitarianresponse.info/system/files/documents/files/Marsabit%20Secondary%20Data%20Review_pre-crisis.pdf; Kenya Inter-Agency Rapid Assessment (KIRA). "Mandera Secondary Data Review", April 2014. https://www.humanitarianresponse.info/system/files/documents/files/Mandera%20secondary%20data%20review_20140104.pdf

5 "When The Water Ends: Africa's Climate Conflicts." Yale Environment 360. 2011. http://e360.yale.edu/feature/when_the_water_ends_africas_climate_conflicts/2331/

6 "East Africa Food Security Update 2011." FEWS: Famine Early Warning System Network. 31 January 2011. http://www.fews.net/pages/region.aspx?gb=r2&l=en

7 "Turkana, Kenya: Five Years Without Rain"; Oxfam International; 22 August 2011; https://www.oxfam.org/en/multimedia/photos/turkana-kenya-five-years-without-rain

	villagers from the discussions held for the present study reported powerful examples of this based on their own experience.

Table 2 Local climatic changes

Summary of interviewees' comments	The population of the target communities has increased rapidly in recent years, doubling over the past ten or twenty years in many areas.
Evidence from the literature	National population growth rates for Kenya as a whole have ranged from 2.5% to 3.8% per year over the past 50 years, with a declining trend over time.[8] County-level population data are limited, but suggest significantly higher growth rates in the northern counties targeted by ASP. For instance, secondary data compiled for the four ASP target counties suggests that the percentage of the population aged 0-14 years is between 46% and 47% across the four ASP counties. Similarly, open data portals for each Kenyan county do not provide county-level growth estimates, but show that the population distribution is heavily weighted towards those under 30 years of age in these counties.[9] Some evidence suggests that the population growth rates in some areas could be truly extraordinary. For instance, one report suggests that the population of Mandera county has increased fourfold in just the past 10 years.[10]
Analyst's observations	A rapidly growing human population creates opportunities but also poses threats. Where these additional people are integrated into the economy they can drive it forward. Yet where youths lack opportunities, their frustrations and grievances can become a source of social problems or conflict. Population growth also puts pressure on local natural resources. This could exacerbate poverty and vulnerability unless management strategies are found that do not deplete key resource stocks, since the continued viability of livelihoods may depend on these resources.

Table 3 Human population

Summary of interviewees' comments	In some areas, the livestock population has fallen sharply due to resource constraints while in others it has risen due to the efforts of communities to increase herd size. Yet one virtual constant is that communities seek to increase herd size where possible, although some households are now exploring alternative approaches with help from the project.				
Evidence from the literature	Current livestock populations for the four ASP target counties are as follows[11]:		Goats	Sheep	Cattle	Camels
		Mandera	3.9M	1.6M	1.0M	0.9M
		Marsabit	1.1M	1.0M	0.4M	0.2M
		Turkana	6.0M	3.5M	1.5M	0.8M
		Wajir	1.9M	1.4M	0.8M	0.5M
Analyst's observations	It is understandable from a household perspective that villagers would seek to increase herd numbers, yet at some point herds can lead to the degradation of key natural resources, notably pastures. This in turn could exacerbate livelihood challenges unless this supply-demand disconnect (i.e., excessive demands by livestock on local resources) is addressed, whether by increasing fodder supply or reducing herd numbers. The steady decline in livestock numbers in some areas despite the efforts of communities to maximise their herd size offers a powerful cautionary tale. It clearly shows that a strategy based on maximising herd numbers no longer fits the local context, even if this rule of thumb served these communities well in the past. They must therefore adopt a new approach to maintain the viability of large-scale pastoralism in the area.					

8 Kenya Population 2016; http://worldpopulationreview.com/countries/kenya-population/

9 Kenya OpenData County Data Sheets. See https://www.opendata.go.ke/facet/counties/

10 "Population Numbers for the Northeast Raise Questions About the Sharing of County Cash", The Daily Nation, 10 June 2015; http://www.nation.co.ke/news/Population-numbers-for-the-northeast/-/1056/2747584/-/134h5pyz/-/index.html

11 Data provided are estimates from Kenya's State Department of Livestock, based on data from the national census of 2009.

Table 4 Livestock population

Summary of interviewees' comments	Water availability has worsened dramatically over the past 20 years, and water scarcity and cleanliness are major issues for most communities. Digging wells by hand is no longer viable in most areas. In response, many communities are calling for government and donors to dig ever more and deeper boreholes for them, as well as providing latrines. Sanitation is a related issue, since some communities defecate in the open if they lack pit latrines, and their waste may then be washed into their wells.
Evidence from the literature	According to secondary data compiled for the four ASP target counties[12], between 50% and 80% of the population has access to an improved water source such as boreholes. Other water sources include water pans and rivers, but most surface water points are dry for much of the year. Access to improved sanitation (i.e., latrines) ranges from 15% to 35%, with other communities relying on open defecation. As an example, data for Wajir show that boreholes and shallow wells are the main water sources for both humans and livestock, with most water being obtained from boreholes. Yet boreholes in most areas are running 24 hours a day to meet the high level of demand. The water level in boreholes is reported to be falling, creating major concerns regarding future water availability in the county. Water obtained from boreholes is normally clean but saline. Water from shallow wells and earth pans is less saline but is often contaminated and hence unsafe for human consumption without treatment, yet people typically continue using it nonetheless.[13] Climate change could aggravate this situation. By 2050, it is expected that areas experiencing water shortages in Sub-Saharan Africa will have increased by 29 percent. Lack of clean water and sanitation leads to various diseases, most notably childhood diarrhoea, a leading killer of children across Africa.[14]
Analyst's observations	Water is a key resource, yet even where water development projects have been implemented it can remain a problem, notably due to pollution of wells, a falling water table and salination. Addressing this problem by digging ever deeper boreholes is a problematic solution, however. Notably, it is expensive and could further exacerbate water scarcity by depleting progressively deeper layers of the water table without replenishing them, creating a need for ever more expensive water projects. A possible alternative solution would be environmental rehabilitation measures in conjunction with engineering measures, which could reduce costs while increasing sustainability. A solution must also be found to the sanitation question, but latrines are just one option.

Table 5 Water availability

12 Kenya Inter-Agency Rapid Assessment (KIRA). See footnote 4 for further details.

13 National Drought Management Authority, Wajir County. Early Warning Bulletin for September 2014. http://reliefweb.int/sites/reliefweb.int/files/resources/Wajir-September-2014.pdf

14 Africa: Atlas of our Changing Environment. (2008). United Nations Environment Programme. http://www.unep.org/dewa/africa/AfricaAtlas/PDF/en/Africa_Atlas_Full_en.pdf

Summary of interviewees' comments	Pasture resources have declined sharply in recent years, resulting in pasture scarcity that creates major problems for pastoral communities. These include seeing livestock regularly die of hunger and herders travelling long distances with their animals in search of pastures, often for protracted periods. Most interviewees blame these pasture problems on "drought" while seeing their own activities and herd numbers as blameless, but some see these problems as also linked to overuse of pastures and other natural resources.
Evidence from the literature	Land degradation is a profound trend with hugely adverse implications for the livelihoods and resilience of the ASP target communities. Testimony gathered by the present study vividly illustrates how this trend is playing out in the target counties, notably the evidence cited in Annex 1 and in section 8.1. The wider trend can be summarised as follows: Land degradation is the process of reducing the capacity of land to produce food or materials. An estimated 31% of Africa's pasture lands are now degraded due largely to overgrazing by livestock, while 65% of its agricultural lands are also degraded. Fortunately, such trends can also be reversed via environmental rehabilitation measures, such as the case study "More People, More Trees: A Success Story in Niger".[15] Unfortunately, the importance of land degradation as a threat and environmental rehabilitation as a potential solution is often overlooked by communities as well as some practitioners. For instance, a recent summary of secondary data on the four ASP counties included listings of "current factors affecting food security in the area" for each county, yet the only factors cited for all four of the ASP target counties were poor rainfall, livestock diseases and ethnic conflict. Yet only one of the four county reports listed land degradation (i.e., "depletion of pasture and browse") as a key factor.[16]
Analyst's observations	Local pastures seem to currently be the key limiting resource in the target communities. Pasture scarcity poses an existential threat to these communities by causing progressive declines in the productivity and resilience of their herds, thus threatening the foundations of their economy and culture. While it is understandable from a household perspective that pastoralists seek to increase herd numbers, given growing population pressure this can lead to a 'tragedy of the commons' whereby everyone loses due to depletion of critical natural resource stocks. This is clearly what is happening, and solutions are needed. Where local people blame pasture problems wholly on climate, they are essentially claiming victim status and appealing for outside assistance, instead of trying to help find viable solutions. Yet any comprehensive solution will require that local communities recognise their role in contributing to these problems and how they could potentially change their livelihood strategies – and pasture management practices – as part of this new solution.

Table 6 Pasture scarcity

15 Africa: Atlas of our Changing Environment. (2008). United Nations Environment Programme. http://www.unep.org/dewa/africa/AfricaAtlas/PDF/en/Africa_Atlas_Full_en.pdf

16 Inter-Agency Rapid Assessment (KIRA). See footnote 4 for further details.

Summary of interviewees' comments	Local tree stocks have decreased sharply over recent years in most areas, which have adversely affected communities. Notably, this has reduced access to tree pods used as livestock fodder, wild foods such as fruits, and herbal medicines, while also resulting in stronger winds and inclement microclimates. While villagers may bemoan such losses, they do not typically see trees as a priority concern, or one requiring action on their part. Instead, many blame these changes on drought. At the same time, charcoal production is widely seen as a fall-back livelihood option for those facing difficulties, even though this can hasten depletion of local tree stocks. Some villagers are concerned about *Prosopis* having adverse impacts on their livestock or local vegetation, but others have found ways to productively manage this species.
Evidence from the literature	See the literature cited in Table 6 above.
Analyst's observations	Trees deliver various important services to communities yet do not seem to be a priority for local people, and are not typically managed or protected. This fact exacerbates livelihood problems faced and represents a missed opportunity. Meanwhile, charcoal production undermines the viability of pastoral livelihoods in the area but is often not viewed as a problem. There is arguably scope for viewing Prosopis more of an opportunity than a threat. Fostering a new approach to trees by these communities would be challenging but could pay large dividends in time. Any such efforts must learn lessons from previous interventions focused on trees to better understand how community ownership could be fostered.

Table 7 Depletion of local tree stocks

Summary of interviewees' comments	Livestock diseases are a major problem here, and kill many animals. Yet this problem is much better now thanks to interventions by government and donors, particularly in areas where free vaccinations are provided. Questions about the affordability of livestock drugs and who should pay nonetheless remain.
Evidence from the literature	Sporadic outbreaks of livestock diseases were one of the only factors cited in all four of the county-level documents summarising available secondary data on the ASP target counties.[17] Diseases affecting livestock in the area include those transmitted by ticks and tsetse flies, viral diseases, bacterial diseases, endoparasites and wildlife derived diseases. Disease control measures fostered by government include vector chemical control, chemoprophylaxis and immunization.[18]
Analyst's observations	It is excellent that progress has been made on treating these diseases and thus sparing households from major economic losses. Yet this development must be seen in its wider context. One consideration is that animals that would otherwise have died now survive, thus placing still greater pressure on pastures and raising the question of how these additional pressures can be managed. Another consideration is that pasture scarcity, in turn, increases disease risk, since it forces pastoralists to migrate with their animals in search of pasture, where they inevitably come into contact with other herds which may carry diseases. A third consideration is that animals that are hungry due to scarce pasture tend to be weak and hence more vulnerable to diseases. Still another concern is that villagers in some areas are now starting to rely on free vaccinations, which could exacerbate their dependency syndrome while also leaving them vulnerable to future policy changes. It would be far preferable for interventions to encourage villagers to sell animals to buy these drugs, rather than simply providing them for free. Villagers may claim they cannot pay for this but drugs seems questionable, since if they sold an animal to pay for this treatment they could easily end up ahead. For this latter option to work, however, villagers would need access to viable livestock markets.

17 Kenya Inter-Agency Rapid Assessment (KIRA). See footnote 4 for further details.

18 Country Pasture/forage Profiles: Kenya. (2014). Orodho, A.B. Kenya. http://www.fao.org/ag/AGP/AGPC/doc/Counprof/kenya/Kenya.htm

Table 8 Livestock diseases

Summary of interviewees' comments	Livestock deaths are a massive problem in the area, with the key causes being insufficient fodder and livestock diseases. Many villagers prioritise restocking their herds following these losses.
Evidence from the literature	Increasingly erratic and unpredictable rainfall coupled with more frequent droughts is taking a heavy toll on livestock and the communities who rely on them. Livestock become emaciated and die and people go hungry, with women and children most at risk. Priest Lance Nadeau shared what he witnessed when working in Turkana county a few short months ago. "I had never experienced anything like it. The smell of death was overpowering. Animals were dropping dead in front of me. That is life—and the end of it—in the Turkana land of northern Kenya."[19]
Analyst's observations	For pastoralists, livestock deaths are devastating both economically and emotionally, so regularly losing large numbers of livestock represents a dysfunctional and untenable state of affairs. Given the centrality of livestock to their livelihoods and culture, it is understandable that many in these communities prioritise restocking. Yet simply restocking herds after such losses seems risky and wasteful, under the circumstances. Instead, the root causes of these deaths should be analysed and holistically addressed. Alternatively, other livelihood options besides pastoralism must be found.

Table 9 Livestock death

Summary of interviewees' comments	Undernutrition is common in the target communities, since they depend on pastoralism yet nowadays it does not reliably provide for their food needs. Kenya's social safety net scheme (i.e., HSNP) helps address this gap, yet villagers report that this support is insufficient for them to meet their food needs.
Evidence from the literature	According to secondary data compiled for the four ASP target counties, Global Acute Malnutrition rates in these counties range from 12% to 25%, while the estimated rates of stunting range from 24% to 66%. Meanwhile, the rate of poverty ranges from 84% to 94%, while the percentage of each county's child population categorised as "deprived" ranges from 68% to 76%. Coping strategies employed to deal with these challenges included skipping meals, the sales of wood fuel or charcoal, casual labour and gifts from relatives.[20]
Analyst's observations	Given the reliance of local livelihoods on pastoralism, malnutrition is closely linked to the problems facing pastoralism in the area. Two problematic responses are seeing this as a reason for either increased food aid or restocking herds. The former fails to solve underlying problems, while the latter could prove a short-lived solution unless the underlying causes of livestock losses are addressed. Instead, solutions are needed that offer viable longer-term livelihood options for communities. Recent data on HNSP beneficiaries show that the safety net programme has a significant presence across the target communities, and is particularly likely to help the poor while having no discernible gender bias (Figures 2 and 3). While only a minority of people in these communities receive this assistance, the level of need appears to far exceed this support, based on the evidence gathered by the CBCBA analysts.

Table 10 Undernutrition

19 "The Smell of Death in Turkana". May/June 2016. Fathers and Brothers Maryknoll Magazine. http://www.maryknollmagazine.org/index.php/magazines/593-the-smell-of-death-in-turkana

20 Inter-Agency Rapid Assessment (KIRA). See footnote 4 for further details.

Figure 2 Current HSNP recipients, disaggregated by wealth group[21]

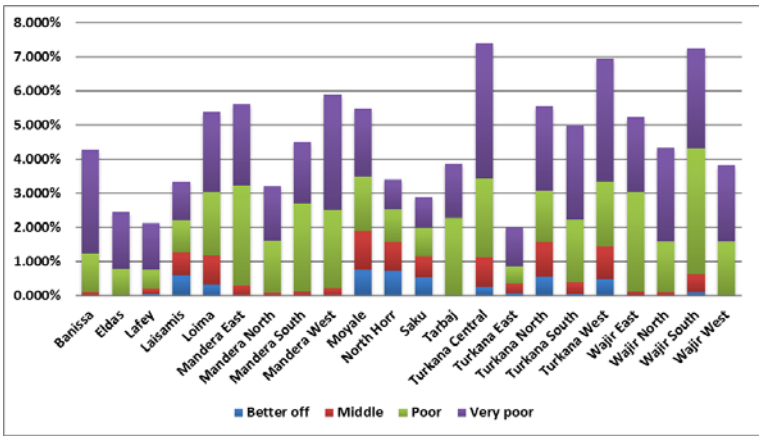
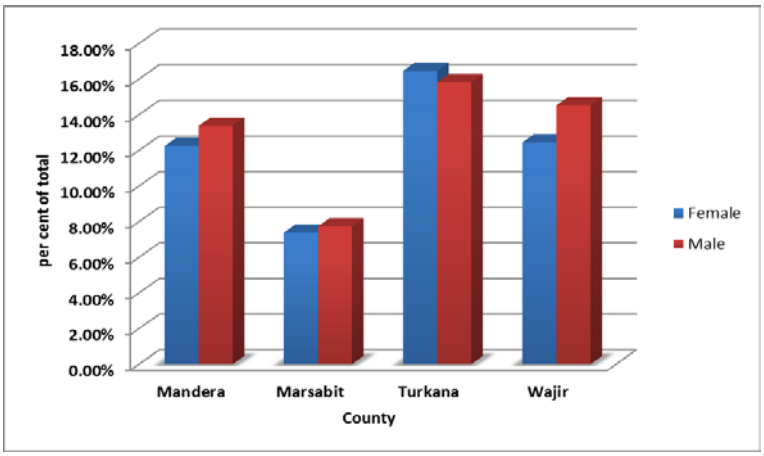


Figure 3 Current HNSP recipients, disaggregated by gender[22]



21 Government of Kenya (2015), Hunger Safety Net Programme data provided by the National Drought Management Authority, based on a request made in March 2015.

22 Ibid.

Summary of interviewees' comments	Inter-ethnic conflict is a major problem, with clashes centred around competition for scarce pasture and water resources or livestock rustling raids between neighbouring groups.
Evidence from the literature	Two key factors that have exacerbated these historical conflicts are growing population pressure and worsening climatic shocks, since they oblige communities to compete over increasingly scarce resources. Another factor is the wide availability of guns in the area.[23][24][25][26] The increasing tendency for pastoralists to move for in search of water and pasture is another key driver of conflict, since this makes it increasingly likely that different communities will find themselves competing for the same resources. Migration fuels the degradation of land further by the continual cycle of occupying new land and then leaving when all available resources are used up.[27] Other contributing factors are a breakdown in community values and the virtual absence of the government in some areas, which leaves people to take the law into their own hands.[28] Still another cause of conflict is the cultural beliefs of some groups, such as their understanding of warriorhood coupled with their perception of livestock raiding as a viable strategy to achieve key life goals in a difficult economic environment.[29] [30]
Analyst's observations	Conflict already poses a huge threat to the target communities, since it can critically undermine local development, yet it could worsen over time given current trends. Urgent action is needed to avoid this. This should include both fostering better livelihood opportunities and explicit efforts to increase cross-cultural understanding. Resolving conflict can open up major opportunities for communities through productive market interactions. However, it can also increase pressure on pastures in areas that were formerly off-limits due to conflict, which could in time lead to the renewal of conflict. For instance, thanks to the peace settlement between the Turkana and the Pokot, many Turkana pastoralists are now converging on the fertile pastures in eastern Uganda, leading to concerns among local organisations that these pastures will be rapidly depleted, potentially leading to renewed conflict.

Table 11 Ethnic conflict

23 "Climate Change and Turkana-Merile Conflict", ICE Case Study Number 238; July 2011; http://www1.american.edu/ted/ice/turkana-merille.htm

24 "Pastoralists' vulnerability in the Horn of Africa, Exploring Political Marginalisation, Donors' Policies and Cross-border Issues". (2009). Overseas Development Institute, http://www.odi.org.uk/resources/download/4576.pdf

25 "Inter-clan Conflict in Mandera District"; 4 February 2013; University of Nairobi Department of History and Archaeology; http://history.uonbi.ac.ke/node/1136

26 Kenya Inter-Agency Rapid Assessment (KIRA). "Marsabit Secondary Data Review", April 2014. https://www.humanitarianresponse.info/system/files/documents/files/Marsabit%20Secondary%20Data%20Review_pre-crisis.pdf

27 "Climate Change and Turkana-Merile Conflict", ICE Case Study Number 238; July 2011; http://www1.american.edu/ted/ice/turkana-merille.htm

28 "What Drives Conflict in Northern Kenya?", IRIN, 18 December 2009; http://www.irinnews.org/report/87450/kenya-what-drives-conflict-northern-kenya

29 "Ethnic Conflicts in Northwest Kenya". Bollig, Michael. Zeitschrift fur Ethnologie; Bd 115; 1990; http://www.jstor.org/stable/pdf/25842144.pdf?seq=1#page_scan_tab_contents

30 "Cultural Beliefs as a Source of Ethnic Conflicts: A Study of the Turkana and Pokot Pastoralists of Kenya". Journal of Global Peace and Conflict 1(1). June 2013. http://aripd.org/journals/jgpc/Vol_1_No_1_June_2013/1.pdf

Summary of interviewees' comments	Communities typically lack good options for selling their livestock. Key problems include low prices, collusion by buyers, distance to markets, and insecurity constraining market access.
Evidence from the literature	Kenyan rural areas are characterised by limited employment opportunities, low incomes and high poverty levels. A key plank of the government's efforts to address these challenges is its ongoing reform programmes geared towards liberalising the agricultural sector. However, these efforts are hampered by inadequate access roads, market centres, and credit facilities. Poor market access discourages enhanced market participation by farmers and pastoralists alike. Lack of commercial orientation is also a constraint, since livestock are sometimes managed based on sociological attachments to animals instead of calculations of optimised earnings. Government seeks to foster market engagement via measures such as building roads, constructing dips, sinking bore holes and organising markets. Enhanced commercialisation represents a clear opportunity, since many farmers and pastoralists are ready to embrace technological innovations, as evidenced by their willingness to participate in pilot initiatives to examine innovative options.[31] The Turkana district livestock marketing council offers an example of government support for market engagement. It seeks to foster better commercial links with the rest of the country and export markets, for instance by encouraging traders from Nairobi to visit the county.[32]
Analyst's observations	Improved market linkages hold great potential for the target communities, particularly if they can learn to embrace a more commercial approach to livestock keeping. The area's livestock markets could potentially be large, given its vast expanse and inherent suitability to pastoralism, coupled with the keen desire of local people to maintain their historical ties with pastoralism. In addition to these supply-side factors, there is a large demand for livestock products in neighbouring countries, notably in the Middle East. Developing this potential should be a priority for government and donors. One key challenge is helping communities take a more commercial approach to livestock instead of one that seeks to maximise herd numbers. Another is finding effective ways to address pasture scarcity so that animals can grow strong and fetch good prices while also being able to withstand climatic shocks. Other challenges include the level of local prices, price information, and ethnic conflict impeding market activity.

Table 12 Market access

31 Pasture/forage Profiles: Kenya. (2014). Orodho, A.B. Kenya. http://www.fao.org/ag/AGP/AGPC/doc/Counprof/kenya/Kenya.htm

32 Guardian. "Turkana Pastoralists Encouraged to Innovate to Build Resilience to Drought". Guest, P. 22 October 2012. http://www.theguardian.com/global-development/2012/oct/22/turkana-pastoralists-innovate-resilience-drought

Summary of interviewees' comments	Local government services have improved over time, particularly since devolution, but are still often inadequate. Another problem is corruption, which has "been devolved" along with government services. The dearth of policies to specifically support pastoralism is also a problem.
Evidence from the literature	In 2010, Kenya's new constitution established a system of devolved government with the goal of bringing government closer to the people and making it more accountable. Implementation of devolution began soon after the 2013 elections, which included the election of new county governments. These county-level governments are now in charge of diverse functions, such as provision of health care, primary education and roads, and receive a sizable share of national revenues in order to fulfil their remit.[33] County-level data suggest that government expenditures have increased dramatically over recent years. Specifically, these data suggest that government spending approximately doubled in Mandera, Marsabit and Wajir between 2002 and 2010, while rising five-fold in Turkana. Yet because these data only cover the period up to 2010, they likely fail to fully capture the increase in local government expenditures due to devolution.[34] Despite this progress, local service provision remains inadequate and problematic across the target communities. According to secondary data compiled for the four ASP target counties, the literacy rate in these counties currently ranges from 10% to 26%. Meanwhile, the ratio of doctors to patients remains exceptionally low, as exemplified by 1:500,000 in Turkana county and 1:64,000 in the non-urban parts of Marsabit county.[35]
Analyst's observations	Government services can be key to local development prospects, but could be better targeted on the constraints facing communities. County governments seem eager to find solutions for the communities they serve, but sometimes appear uncertain how best to do this. One option is to simply defer to what villagers say and provide what they request. Another is to take villagers' observations as a point of departure and basis for frank discussions. CBCBA builds on the latter concept. This tool could help governments make evidence-based decisions based on analysing alternative options, including their longer-term payoffs and drawbacks. It could thus help address the need of the county authorities.

Table 13 Government services

33 "Devolution and Resource Sharing in Kenya", Brookings Institution, 22 October 2013. http://www.brookings.edu/research/opinions/2013/10/22-devolution-resource-sharing-kenya-kimenyi

34 Kenya OpenData County Data Sheet. See https://www.opendata.go.ke/facet/counties/

35 Kenya Inter-Agency Rapid Assessment (KIRA). See footnote 4 for further details.

SECTION 4

Frequency with which challenges were cited by villagers

The previous section introduced key aspects of the background context based on the comments of interviewees for the present study, literature sources, and observations from the CBCBA analyst. The comments of villagers participating in the focus group discussions have particular significance, beyond simply offering evidence regarding background factors. Namely, they can help understand the world view and thinking of the target communities. This includes understanding both ways in which they are insightful and ways in which their beliefs or practices could constrain their ability to address the challenges they currently face.

The following table gives a sense of the factors emphasised by villagers when they were asked to describe the main challenges they face. The data show how often each issue was cited by someone in a focus group. That is, they show whether anyone in the focus group discussion spoke about the issue in question in response to the open-ended question, "What are the main challenges facing your community?" Thus, if conflict was cited by 62% of villages, this meant that in 62% of the focus group discussions conducted, at least one participant spontaneously raised the issue of conflict as a community concern. If the reader is interested in getting a fuller sense of the perspectives of the target communities vis-à-vis these challenges, please see the qualitative evidence gathered in the FGDs, as reported in Annex 1 and also Annexes 4-10.

Challenge	Villages citing	Analyst's observations
Drought	100%	'Drought' is the factor most strongly emphasised by the target communities. It was not only mentioned in 100% of the FGDs conducted, but was also typically the factor cited first. This term seems to be used by many in the target communities as shorthand for a range of problems. Most notably, it describes the main climatic shocks observed in the area, namely periods when rainfall is either unusually low or very irregular. It is also used as shorthand for the problem of pasture scarcity, and associated problems like low productivity of livestock, livestock deaths, and human malnutrition. When villagers speak of 'drought', they are often speaking about this entire complex of related factors.
Water scarcity / cleanliness	76%	Water scarcity and water quality are priorities for most of the target communities, since both problems are widespread. Yet water access is less problematic nowadays in some localities thanks to the numerous water development projects implemented in recent years. Despite this progress, the continued availability of water remains a question due to falling water tables, while water quality may be problematic due to factors such as salination and pollution by sewage.
Livestock diseases	71%	Livestock diseases are a priority for the target communities, since they have been a major cause of livestock deaths in recent years across these counties. However, this problem has been effectively addressed in many areas due to a combination of vaccinations and treatments for sick animals.
Conflict	62%	Conflict is a concern across the ASP target communities. Due to the recent successes of peace building efforts in some areas, it is

Challenge	Villages citing	Analyst's observations
		sometimes less of a concern. Yet it remains a profound concern across the target communities, since even those who have seen progress towards peace often worry about whether this peace will hold.
Market access	43%	Market access and associated issues like market prices are clearly widespread concerns, as reflected in villagers' comments in response to being asked about this factor (see Annex 1). However, these concerns were only spontaneously cited sometimes as among the challenges facing communities. Perhaps this is because most villagers do not currently take a commercial approach to livestock production.
Food insecurity / malnutrition	33%	Food insecurity is clearly a concern, but was only cited sometimes as among the challenges facing communities. This seems to be because it was sometimes understood as the ultimate consequence of the various challenges faced, instead of a challenge in its own right.
Pastures	29%	Pasture resources are clearly a concern, as reflected in communities' comments in response to being asked about this factor (see Annex 1). However, these concerns were only spontaneously cited sometimes as among the challenges facing communities. The likely reason is that many villagers understand pasture as a function of 'drought', and hence used 'drought' as shorthand to cover this problem.
Schooling / Illiteracy	29%	Access to schooling is a widespread concern in the target communities, since sending children to school is a priority for most households, yet many struggle to afford school fees. Schooling is seen primarily as a way to help a family member get a job and hence help the rest of the family, but some also see it as preparing children to engage in business or to be able to communicate with people outside their tribe.
Alternative livelihood options	19%	Some communities cited the dearth of livelihood diversification options available to them. Their comments seemed to suggest both a perceived need for livelihood alternatives and a desire for help with identifying and pursuing these alternatives.

Table 14 Frequency with which challenges were cited by target villagers

SECTION 5

Findings from the data collection

Three distinct types of data were collected as the basis for this analysis. For each of the seven projects examined, data were gathered on qualitative benefits, quantitative benefits and costs. In the interest of keeping the present report concise, these findings are provided in the Annexes.

A representative overview of the qualitative evidence is provided in Annex 2. This data is also reported in greater detail in Annexes 4-10, which summarise the analysis conducted for each of the seven ASP projects. Annexes 4-10 also contain other data on each project, such as selected interviewee comments about the expected duration of different observed benefits and any adverse impacts and weaknesses of each ASP project. These qualitative data provide information on how each project activity has impacted the target communities, which is a fundamental aspect of CBCBA.

The quantitative evidence for each of the seven ASP projects is summarised in Annexes 4-10. This evidence provides rigorous and comparable measures of benefits delivered, thus offering a powerful way to learn from project experience and inform future interventions. Yet it is important to consider these quantitative measures in conjunction with qualitative findings, in order to ensure a holistic and balanced picture of net impacts.

The cost evidence for each of the seven ASP projects is summarised in Annexes 4-10. Data on costs for use in calculating benefit-cost ratios fall into several categories. The key costs are those associated with the intervention being examined, including both the costs incurred by the organisation implementing the intervention and any in-kind costs incurred by the target communities. Yet a second important question that must always be considered is the degree to which interventions by other organisations may also have contributed to the beneficial outcomes being quantified.

SECTION 6

Findings from the data analysis

6.1 Benefit-cost ratios and subjective rankings

The principal findings of the data analysis are a set of benefit-cost ratios. For each project examined, headline ratios are generated based on the core assumptions made for the project in question. An alternative set of ratios is also generated by rerunning the analysis using plausible alternative assumptions. The core assumptions reflect the most likely circumstances as things stand, while the alternative assumptions frame alternative scenarios of the policy or enabling environment.

Benefit-cost ratios have several major advantages as a basis for analysis notably that they are rigorous, readily understood and easily compared. Any benefit-cost ratio value of greater than one suggests an intervention whose benefits exceed its costs, and is therefore a worthwhile investment. These ratios also permit comparisons between different projects and project activities based on the size of these ratios.

Despite the utility of benefit-cost ratios, it is important to bear in mind that taking them as stand-alone measures could be misleading. The issue is that these ratios only provide a partial picture, given the complexity of applying cost-benefit analysis to interventions supporting vulnerable rural communities. Specifically, looking at headline benefit-cost ratios on their own overlooks how these measures depend on assumptions linked to policy levers, and how they fit together with qualitative impacts of projects. The danger of taking these headline ratios as stand-alone measures is that this could lead to prioritising ‘quick fix’ project activities with clear-cut but limited potential. Crucially, this could also lead to overlooking activities that grapple with difficult underlying problems yet hold great future promise. In short, taking benefit-cost ratios out of context could lead to short-term solutions and a failure to tackle critical underlying obstacles to progress.

Subjective rankings are also provided to complement these quantitative benefit-cost ratios and reduce the chances of them being taken out of context. They seek to provide a global assessment of each prioritised project activity, and are generated by the CBCBA analysts to summarise the net picture emerging from the quantitative and qualitative findings. The rankings are made using a scale of 1-5, where 1 represents a low score (i.e., low net benefits) and 5 a high score.

Both benefit-cost ratios and subjective rankings are provided for each project examined. Benefit-cost ratios are provided for both (1) the overall project and (2) those of its activities that were readily quantifiable. Subjective rankings are provided for each of the project activities prioritised by the target beneficiaries in the FGDs, whether or not these were quantified. Thus, all prioritised activities have a subjective ranking, but only some of these prioritised activities also have a set of benefit-cost ratios.

6.2 Uses and limits of benefit-cost ratios

One virtue of benefit-cost ratios is that they are easy to interpret. Any ratio of greater than one suggests an intervention or activity whose benefits exceed its costs, and is therefore a worthwhile investment. Conversely, any ratio of less than one is not cost-effective. The

simplest use of benefit-cost ratios is therefore to determine whether or not a given project or activity is cost-effective.

These ratios can also be used as a basis for comparison, specifically to compare different projects and project activities. This follows because the higher the ratio, the greater the net benefits, and vice-versa. In these comparisons, those projects or activities with higher ratios are deemed to provide better value for money. Such projects and activities are therefore preferable to those with lower ratios, *all things being equal*.

However, these benefit-cost ratios should not be taken as stand-alone measures, since they only provide a partial picture, given the complexity of applying cost-benefit analysis to interventions supporting vulnerable rural communities. Simply put, these are complex situations, so the caveat "all things being equal" may very well not hold. Reasons for this include:

- **Quantification was partial:** Only some of the project benefits observed were quantified while only qualitative data was gathered on others, so the resulting ratios tell only a partial story.
- **Levels of ambition:** Some of the ASP project activities targeted comparatively easy near-term wins while others focused more on elusive or longer-term objectives. Examples of the latter are activities that target the root causes of problems or could potentially disseminate widely in the medium to long-term. A reductionist interpretation of cost-benefit findings could strongly favour the former while discouraging the latter, whereas both are needed and may also be complementary.
- **Assumptions matter:** The benefit-cost ratios obtained can change greatly depending on the assumptions made. The headline benefit-cost ratio for each activity or project examined reflects just one set of assumptions, and must therefore be set alongside alternative ratios obtained using other plausible assumptions. This is important, since the assumptions made often reflect policy levers, with government or donors able to strongly influence which assumption holds based on the types of support they provide.

Multi-nutrient urea blocks (MUBs): The case of the MUB activity by Solidarites shows how much benefit-cost ratios can change if key assumptions are altered. This activity is uncertain to continue once the project ends, so continued benefits cannot be assumed after this point, which means the headline benefit-cost ratio is low. Yet if this activity could be continued and the use of MUB ended up disseminating widely, then its benefits could potentially be huge. This is a plausible scenario if appropriate institutional support were provided, since this technology has great potential to bolster pastoral livelihoods in communities struggling with pasture scarcity.

6.3 Elaborating on how ratios were generated to ensure the following findings are clear

Benefit-cost ratios were generated using quantitative benefits data and costs data. Because the projects examined lack quantitative data on project outcomes, the study generated a fresh body of benefits data for most of the projects[36].

Only a subset of the project activities were selected for quantification, due to the difficulties of quantifying some outcomes in this context and the desire to remain conservative via only quantifying a subset of project benefits. The project activities that were quantified were selected on an empirical basis. To be quantified, project activities had to meet two criteria, namely (1) they had to be selected by the target communities as among the project activities

[36] BOMA was the only exception, since its team generated solid quantitative data on its project outcomes.

most beneficial to them, and (2) the data gathered on their benefits had to be readily quantifiable. (By contrast, subjective ranking were provided for all project activities prioritised by the target communities, including those for which only qualitative evidence was generated.)

For each ASP project examined (except BOMA[37]), benefit-cost ratios were calculated for at least two distinct project activities as well as for the project as a whole. Most of these activities analysed could be categorised as "income generating activities", since they delivered tangible quantifiable benefits to communities. Yet the analysis focused on priority activities as perceived by communities, not definitions of what constituted an IGA. Estimated net benefits for the project as a whole were obtained by adding together the benefits calculated for the various project activities that were quantified, then dividing by the project costs.

Another aspect of this analysis is that stratification was applied to the target population for most of the projects examined. This was done because CBCBA is only effective where the population being examined is roughly homogenous. The ASP partners were asked to specify ways that different parts of their target populations varied. In cases where these variations were deemed fundamental, the target population was stratified and only one stratum was analysed.

The core assumptions used in this analysis were the expected duration of the beneficial outcomes being quantified and the discount rate used. These core assumptions varied from project to project vis-à-vis the expected duration of benefits, but were consistent regarding discount rates. The choice of expected duration was made based on frank discussions with both the target communities and the implementing partner, and a duration of 1, 5 or 10 years was selected, based on what was deemed realistic for the activity in question. A discount rate of 10% was applied across the board in the base case, following standard practice.

Given the sensitivity of the benefit-cost ratios obtained to the assumptions used in the analysis, alternative assumptions were also examined. This 'sensitivity analysis' showed the different benefit-cost ratios obtained when alternative key assumptions were used. Examining how the benefit-cost ratios vary as these assumptions vary gives a sense of plausible project impacts over the medium- to long-term. Three distinct types of alternative assumptions were examined: expected duration of 5, 10 or 20 years to convey a sense of the impact if benefits proved long-lasting; a discount rate of 0% to convey the 'sustainability' case where future impacts are just as important as current impacts; possible problems or boons for the activity in question. Please note that the sensitivity analysis usually includes the headline ratio case based on the core assumptions, and that these 'duplicate' figures are highlighted in grey for easy recognition.

Insofar as possible, the same assumptions were examined across the board in order to facilitate comparisons between activities. Yet this was not always possible due to the inherent characteristics of these activities. For instance, the benefits of some activities could easily disseminate to neighbouring communities, thus greatly increasing their impact, while the benefits of other activities are unlikely to do

[37] A different procedure was followed for the BOMA project. This was because the implementing organisation insisted that it did not make sense to separate out its different project activities, since the project was an integrated package that could not be subdivided. The CBCBA analyst accepted this argument and adjusted the analysis correspondingly. This involved using the project's data for the quantitative analysis, while only gathering fresh data on qualitative benefits. Villagers were simply asked to discuss the various benefits of the project, as well as any adverse or problematic aspects of it, in order to generate qualitative data on benefits. Discussions of benefits began with open-ended questions, but also included asking specifically about economic, social and environmental benefits, to ensure that the discussions covered all three aspects of the 'triple bottom line'.

so. To square this circle, the study provides a full range of statistics for each project and activity, except in cases where it would be unrealistic to do so.

6.4 Initial observations about the findings and their use

The calculations reported below reveal that some ASP activities and projects have only modest benefit-cost ratios under their core assumptions, while others have high ratios. Specifically, various project activities examined have core ratios of 1 or less, while others have ratios of 5 or 10. On the surface, these findings would suggest that the choice of which project activities to prioritise is clear. Yet such rapid judgements could be misplaced. In some cases, activities with low ratios in the core analysis may look attractive when the full array of evidence is considered. For instance, they may seek to address daunting challenges where progress is urgently needed but necessarily slow. As such, they could potentially help avoid large future costs associated with economic failures, or alternatively deliver large gains if needed institutional or policy support were provided. See section 7 for further discussion of these points.

Another implication of the findings obtained is that most of the projects examined included promising activities that would merit scaling up. This is perhaps unsurprising, for two reasons: (1) each of the ASP partners had developed a range of project activities that built on their ample past experience; and (2) all the activities examined had been selected from among the various project activities as particularly promising, in the view of target communities.

The findings provide powerful evidence to inform future policy and programming for the ASP target communities. However, the net picture that emerges from this analysis is also multifaceted, including quantitative and qualitative impacts, a sensitivity analysis that varies key assumptions about the future, and a subjective ranking. Drawing specific conclusions for future actions based on this analysis would require careful consideration of these findings, ideally based on frank discussions among key stakeholders.

6.5 Benefit-cost ratios and subjective rankings: BOMA

Assumptions used in base case, or unless otherwise specified

- Expected duration of benefits = 10 years
- Discount rate = 10%

Activities (i.e., IGAs) and overall projects examined	Costs (£)	Benefits (£)	Benefit-cost ratio: base case	Alternative assumptions examined						
				Benefits last 5 years	Benefits last 10 years	Benefits last 20 years	Problem: Half of businesses fail	Problem: Half of goats die before sold	Boon: Benefits disseminate to others, doubling the new businesses	Discount rate of 0%
BOMA project as a whole[38]	1,269,000	5,337,366	4.2	2.6	4.2	5.7	3.5	2.8	8.4	6.5

Table 15 Summary of benefit-cost ratios obtained for the BOMA project

[38] The fact that the BOMA project was exclusively analysed as a whole follows from the insistence of the implementing organisation that its activities constituted an indivisible whole. See Annex 3 for details.

Priority activities	Ranking	Analyst's observations
BOMA project as a whole	4	Strong evidence of both quantitative and qualitative benefits, yet difficulties remain: Addresses a critical need by offering ways to diversify the livelihoods of vulnerable pastoralists, specifically poor women from these communities who have been selected by village elders as among 'the poorest of the poor'. The scheme has clearly captured the imaginations of communities, and is delivering valuable benefits to them. Despite its many merits, the scheme has several shortcomings. One is that its training seems to have been only partially internalised by villagers, namely how to ensure that a business remains viable over time and the rationale for taking a commercial approach to livestock keeping. Another is the scheme's focus on activities that complement the core pastoral economy, while largely neglecting the factors undermining this core economy. A third is that its exclusive focus on women has caused anger in some villagers, while also foreclosing potentially promising avenues to help communities.

Table 16 Subjective rankings for the BOMA project

6.6 Benefit-cost ratios and subjective rankings: CONCERN

Assumptions used in base case, or unless otherwise specified

- Expected duration of benefits = 10 years
- Discount rate = 10%

Activities (i.e., IGAs) examined, and summary data for the project	Costs (£)	Benefits (£)	Benefit-cost ratios: base case	Benefit-cost ratios, based on alternative assumptions						
				Benefits last 5 years	Benefits last 10 years	Benefits last 20 years	Problem: Half of businesses fail	Problem: Goats cured but half die of hunger	Boon: Benefits disseminate to others, doubling the new businesses	Discount rate of 0%
Small grants scheme	23,754	127,326	5.4	3.4	5.4	7.2	2.7	-	10.7	8.2
Pastoral field schools	58,739	120,574	2.1	1.3	2.1	2.8	-	1.0	-	3.2
Overall project (pastoralist stratum only)	528,527	247,900	0.5	0.3	0.5	0.6	-	-	-	0.7

Table 17 Summary of benefit-cost ratios obtained for CONCERN project

Priority activity	Ranking	Analyst's observations
Small grants scheme	4	Strong evidence of both quantitative and qualitative benefits, yet difficulties remain: These loans can boost the incomes of group members by enabling them to both launch businesses and to buy additional livestock. Loans also help meet social needs like schooling and medical expenses, whether directly via loans or by using the profits from businesses. This scheme has generated real excitement. One concern however is that some villagers don't seem to distinguish between uses of money that represent investments and those that are simply expenditures. Some villagers use loans (as opposed to business profits) to meet social priorities like buying food and paying school fees or medical expenses. The danger is that such expenditures will only make people poorer, since they incur interest payments but don't raise income. Arguably they could also further impoverish those outside the group by offering loans for such expenditures. Another concern is that some villagers were enthusiastic to use loans to restock their herds, but this practice seems questionable in a situation where villagers reported losing between ¼ and ½ of their herds over the past year due to largely to insufficient pasture, yet where this root cause of deaths has not been addressed. Still another concern is that this activity targets only women while neglecting other deprived groups, notably youths, who lack opportunities and perceive this exclusive focus on women as unfair.
Pastoral field schools	3	Modest quantitative benefits but qualitative evidence suggests large potential: PFS addresses a critical need by offering ways to improve pastoral livelihoods, including treating livestock diseases, practicing pasture conservation and managing animals on a more commercial basis. These trainings have the potential to profoundly improve the welfare of the target communities by increasing both their income and assets. Notably, they can improve production of milk and meat, help avoid livestock deaths, and fetch better prices from livestock sales. Yet achieving these gains will require overcoming deeply ingrained cultural practices, such as maximising herd numbers and practicing free grazing. Progress towards achieving these aims seems to be limited at present, perhaps because the challenges faced are large. The potential is likewise large, however.
Shallow wells	3	Not quantified, but qualitative evidence suggests it is significant: These wells address a major problem facing target communities by improving the accessibility and cleanliness of water, and is appreciated by them. One problem is that greater accessibility of water could encourage overuse, leading to progressive lowering of the water table unless it is complemented by environmental rehabilitation measures.
Galla goats	1	Not quantified, but qualitative evidence suggests major problems: This activity seeks to improve goat herds via interbreeding, thus increasing milk production and earnings from sales. No benefits have been observed yet, since the goats are young. Villagers are excited about this potential, but some report that galla goats are more vulnerable to climatic shocks than local breeds, so this breed could be a poor choice for these communities. The fact that goats are provided for free is also problematic, since it discourages the shift to commercial livestock production, and instead encourages dependency thinking.

Table 18 Subjective rankings for the CONCERN project

6.7 Benefit-cost ratios and subjective rankings: Solidarites

Assumptions used in base case, or unless otherwise specified

- Expected duration of benefits = 1 year for PFS and MUBs; 5 years for shallow wells
- Discount rate = 10%

Activities (i.e., IGAs) examined, and summary data for the project	Costs (£)	Benefits (£)	Benefit-cost ratios base case	Benefit-cost ratios, based on alternative assumptions					
				Benefits last 5 years	Benefits last 10 years	Benefits last 20 years	Problem: Benefits of project last only 1 year	Boon: Benefits disseminate to others, thus doubling users AND benefits last 10 years	Discount rate of 0% AND benefits last 10 years
MUBs[39] + livestock health	108,028	80,556	0.8	3.1	4.9	6.5	0.8	13.0	7.5
Shallow wells	25,200	67,626	2.7	2.7	4.3	5.8	-	-	6.6
Overall project (pastoralist stratum only)	224,459	148,182	0.7	1.8	2.8	3.8	-	-	4.3

Table 19 Summary of benefit-cost ratios obtained for the Solidarites project

Priority activity	Ranking	Analyst's observations
Multi-nutrient Urea Blocks (MUBs)	4	Modest quantitative benefits, yet qualitative findings suggest huge potential: MUBs are a food supplement for livestock that helps them metabolise other foods, thus enhancing their capacity to survive drought and increasing their milk production. Pasture scarcity is the key limiting constraint on pastoral livelihoods across the ASP target population, so MUBs are a highly promising innovation that could make an important contribution to the welfare and resilience of pastoral communities. Solidarites is focusing on demonstrating the efficacy of MUBs then making them available for purchase. One challenge, however, is that villagers may struggle to afford these blocks. This explains why the quantitative analysis assumed that its benefits would last only 1 year in its headline analysis. Based on consultations with interviewees, one possible solution would be to provide MUBs on credit, but this could be unsustainable. A problem is that this approach would oblige the seller to bear the risk, e.g., in case the livestock in question die, while another is that it would enable users to avoid taking a commercial approach whereby they sell animals in order to buy livestock inputs. MUBs are a technology that could potentially disseminate widely across the target communities if villagers fully understood its benefits and embraced a commercial approach to pastoralism. The high benefit-cost ratios obtained if MUBs disseminated to other villagers and were used over time underline this potential. Yet realising this potential would likely require relevant institutional support to address the obstacles faced.

[39] Multi-Nutrient Urea Blocks (MUBs)

Priority activity	Ranking	Analyst's observations
Pastoral field schools (PFS) / Livestock health	3	Modest quantitative benefits but qualitative evidence suggests large potential benefits: Communities learned various ways to improve their management of livestock, notably treating diseases, practicing pasture conservation and managing animals on a more commercial basis. Deworming was also provided to villages on a free or heavily subsidised basis in order to demonstrate its efficacy and induce villagers into practicing deworming on a commercial basis. PFS trainings could profoundly improve the welfare of the target communities by raising the production of milk and meat, helping avoid livestock deaths, and fetching better prices from livestock sales. Yet the aspect of PFS that seems best understood and most valued by the communities was deworming, which delivers rapid, tangible benefits. One problem is that it costs money and must be done every three months, raising questions about whether communities will be able to maintain these benefits. Another problem is that free provision of deworming could encourage dependency syndrome instead of spurring provision through commercial channels. Pasture conservation areas have also captured the imagination of many villagers as a means to increase dry season pastures and lower spend on buying maize as livestock feed, but thus far their implementation seems half-hearted and ineffective.
Shallow wells	3	Significant quantitative benefits are supported by qualitative evidence, yet problems remain: Shallow wells coupled with drinking troughs deliver clear benefits to communities, including increasing the accessibility of water and reducing the labour burden on households. One shortcoming is that they are not protected, and hence sometimes get polluted with human waste, which suggests the need for a more holistic approach to minimise the risk of adverse impacts.
Galla goats	1	Not quantified, but qualitative evidence suggests major problems: This activity seeks to improve goat herds via interbreeding, thus increasing milk production and earnings from sales. These goats are still young so no benefits have been observed yet, but villagers are hopeful about this. Improving livestock breeds is a worthy aim. Yet villagers report that galla goats are more vulnerable to climatic shocks than local breeds, so this breed could be a poor choice for these communities. The fact that goats are provided for free is also problematic, since it discourage the shift to commercial livestock production, and instead encourage dependency thinking.

Table 20 Subjective rankings for the Solidarites project

6.8 Benefit-cost ratios and subjective rankings: Trocaire

Assumptions used in base case, or unless otherwise specified

- Expected duration of benefits = 10 years
- Discount rate = 10%

Activities (i.e., IGAs) examined, and summary data for the project	Costs (£)	Benefits (£)	Benefit-cost ratios base case	Benefit-cost ratios, based on alternative assumptions					
				Benefits last 5 years	Benefits last 10 years	Benefits last 20 years	Problem: Goats cured but half die of hunger	Boon: Twice as many goats saved because pastures are ample and herds larger	Discount rate of 0%
Capacity building for VSL loans	65,299	158,254	2.4	1.5	2.4	3.3	-	-	3.7
Livestock health	638,489	393,373	0.6	0.4	0.6	0.8	0.3	1.2	0.9
Overall project (pastoralist stratum only)	1,076,572	551,626	0.5	0.3	0.5	0.7	-	-	0.8

Table 21 Summary of benefit-cost ratios obtained for the Trocaire project

Priority activity	**Ranking**	**Analyst's observations**
Livestock health / Training and initial provision of free vaccinations	4	<u>Poor quantitative benefits but qualitative evidence suggests clear benefits and large future potential:</u> This activity is an excellent example of why it is important to not rely on quantitative evidence alone, since in this case doing so would suggest this activity is a poor investment. A closer look at the evidence tells a different story, although it also highlights problems that contain lessons for future programming. The qualitative evidence clearly shows that most villagers in the target communities now recognise the importance of veterinary medicine, including both vaccinating their animals and treating diseases. Many also now know how to recognise the early signs of different diseases and how to treat them. It is clear from the evidence that these outcomes represent major changes for the target communities. Finally, this evidence shows that this intervention has greatly reduced livestock deaths due to diseases. Villagers in the target communities now tend to be enthusiastic about livestock drugs, and seem willing to pay for them to treat sick animals. However, most express doubts about their capacity to pay for vaccination in the event that free provision ends. These claims seem unconvincing, however, and arguably represent evidence of dependency thinking rather than inability to pay. The likely reason that the quantitative measures were poor is the high cost of this activity. Notably, the project provided blanket free vaccinations to the target communities in 2014 as a means of demonstrating the efficacy of vaccinations and spurring commercial demand for them, a role which has since been taken over by the county government. One lesson of this experience is that providing inputs for free is expensive, and hence can easily lead to poor benefit-cost ratios. Another is that providing drugs can be a good way to demonstrate their efficacy. A third, however, is that providing free inputs seems an ineffective way to spur commercial demand. These observations

Priority activity	Ranking	Analyst's observations
		suggest that future interventions on livestock health may be better off focusing on other modalities. Another concern is that addressing livestock diseases could increase the pressure on scarce pastures by keeping alive animals that might otherwise have died. This observation highlights the inherent complementarity of livestock health activities and those to improve pasture resources. Trocaire engages such activities under the ASP, but making progress in this area is much more difficult than demonstrating the efficacy of livestock drugs, since it requires overcoming ingrained cultural practices such as maximising herd size and free grazing. A lesson from these observations is that continued activities to address pasture scarcity are needed, even if they fail to show strong benefit-cost ratios in the near-term.
Capacity building on VSL loans	4	Solid quantitative benefits and strong evidence of qualitative benefits, yet difficulties remain: This scheme enables villagers to seize the profitable business opportunities that exist with the target communities. This is important; since livelihood diversification is needed yet formal job opportunities are very limited. The loan scheme is greatly appreciated by villagers, including both its training and loan components. However, many expressed frustration about the amount of funding made available, which only allowed a small proportion of group members to obtain loans at any given time, and limited the loans to relatively small amounts. However, it is notable that others who had received the training but no loans had nonetheless managed to start a business. Villagers greatly appreciate this scheme, but some may like it for the 'wrong' reasons. Some wish to invest these funds in a business, but others want to buy livestock, while a third group wants them to meet household needs such as buying food or paying medical bills. The latter use does not build the household's earning potential, and is a misuse of a business loan. Buying livestock could be a wise investment, but given the current levels of livestock deaths in these communities the risk seems high that these new animals will be lost as well, thus leaving households with a debt but no asset. A clear lesson is that continued capacity building is needed.
PFS training	3	Not quantified and qualitative evidence is mixed, but future potential is large: Villagers learned various ways to improve livestock keeping besides use of livestock drugs, namely managing livestock on a commercial basis, rangeland management, and pasture conservation. These concepts have the potential to profoundly improve the welfare of the target communities by increasing both their income and assets. Yet communities were more receptive to some lessons than others. They were particularly receptive to the training on livestock drugs, given is rapid and tangible benefits. They were also somewhat receptive to lessons on commercialisation. By contrast, lessons on pasture management do not seem to have been internalised, perhaps because they bump up against profound cultural barriers. Pasture management nonetheless remains critical for the both the sustainability and resilience of local livelihoods, and thus merits redoubled efforts from stakeholder organisations.
Conflict resolution	3	Not quantified and qualitative evidence is mixed, but activity is important for avoiding adverse outcomes: This activity helped secure the recent peace accord between the Turkana and the Pokot, which has already delivered major benefits. Notably, it has saved many lives and enabled neighbouring communities to begin trading with each other. If the peace holds, the potential importance of this outcome cannot be overstated, since conflict undermines economic development and can even prevent assistance from reaching communities in times of need. Yet major challenges

Priority activity	Ranking	Analyst's observations
		remain, notably addressing root causes of conflict such as poverty and vulnerability to climatic shocks, which does not seem to be happening sufficiently at present. Some villagers warned that a major threat to this peace that should be anticipated and managed is that herders from areas with poor pastures may converge upon the areas with better pastures and deplete them, potentially incurring the hostility of locals. Others stressed the need to find viable livelihood opportunities for the types of people most likely to engage in raiding, namely youths.
Galla goats	1	Not quantified, but qualitative evidence suggests major problems: Villagers are hopeful that this new breed of goat will improve their herds via interbreeding, thus increasing milk production and earnings from sales. No benefits have been observed yet, however, since these goats are still young. Improving livestock breeds is a worthy aim. One problem is that villagers from neighbouring areas have reported that galla goats are more vulnerable to climatic shocks than local breeds, so this breed could be a poor choice given the climatic shocks faced by these communities.

Table 22 Subjective rankings for the Trocaire project

6.9 Benefit-cost ratios and subjective rankings: World Vision

Assumptions used in base case, or unless otherwise specified

- Expected duration of benefits = 10 years
- Discount rate = 10%

Activities (i.e., IGAs) examined, and summary data for the project	Costs (£)	Benefits (£)	Benefit-cost ratios	Benefit-cost ratios, based on alternative assumptions					
			base case	Benefits last 5 years	Benefits last 10 years	Benefits last 20 years	Problem: Half of honey ends up being stolen	Boon: Production of aloe vera and honey doubled , reflecting stated wishes of villagers	Discount rate of 0%
Aloe vera products	42,258	45,134	1.1	0.7	1.1	1.4	-	2.1	1.6
Honey production	44,215	21,703	0.5	0.3	0.5	0.7	0.3	1.0	0.8
Overall project (pastoralist stratum only)	588,416	66,837	0.1	0.1	0.1	0.2	-	0.2	0.2

Table 23 Summary of benefit-cost ratios obtained for the World Vision project

Priority activity	Ranking	Analyst's observations
Aloe Vera products	4	Modest quantitative benefits but qualitative evidence suggests real future potential, yet obstacles remain: Producing aloe vera products is a livelihood diversification option that has captured the imagination of its target communities. These products are both useful to villagers and sell well, and villagers are keen to continue and in time ramp up production. However, challenges include provision of needed inputs and identifying and accessing markets with greater demand. Communities are acutely aware of these challenges, but are likely to need outside support to address them, at least initially. The fact that most of these products require the use of boiled water to meet quality standards is positive, increasing the plausibility of selling these products more widely. Observed benefits are solid, but the main interest of this activity is its future potential as a scalable livelihood diversification option, given the degree to which communities agree about this being a viable livelihood option for them.
Honey production	4	Poor quantitative benefits but qualitative evidence suggests significant potential and important co-benefits: Beekeeping is a promising livelihood diversification option that offers potential income as well as direct and indirect benefits. It has captured the imaginations of communities and they are keen to continue and ramp up production. Yet several obstacles could impede scaling up unless they are addressed, notably theft and identifying and accessing markets. Communities are aware of these challenges but do not currently have solutions, and are likely to need outside support to address them, at least initially. This is an exciting livelihood diversification option because it is scalable, the potential market demand is large, and it has captured villagers' imaginations. It also creates incentives to conserve forests, which could help secure critical ecosystem services that underpin local livelihood options including livestock production, while also building the resilience of communities to climatic shocks.
Livestock production management	3	Not quantified; qualitative evidence suggests major benefits to communities, yet difficulties remain: This activity trains villagers to identify and treat common livestock diseases, which is greatly valued by communities since it can have a major impact on avoiding livestock deaths. This training is clearly useful to the target communities, given the potential of these treatments to deliver rapid, tangible benefits, including reduced livestock deaths and higher milk and meat production. One problem is that this training was delivered alongside free vaccination programme by Trocaire and the county government, which could exacerbate tendencies towards dependency syndrome, instead of helping villagers to embrace a commercial model whereby they sell animals in order to buy needed inputs.
Rangeland management	3	Not quantified; qualitative evidence suggests villagers have not yet internalised this critical concept: Rangeland management is a powerful idea that builds on the traditions of the target communities. Potentially, it could deliver higher pasture production and increased dry season pasture availability in a situation where pasture scarcity is the critical livelihood constraint. Benefits could include fewer livestock deaths and higher milk and meat production. Yet most villagers seem to see this is a nice idea but not realistic under current conditions. The magnitude of the potential livelihood gains are nonetheless suggested by the few villagers interviewed for the current study who grow pasture within enclosures.
VSL training	3	Not quantified; qualitative evidence suggests good potential, yet difficulties remain: This activity helps communities to access government grants for VSL schemes that can help them diversify their

Priority activity	Ranking	Analyst's observations
		livelihoods, and communities are enthusiastic about these loans. However, many VSL groups have not yet received grants despite completing the required steps, leading to frustrations. Another problem is that it seems like only some villagers understand that part of their earnings must be reinvested in their business, while others seem to believe that this is simply free money that they can use any way they want. A third challenge involves the scalability of this activity. Provided the new businesses are sufficiently diverse, scaling could work. But if most villagers tried to open kiosks, businesses could face diminishing returns.

Table 24 Subjective rankings for the World Vision project

6.10 Benefit-cost ratios and subjective rankings: Oxfam

Assumptions used in base case, or unless otherwise specified

- Expected duration of benefits = 10 years
- Discount rate = 10%

Activities (i.e., IGAs) examined, and summary data for the project	Costs (£)	Benefits (£)	Benefit-cost ratios base case	Benefit-cost ratios, based on alternative assumptions					
				Benefits last 5 years	Benefits last 10 years	Benefits last 20 years	Problem: Production of processed meat reduced by half	Boon: Fodder production doubled	Discount rate of 0%
Camel meat processing	430,386	2,866,793	6.7	4.2	6.7	9.0	3.3	-	10.2
Irrigated fodder production + spin-offs	407,734	3,696,801	9.1	5.7	9.1	12.2	-	18.1	13.9
Overall project (pastoralist stratum only)	1,132,594	6,563,595	5.8	3.6	5.8	7.8	-	-	8.9

Table 25 Summary of benefit-cost ratios obtained for the Oxfam project

Priority activity	Ranking	Analyst's observations
Fodder production in irrigated pastures	5	Strong quantitative benefits and qualitative evidence supports this, yet challenges remain: Fodder is produced in an area that has been enclosed using wire fencing that is irrigated with water from a borehole, as a strategy to increase fodder productivity. The key benefits of fodder production are providing a secure source of food for the herds of participating households and generating significant supplementary revenue streams. Three distinct supplementary revenue streams are generated by this activity, namely selling fodder to other pastoralists during the dry season; using fodder to fatten livestock in anticipation of selling them for a profit; and selling milk from the animals fed on this

Priority activity	Ranking	Analyst's observations
		fodder, which lasts for 8 months per year due to the animals being well-fed thanks to cultivated fodder supplies. The end result is that target beneficiaries earned high levels of supplementary income from this activity, particularly during the dry season. Sometimes target beneficiaries also share with those from other areas who visit them in times of need, based on the principle of social sharing. Such sharing works to a point, yet at present it sometimes places strong pressure on these communities due to the beneficial outcomes observed being relatively rare in the wider area. One implication is that these pressures would be less intense if the project activities were more widely practiced. Another problem facing this activity is that its reliance on irrigation using water from a borehole strictly limits its potential for expansion.
Camel meat processing	4	Strong quantitative benefits and qualitative evidence supports this, yet scope is limited: Processing camel meat for market sale is a livelihood diversification option with strong potential, since it can earn significant revenues for participating households and fits well with the local culture due to building on a traditional practice. This activity allows participating households to increase the production of processed camel meat, which enables them to sell surplus production for income instead of simply consuming their production like they did before the project. The fact that this livelihood option relies on camel meat makes it more climate resilient, since camels are the most climate resilient type of livestock. Processing camel meat also fosters other livelihood activities via the earnings it provides, namely buying young camels for fattening and resale, restocking of livestock that produce milk for sale, and income from shops that sell items such as groceries or clothing. The scope for developing camel meat production may be limited, however, since local demand is modest and quality standards may constrain access to urban markets.

Table 26 Subjective rankings for the Oxfam project

6.11 Benefit-cost ratios and subjective rankings: Save the Children

Assumptions used in base case, or unless otherwise specified

- Expected duration of benefits = 5 years for small business dev't and 10 years for fodder production
- Discount rate = 10%

Activities (i.e., IGAs) examined, and summary data for the project	Costs (£)	Benefits (£)	Benefit-cost ratios base case	Benefit-cost ratios, based on alternative assumptions						
				Benefits last 5 years	Benefits last 10 years	Benefits last 20 years	Problem: Half of new businesses launched fail	Problem: Fodder reduced by half due to severe drought	Boon: Number of new businesses doubles due to copycat effect	Discount rate of 0%
Fodder production	707,762	2,778,027	3.9	2.5	3.9	5.3	-	2.0	-	6.0
VSLAs and small	646,218	4,004,000	6.2	6.2	9.0	13.3	3.1	-	12.4	7.6

business development										
Overall project (pastoralist stratum only)	1,538,614	6,782,027	4.4	3.7	5.9	8.0	-	-	-	6.0

Table 27 Summary of benefit-cost ratios obtained for the Save the Children project

Priority activity	Ranking	Analyst's observations
Fodder production	5	Strong quantitative benefits and qualitative evidence supports this, yet challenges remain: Fodder is produced in areas that have been enclosed with fencing, as a strategy to increase pasture productivity by regulating their use. Enclosed pastures are large and expanding, and often include systems to divert water to these areas. The target communities take good care of these enclosures because they see them as precious resources, and have internalised the enclosure concept. These enclosures serve as secure reserve pastures for drought times. Direct benefits to target beneficiaries include minimising livestock deaths during dry periods and reducing the need to travel far with animals in search of pasture, which can be disruptive to family life and potentially dangerous for both animals and people. These enclosures also generate several supplementary income streams, namely selling fodder to other pastoralists during the dry season; using fodder to fatten livestock in anticipation of selling them for a profit; and selling milk from the animals fed on this fodder. The end result is that target beneficiaries earned high levels of supplementary income from this activity, particularly during the dry season. As such, fodder production generates savings and can thus stimulate income diversification. Sometimes target beneficiaries also share their fodder with those from other areas who visit them in times of need, based on the principle of social sharing. Such sharing works to a point, yet at present it sometimes places strong pressure on these communities due to the beneficial outcomes observed being relatively rare in the wider area. Another problem with these communities acting as a magnet to pastoralists in need from other areas is that these visitors can degrade the local pastures and may also bring livestock diseases. One implication is that these pressures would be less intense if the project activities were more widely practiced.
VSLA groups and small businesses	4	Strong quantitative benefits and qualitative evidence supports this, yet difficulties remain: Members of village savings and loan association (VSLA) groups launch businesses that generate supplementary income for their households. This income delivers diverse welfare benefits to these communities (e.g., higher food consumption, covering school fees), but is also used to increase the livestock holdings of households. These animals enhance the household's assets, and can also be used to earn money through milk production or fattening and resale. Some non-beneficiaries are also seeking to copy the activities of the beneficiaries by starting shops of their own. In theory, these uses several of business earnings are strongly advantageous, yet potential problems include businesses spending too much of their proceeds on consumables and purchasing livestock in situations where animals have a good chance of dying from diseases or pasture scarcity.
Vouchers for livestock drugs	2	Not quantified; qualitative evidence suggests significant benefits, yet major problems remain: Vouchers are provided to target beneficiaries free of charge. They can be used to vaccinate animals against certain

Priority activity	Ranking	Analyst's observations
		diseases, which has a big impact on preventing deaths from these diseases. A major problem with this activity however is that it provides inputs free of charge, which could foster dependency while undermining efforts to foster a commercial approach to livestock keeping.

Table 28 Subjective rankings for the Save the Children project

SECTION 7

Lessons learnt

7.1 Several high-level conclusions are clear

Several high-level lessons can be drawn from the preceding analysis, namely the combination of generating benefit-cost ratios, conducting sensitivity analysis, and specifying subjective rankings. In all cases, these lessons reflect common sense, yet the numbers put these home truths into stark relief.

One lesson is that there is a large premium on making interventions that maximise the benefits delivered. One way to do this is to deliver benefits that last for an extended period of time, so that the benefits may be calculated over a relatively large number of years instead of for just a few years. The more years that can be added in on the “benefits” side of the register, the higher the resulting benefit-cost ratios. Long durations can be secured by ensuring that activities are well designed and that the target beneficiaries internalise the relevant concepts and take ownership of them. Another way to maximise the benefits delivered is to find ways for the benefits delivered to disseminate beyond their target beneficiaries. These results in a larger number of beneficiaries for a same level of costs, which will obviously increase the benefit-cost ratios calculated. Spontaneous dissemination can be achieved where an innovation or activity captures the imaginations of other villagers or communities and does not have any firm barriers to entry.

Another lesson from the preceding analysis is that there is a similarly large premium on making interventions that minimise intervention costs, provided quality is not compromised. Again, this is an intuitive point, but one that is starkly highlighted by the numbers. If project staff were concerned about the potential benefit-cost ratios their work may generate, they might think more carefully when planning their project activities. For instance, they might avoid large expenditures unless these were wholly justified, based on promising to deliver correspondingly large benefits over their lifetime. Making such assessments is precisely what households or small businesses do when they informally assess whether taking a particular path seems “worth it”. CBCBA offers a way for organisations seeking to assist vulnerable communities to do likewise, yet based on firm evidence.

A third lesson is that the numbers do not tell the full story, and must be considered in their wider context. Some challenges are more difficult than others, and activities that seek to address these challenges may deliver lower benefit-cost ratios at least initially. Sometimes these activities promise to deliver large benefits in time, or alternatively may avoid potentially large costs. A slavish reliance on quantitative measures of the initial implementation of project activities could give misleading guidance to organisations planning or funding interventions that aim to build the resilience of vulnerable communities. Fortunately, a careful examination of the qualitative data reveals when project activities are important even if the early benefits delivered are relatively small.

Finally, some project activities require institutional support for only a short time, while others need longer-term support. Those requiring longer-term engagement may generate relatively low benefit-cost ratios initially, yet promise large benefits over time. Again, careful examination of the qualitative data in conjunction with the quantitative data can reveal where such longer-term engagement is worthwhile and where it is not.

7.2 The ASP projects are tackling daunting problems in different ways

The challenges facing the ASP target communities are daunting, and some key stakeholders serving them seem discouraged and uncertain about the best way forward. For instance, a smart and dynamic local government official was asked for their view of the most promising potential opportunities for their target communities to move forward. The official responded, “perhaps they could sell rocks” while smiling sadly, suggesting they were discouraged about the area’s prospects.

All seven of the ASP partners are bravely stepping up to try to address these daunting problems. Each partner is experimenting with possible solutions to the challenges facing the target communities, all of which have merit in different ways. The ASP partners should be applauded for their efforts and their honest attempts to explore possible solutions, despite the odds. This being said, some of the activities trialled have delivered better than others. Similarly, some seem to hold promise for delivering longer-term sustainability, while others seem to constitute only short-term solutions. Still another distinction is that some activities seek to address the factors undermining the pastoral economy, while others focus on measures that complement and depend on this core economy, but do not address the threats to it.

The present analysis seeks to tease out the most promising of the ASP project activities. It specifically emphasises (1) those that seem to deliver most effectively in ways that promise progress towards greater food security and enhanced resilience to climatic shocks, (2) those that address the factors undermining pastoralism, given its capacity as the bedrock of the local economy and (3) those that offer promising avenues for diversifying the local economy.

7.3 Applying cost-benefit analysis in this context is challenging but worthwhile

Applying cost-benefit analysis on interventions targeting vulnerable communities is challenging in various ways, namely:

- Only some benefits of project activities lend themselves to quantification, while others do not
- Quantified data on outcomes are not typically gathered by project staff
- The target communities do not naturally think in terms of quantified outputs, so seeking to obtain quantitative evidence from them can be delicate and requires a strong participatory approach.
- Obtaining frank answers from communities can be difficult since they may have a tendency towards strategic argumentation, i.e., providing a certain answer because think it might be beneficial to them.

Fortunately, the CBCBA methodology has answer for how to deal with each of these challenges:

- Quantifying only some project benefits can be seen as a virtue, since it helps ensure that estimates are “conservative” and hence reliable
- CBCBA generates its own quantitative data, and hence does not rely on data from ASP partners
- CBCBA applies a strong participatory approach that helps communities think in terms of quantitative benefits

- CBCBA uses several mechanisms to maximise the chances that it obtains frank answers from communities, while also relying on other data sources to cross-reference their answers.

The end result is that despite the challenges involved, applying cost-benefit analysis in this context via conducting a CBCBA study is arguably an excellent investment. Most notably, doing so forces all stakeholders to think in terms of concrete outcomes and their delivery in the target context. This may be difficult and messy at times, but it focusses the mind and gets people asking the right questions. That is, the process of talking and thinking through these issues is inherently educational and beneficial for those involved, from the CBCBA analysts to the implementing organisations and key informants to the participants in the focus group discussions. Thinking in terms of activities and outputs is easy, but can also lead to questionable investments and programmes. Thinking in terms of outcomes and quantification is difficult, but can help ensure a focus on the most promising project activities and approaches. Specifically, it helps focus minds on what really delivers and on why and how a particular activity might be 'good', instead of simply relying on theories, such as 'participatory consultations are important'.

7.4 The evidence gathered tells a coherent story

The present study gathered a large amount of data from numerous different sources. The picture painted is multi-faceted and complex, but also ultimately clear and coherent. This picture offers real hope, but also a cautionary tale. One 'plank' of this picture is that various promising livelihood opportunities exist for the ASP target communities, and most involve increased engagement with markets. Another is that these opportunities fall into two broad categories, namely commercialisation of livestock and diversification away from livestock. A third plank is that building on local traditions and institutions is desirable but that departures from them may be needed. Finally, addressing the biggest obstacles to progress may require sustained engagement by stakeholders.

One striking part of this coherent story is the degree to which villagers tend to agree about the opportunities and challenges they perceive. This is not to say there aren't disagreements among villagers; there most certainly are, as reflected in the testimony from focus group discussions provided. But villagers in the target communities tend to agree strongly about both the challenges they face and the most promising options for addressing them. While most of the ASP partners had various activities, the same few activities were mentioned repeatedly in different villages in answer to the question, "Which project activities have been most important for your community?" The types of activities that were of greatest interest were those that sought to either support livestock production or diversify household incomes. Villagers tended to be particularly keen on the prospect of getting grants or loans, but perhaps this is no surprise, since most people in most parts of the world would respond positively if someone proposed to give them a grant or a concessionary loan.

The question is how the various consensus viewpoints and perspectives should be interpreted by outsiders, specifically by institutions seeking to support these communities and build their food security and resilience to climatic shocks. Based on the evidence collected for the present report, the answer to this question should arguably be "it depends". Clearly, the perspectives of local people should always be a point of departure for interventions to assist them. Yet it also seems clear that sometimes the beliefs and practices of target communities may be unhelpful for dealing with the challenges they now face. One way to detect these instances where cultural beliefs or practices may be problematic is to ask the same question many times of different stakeholders, then to see what different viewpoints emerge. Sometimes these divergences can flag up problems and potential alternative ways forward. Various such divergences are highlighted in section 8.

7.5 Two promising types of interventions are commercialising livestock production and diversifying rural livelihoods

A key plank of the 'coherent story' told by the evidence analysed by this study is that various promising livelihood options exist for the ASP target communities, and most involve increased engagement with markets. Promising livelihood options for the ASP target populations fall into two broad categories, namely those involving commercialisation of livestock and those involving diversification away from livestock. Both of these tracks could powerfully improve the welfare of the target communities, namely by bolstering food security, building climate resilience, and fostering sustainability. Moreover, these two livelihood tracks tend to be complementary, whether at the level of the wider economy, the community or the household. Yet most of these promising livelihood options would require further support and facilitation from government and/or donors in order to be adopted at scale across the target communities, and hence to realise their full potential. If government and donors would focus on such a role, this could offer more long-term promise for these communities while progressively reducing the need for ongoing support.

Reasons why commercialisation of livestock is promising

- Maximising livestock herds is ineffective: Currently, the dominant strategy vis-à-vis livestock keeping in these communities involves seeking to maximise the headcount of herds and only selling animals when obliged to do so out of need. This strategy represents traditional practice in these communities. While it may have been effective in the past – when population pressure was relatively low, environmental resources were more abundant, and climatic shocks were comparatively modest – it is ineffective given the challenges these communities now face. Notably, it is ill-suited to a situation where pasture and water have become scarce, given the twin pressures of growing climatic shocks and greatly expanded local populations of both humans and livestock. It is also ill-suited to a situation where scarce resources coupled with high population pressure leads to growing tensions between neighbouring communities with a history of ethnic rivalry. One grim consequence of persisting with this strategy is high levels of livestock death, which can decimate the income stream and asset base of affected households. Another consequence is ethnic conflict, involving both livestock raiding and the killing of men, women and children.
- Communities are open to finding ways to improve livestock production: The target communities remain strongly attached to livestock as the root of their culture and hub of their economy. Yet they also recognise that high levels of livestock mortality mean that pastoralism in the area is in crisis, and hence are open to exploring options to improve livestock production.
- Commercialisation can sharply raise incomes: The prices of livestock in Kenyan markets vary greatly over the course of the year. These variations are caused by two major trends, namely (1) the inherent quality of livestock tends to change over the course of the year – and during climatic shocks – depending on pastoralists' access to water and pasture, and (2) many livestock keepers want to sell at certain moments while relatively few want to sell at other moments, creating either a supply glut or limited supply. These price variations create scope for pastoralists to greatly increase their earnings from livestock production by heeding price movements and being more calculating about when to buy and sell livestock. Specifically, these variations create scope for pastoralists to 'buy low' and 'sell high', instead of trying to avoid selling until the last minute, then ending up selling at the same moment as most other pastoralists, and at a time when animals are at their weakest and least attractive to buyers. The problem here is often a combination of lack of commercial orientation and lack of readily accessible price data.

- Commercialisation can reduce livestock losses: In addition to improving earnings, commercialisation of livestock keeping can minimise the risk of livestock losses due to poor pastures, diseases and livestock raiding. Specifically, it can (1) minimise the risk that climatic shocks lead to livestock losses by selling more animals during the rainy season, well before climatic shocks are likely to hit; (2) minimise losses from livestock diseases or raiding by incentivising pastoralists to keep smaller herds, thus lessening their need to travel to distant pastures, which can expose them to diseased animals or conflict over scarce resources.
- Commercialisation can support livelihood diversification: Commercialisation can also generate cash that can be used to diversify the livelihood strategies of vulnerable communities, such as investing in a business. The end result is that more households may follow a 'dual strategy' whereby they keep livestock but also develop one or more alternative income sources or stores of value. Such a strategy is likely to further raise household incomes while also stabilising incomes and asset levels in the face of shocks.

Reasons why livelihood diversification is promising

- Diversification options are underdeveloped: Options to diversify livelihoods remain underdeveloped in these communities. Key categories of options include: (1) producing and selling value-added products from livestock, such as meat, milk or leather products; (2) producing and selling other goods, such as honey, aloe vera soap, or wood products; (3) shop keeping, or selling goods in the village.
- Communities are eager to pursue livelihood diversification: These alternative livelihood options face major obstacles, yet one big advantage is that communities seem enthusiastic about exploring these options. This does not mean they wish to abandon livestock production, since most remain strongly attached to livestock. But most also seem to recognise the limits of relying on livestock only and are eager to diversify.

7.6 Interventions should build on local traditions where possible but depart from them where necessary

Another plank of this 'coherent story' is that building on local traditions or institutions is desirable, but that departures from them may be needed. Where it is possible to build on aspects of the local culture, this can help ensure that interventions enjoy local ownership and deliver outcomes that communities endeavour to sustain over time. Yet departures from local traditions are sometimes needed to achieve progress in key areas, despite such changes being difficult, uncomfortable and slow to realise.

Whenever an intervention is being planned, it is important to begin by examining the local systems that exist in the relevant sector, and whether they provide a foundation that could be built upon. Specifically, the scope for either complementing or supplementing these systems could be considered. Simply ignoring these systems, however, could reduce the efficacy of the intervention.

The range of possible scenarios can be illustrated using examples. One possibility is building effectively on local systems, such as using local bylaws to prohibit cutting of Acacia trees while controlling the proliferation of Prosopis trees. Another possibility is seeking to build on traditions but finding this ineffective, such as trying to restore traditional rangeland management practices but discovering that communities don't follow these practices due to desperation linked to pasture scarcity. A third possibility is to depart from traditions, such as by supporting women to start businesses or by encouraging communities to create enclosed pastures.

7.7 To ensure potential opportunities are recognised, it is best to think in terms of both actual and potential outcomes

In the present study, one consequence of thinking in terms of outcomes is the conclusion that it is important to consider not just actual outcomes already achieved, but also potential medium-term and longer-term outcomes. Key reasons for this include:

- When you look closely at the ASP projects, it is obvious that some of the challenges faced are huge (e.g., cultural and social change, contending with dependency syndrome), so progress will take time
- Some of the most promising opportunities might be the hardest ones to get going (e.g., increasing fodder supplies, overcoming cultural obstacles like the desire to maximise herd numbers), so the initial gains may be low, but the potential medium-term to longer-term gains could be large.
- The prospect of continued development failures in the target counties is extremely worrisome, given the high rate of population growth, the scale of environmental degradation, the sharp increase in climatic shocks, and the simmering ethnic tensions between neighbouring groups. The medium- to longer-term 'costs' of failing to find viable, sustainable solutions for these communities could be very high, both for them, their country and perhaps also other countries.

Thinking in terms of both actual and potential outcomes suggests the need to apply a different calculus to decision making regarding potential investments in the area. Specifically, it suggests the relevance of considering alternative potential medium-term outcomes, including both best-case success and worst-case failure. Applying this different calculus is important in order to minimise the chances of ending up with false negatives (i.e., abandoning activities with great longer-term promise) and/or false positives (i.e., funding activities that lead to only short-lived gains). Simply put, in situations where the target population faces daunting challenges and tangible dangers, it is important to be lucid about the actual opportunities and threats in the medium- to longer-term.

Trying to get a sense of what the future may or may not hold is difficult, but certainly not impossible. Many developments can be predicted well before they finally occur, if only one looks closely and clearly enough at the situation. As it happens, CBCBA offers a useful approach to do this. Reasons include:

- CBCBA involves meeting with the full range of key stakeholders working in a given area, from target communities to government officials to project staff to private firms. It thus enables analysts to benefit from the insights and experience of different stakeholders, and to 'stand on their shoulders'.
- CBCBA provides an opportunity to carefully examine a range of potentially promising project activities. It is difficult to know the best way forward in a challenging context, but learning from a range of project experiences is a good way to do this.
- Sensitivity analysis creates scope for considering how the outcomes might change if a key variable were altered. For instance, this makes it easy to consider how the benefit-cost ratio might change if a given innovation succeeded in truly capturing imaginations of target beneficiaries and disseminated rapidly to neighbouring communities.

The present study has focused largely on the current situation in the target communities, but also sought insights about potential future options. Based on these discussions, both the opportunities and the threats facing the target counties seem tangible and clear. The best-case scenario could be highly positive, and the evidence gathered by the present study suggests some of its key components. The worst-case scenario, meanwhile, could be fearsome. Potentially, it could include deepening ethnic conflict, growing linkages to international terrorism (i.e., Mandera, Marsabit and Wajir are Al Shebab recruiting grounds), refugee flows, and possibly famine.

SECTION 8

Recommendation for future interventions

This chapter examines more closely several key opportunities, barriers and possible leverage points for interventions to support the ASP target communities. The factors highlighted are those that emerged most strongly from the CBCBA study. Two related issues are covered in Annex 3, namely dependency syndrome and the perverse effects of maldevelopment.

Each factor is first briefly described, then elaborated via the voices of selected interviewees who made directly relevant observations. These differing voices provide a nuanced and multi-faceted view of each issue, and constitute a rich body of data to inform evidence-based programming. However, readers are encouraged to simply skip over these tables if they do not wish to consider these details.

8.1 Increase fodder supplies via environmental rehabilitation

Pasture is a key limiting constraint on pastoral livelihoods in many of the ASP target communities, so addressing this constraint is a critical priority. Specifically, pasture shortages can leave animals vulnerable to disease, less likely to produce offspring or milk, and can even cause deaths. Pasture scarcity can also trigger worrisome coping mechanisms, such as HSNP recipients using much of their safety net allocation for their animals or purchasing maize on credit from local merchants as feed for their animals. When pasture supplies run out, local people either leave with their herds in search of pasture or hope for the best, with both of these scenarios often leading to livestock deaths and serious hardship. This state of affairs places a premium on any activities that offer scope to increase pasture availability, particularly during climatic or disaster shocks.

Options for increasing fodder supply include customary rangeland management systems as well as more active strategies for fostering the rehabilitation of grasses and/or favourable trees, such as pasture conservation areas, tree cultivation, or the ‘multi-nutrient urea blocks (MUBs) being piloted by Solidarites.

Of these options, only rangeland management – or saving certain pastures for dry season grazing – fits with the local culture. Unfortunately, such traditions are under threat. One problem is climatic shocks, with communities reporting that they seek to follow such practices when rains are good but abandon them when climatic conditions are poor. Given the strong increase in the incidence of poor climatic conditions in the area, reviving these traditions could prove difficult. A second problem is that this strategy may be inadequate to cope with the increased livestock numbers in many of the target communities, particularly when coupled with the growing incidence of climatic shocks. These observations highlight the need for more active strategies of pasture management such as those tested by some of the ASP partners, rather than simply trying to restore traditional rangeland management practices.

Taking a more active approach to pasture management could hold real promise for the target communities, but would require that they embrace major changes to some of their traditional ideas and practices. Specifically, it would require that they engage in one form or another of environmental rehabilitation, in a departure from traditional practices. This need for cultural change is reflected in the fact that the villagers interviewed for the present study rarely mentioned the environment unless they were specifically asked about it, even though

environmental degradation in the area is extreme and is profoundly undermining their livelihoods. Simply put, such questions seem to represent a cultural 'blind spot' for the target communities. Trees in particular are a low priority for them, even though they recognise that trees provide valuable goods and services. Cultivation of any kind is also seen as a low status activity within their culture. Manure is another local resource that could potentially be harnessed to improve pastures but is not currently valued by these communities. While pasture was universally recognised as a critical problem by the interviewees, it was typically seen as caused by 'drought', and unrelated to the natural resource management practices of communities. A related problem is that the dominant responses of these communities to the pasture problem seem unlikely to succeed over time, namely travelling ever further in search of pastures and hoping that the rains – and their pastures – will be better again in future.

All this being said, environmental rehabilitation measures nonetheless represent a potentially pivotal opportunity for the target communities that could enhance food security and resilience to climatic shocks in the area, and thus help establish a solid foundation for lasting peace.

The following contributions by interviewees do not constitute a definitive analysis of these questions, merely inputs from stakeholders well-placed to comment. Comments 9 and 10 are both from forward-thinking villagers. Their testimony shows that the ASP target communities include people with open minds and a critical perspective who could potentially act as local advocates for difficult interventions, such as those that seek to address cultural barriers to change.

#	**Selected comments from interviewees**
1	I buy maize with the money I get from HSNP but usually only eat half, since I give half to my weak animals. Many people here do this. (CONCERN villager)
2	The rich can afford to truck water to the few areas where good pasture remains and thus avoid their livestock dying from hunger, but most of us cannot afford this. (CONCERN villager)
3	The possibility of tree or pasture cultivation offers a real opportunity, but would require radical cultural change. It would involve investing significant labour inputs before seeing the fruits of this effort. If communities fully understood the future benefits of such efforts and got some help with the up-front costs they would face, perhaps this could work. The danger though is that pastoralists can get discouraged fast. (Solidarites staff)
4	The conservation area has helped reduce conflict with our neighbours, since it creates a buffer area between us. This area is also more productive than the surrounding lands, with its grass currently about 1-meter-high vs very short elsewhere. It also has lots of trees and lots of wildlife. This conservation area has strong support from government. Yet there are problems with this area. It is run by a mzungu, and some people say he 'owns' this area and are not happy about this. The only reason people accept this conservation area is because many locals are employed there as guards. But even so we sometimes see incursions, since everyone here believes this is our land. If anyone tried to put up a fence to protect this conservation area you would get conflict, because everyone would say you are trying to privatise this area and wouldn't accept this. (BOMA villager)
5	One opportunity is pursuing some cultivation activities, such as irrigated farming next to the river, growing vegetables, or planting trees. One obstacle to this is the traditional belief that those who farmed were poor and had low status, whereas someone with livestock was considered rich and had respect. Yet now increasingly some people are seeing the benefits of livelihood diversification, including those involving cultivation. (Trocaire implementing partner)
6	During the transect walk, I saw manure scattered on the ground within the village and asked the villagers if they used it, and they said they didn't because they weren't farmers. (direct observation by the CBCBA analyst)
7	Manure has no uses for us, so periodically we collect it and dispose of it elsewhere. (CONCERN villager)
8	Village leaders are very aware of the pasture scarcity problem and want to find ways to address it. Seeking to rehabilitate degraded pastures or depleted tree stocks could deliver significant benefits over time, yet any such efforts would be challenging due to population pressures and climatic shocks. Finding viable solutions would require community-led efforts. For instance,

#	Selected comments from interviewees
	community-based mechanisms could be used to protect a given area of pasture at certain times by imposing penalties such as heavy fines or being made outcasts. Solidarites is already holding exploratory discussions with village leaders about developing community-based mechanisms to protect rangelands. (Solidarites staff)
9	We would be interested in protecting or even cultivating pasture. We would also be interested in protecting trees, and if possible we would like to plant them. We want to know which plants could help us and how to cultivate them. But we would need capacity building to do such things. (Solidarites villager)
10	I cultivated pasture in a household plot measuring 5 acres, and it has grown well. Last year I relied on this pasture in the dry season and was able to sustain my livestock, to the point that I didn't have any deaths due to hunger. Before I had this pasture I might have lost half my herd. Another villager recently also tried starting an enclosure, including spreading grass seeds to foster better growth. His pasture was growing well, but then someone broke into his enclosure at night and grazed it to the point that its pasture was depleted. The owner was so discouraged by this that he has now abandoned his efforts. I have managed to avoid this fate thanks to having a strong fence. I want to continue doing this, since it is very beneficial. (World Vision villager)
11	Efforts to increase tree stocks could be more complicated, since our target communities tend to have little interest in trees, and lack a culture of tree planting. Also, the harsh local environment makes tree planting difficult. If a small tree starts to grow, it must first cope with intense heat and little rain, then survive grazing from goats. (Solidarites staff)
12	Goats greatly appreciate tree pods, and those that eat tree pods produce more milk than others. People recognise these benefits, but still view trees as their last priority. (CONCERN implementing staff)
13	The county started a tree nursery in Lorengippi, but the only concrete outputs are a fence, a gate and a water tank, with villagers suggesting that most of the funds disappeared due to corruption. A training on the benefits of tree planting was also delivered that elaborated on how trees are good for fodder, fuel, fencing, shade, and making rain. I am told that people "accepted" this information, yet no one mentioned trees spontaneously in our entire 3-hour meeting, so it seems this information was not internalised. (direct observation by the CBCBA analyst)
14	Tree pods are very good for goats. If we had enough pods, then our goats might not die in times of drought. Pods make goats stronger than grasses do. Sometimes we gather and store them. (CONCERN villager)
15	If there were more Acacias here, it would help a lot. It might mean that we could collect and store these pods, then feed them to our livestock during the dry season. This could allow us to avoid having to buy maize to feed our livestock. It could also mean that any maize we purchase with the money we get from HSNP could be used to feed our families instead of our animals. (CONCERN villager)
16	If we had more pods, we would get more milk production, since our animals would be stronger. (CONCERN villager)
17	In theory we could take action to increase local tree stocks. But to plant trees we would need better access to water. Otherwise, we might be limited to trying to protect them. We would be interested in this. (CONCERN villager)
18	It is essential that we find a way to rehabilitate the local environment, since it is needed to sustain local livelihoods, including pastoralism. But this is a big challenge, since the culture here is based on free grazing; yet addressing our pasture problems will require abandoning these traditions and restricting grazing in some way. An ownership model is needed that creates incentives to conserve and invest in natural resources, instead of the free grazing model where resources are freely available to all. This could involve community ownership. We need to better understand how to make this essential transition. Ideally, any future environmental management system would be friendly to pastoral mobility, since this would require less of a departure from the local culture with its traditions of reciprocity. One possibility is to require non-locals to pay to use pastures, but this would require transforming the culture of the wider area, which would be difficult. Another option is to establish community systems that limit access based on negotiations. The county government is seeking to address the pasture problem by fostering restricted grazing areas. Some communities are suspicious though, and view this as a ploy to expropriate their resources, perhaps for the benefit of other groups. If such strategies

#	Selected comments from interviewees
	are to work, affected communities must buy into this concept via participatory engagement. Efforts to capture people's imagination could emphasise the idea that such practices can create a 'bigger pie' that can be fairly distributed. (CONCERN implementing partner)

8.2 Target cultural beliefs that are undermining welfare

Deep-seated cultural beliefs can undermine community welfare in cases where they no longer offer a good fit with the opportunities and constraints facing them. These beliefs can also impede villagers from embracing promising new practices and strategies, such as the commercialisation of livestock keeping or measures to foster environmental rehabilitation. Examples include beliefs about livestock keeping, social sharing, and gender. Yet even where they are problematic, cultural beliefs also represent potential opportunities, provided effective ways can be found to help communities embrace new ideas and perspectives. Where they are found to be obstacles to reducing food insecurity or building climate resilience, sustained efforts are needed to address these cultural obstacles to change.

The culturally embedded livestock management practices and associated beliefs of the target communities clearly constitute a major obstacle to enhancing food security and climate resilience in the area, namely their attachment to maximising herd size and reliance on free grazing. However, it would be wrong to frame these cultural beliefs as 'uneconomic' or misguided. These ideas arguably served the communities well in the past, when population pressure was lower and climate change impacts were not yet observed, judging from the testimony of the target communities regarding how their life was 20 years ago. Yet the evidence gathered by the present study also clearly suggests that these cultural beliefs are problematic given the constraints the target communities now face, namely climatic shocks and environmental degradation linked to population pressure. Sustained efforts are thus needed to address these cultural obstacles to change, since pastoralism in the zone now faces threats to its continued viability.

Given the importance of cultural beliefs about gender, this issue deserves special mention. Culturally-defined gender roles are strong across the target communities, with many economic activities being gendered and women often kept subordinate and excluded from certain types of decisions. It follows that interventions into these communities must be gender sensitive, carefully considering their target beneficiaries, as well as the reasons for targeting these persons and the possible results of this targeting. For instance, if an intervention targets only women will it break down cultural barriers to women owning livestock or running a business? Or will it instead miss important opportunities to assist communities via their men, for instance by providing young men with occupations that incentivise them to refrain from engaging in ethnic conflict? It is important to consider such questions when interventions are being designed, in order to ensure that their approach to gender does not undermine or limit their potential impact.

The following contributions by interviewees do not constitute a definitive analysis of these questions, merely inputs from stakeholders well-placed to comment.

#	Selected comments from interviewees
1	Most people in the target communities keep livestock primarily for prestige, which means trying to keep as many animals as possible and then sometimes ending up losing many. If your mind is infected by a fixation on her numbers, then you may not be open to finding new ways to solve problems. I saw a man with 300 animals end up losing 80% of them to drought because he was focused on prestige and simply hoped things would be OK. (BOMA staff)
2	Some of us sell during the rainy seasons when our animals are strong and the prices are high, but 95% of people here still follow the traditional model of only selling when they need to in order to meet household needs, so they may get bad prices for their animals. (BOMA villager)
3	We sell livestock based on our needs, such as buying food, paying school fees or purchasing livestock drugs, and make these sales whether the prices paid are high or low. No one in this village follows a different approach. If a person sold an animal at a time when they didn't need to, then they might be tempted to spend the money, so we are careful about this. (World Vision villager)
4	We are thinking about our future, but don't know what God has planned for us. We will see. (World Vision villager)
5	The decision to sell does not depend on the prices offered, but only on whether a household is facing need. (World Vision villager)
6	Few people here possess a business-oriented mind-set or the knowledge needed to recognise potential opportunities in the local economy. They may therefore fail to seize such opportunities. (World Vision staff)
7	Traditionally pastoralists keep livestock for prestige and economic security. Those with many livestock have respect, since everyone knows they can take care of their family and be depended upon when needs arise. I've seen pastoralists who sell some livestock to open a shop, but then had problems because this doesn't fit well with our culture. For instance, maybe your cousin and brother come by the shop and ask for things, while not recognising that this can destroy your business, and is not like borrowing a goat in order to get some milk. (World Vision staff)
8	Pastoralists find it easier to manage their wealth in the form of animals than in cash, because the latter is not part of their culture. Their culture is to sell when a need arises, not in order to earn cash to deposit with the bank. A few are slowly starting to buy and sell livestock on a commercial basis, but this remains unfamiliar to most people. Selling livestock to save money and make other investments is the way to go but it's not the culture here and will take time. People may agree to sell when they need cash or when animals are on their last legs during a drought to avoid them simply dying, but they do not like selling animals when they are fat and strong. Word Vision has been trying to convince them to do this, but so far it hasn't worked. (World Vision staff)
9	Another problem is violence against women, which includes the practice of FGM. It's hard to understand why our culture does this, but we need more education to solve it. (BOMA villager)
10	The project seeks to empower women not to change men, yet such changes may come organically. For instance, men may be less inclined to beat their wives if they are providing for the family. They might think, "if I beat her she may leave", or "while I was away she provided for my kids". (BOMA staff)
11	One problem facing girls is that some families want to marry them off early to receive a dowry. Many are married off at 14 or 15 years old, but even as young as 9. Families receive many camels for a girl, so the temptation for them is great. By contrast, if a girl goes to school, she may decide she wants to choose her own husband or even not marry, and then the family may lose out on the dowry entirely. Poverty and food insecurity make such problems more acute. (BOMA staff)

8.3 Support the commercialisation of livestock production

Pastoralism is the basis of both the economy and culture of the ASP target communities. The ASP projects seek to both revitalise this core sector and explore various livelihood diversification options. One of the main ways these projects seek to do this is by encouraging communities to take a more commercial approach to livestock keeping. Greater commercialisation of livestock keeping is a major opportunity for the target communities, but will require various types of institutional support as well as sustained efforts to foster a

change to the local culture. Some of the comments listed highlight remaining barriers to commercialisation of livestock in the area, while others suggest opportunities to support this transition. These contributions by interviewees do not constitute a definitive analysis of these questions, merely inputs from stakeholders well-placed to comment.

#	Selected comments from interviewees
1	There are huge opportunities here in marketing livestock. Pastoralists need to sell their animals to meet various household needs, such as buying grains and paying school fees or medical expenses, yet they often sell them at the worst possible moment. I follow a commercial model instead. I buy during the dry season when prices are low, because animals are weak and people are worried they may die, so everyone is trying to sell. Then I sell during the rainy season when animals are strong and prices are high. Using this model, you can sell few and buy many. My goal is always to increase my herd as much as possible, and this strategy is a good way to do this. I tried to explain all this to my fellow villagers in some trainings supported by World Vision, and also did some of this in my role as assistant chief. I have said that it is not good to just keep your livestock while ignoring your other needs, and that sometimes it's good to do other things besides livestock keeping. About 35 people in the village now follow this model, buying and selling livestock as a way to earn money and also to diversify their livelihoods to things like shop keeping and hotels. The people who do these two things tend to be the same ones, as opposed to the more traditional people. (World Vision key informant)
2	The prices pastoralists get in Marsabit county are about 1/3 of the Kenya Meat Commission price, or the prices these animals would sell for in Nairobi. This raises the question of what is a fair share for buyers and sellers. (BOMA staff)
3	The fact that our communities often get only poor prices affects their market participation, since it makes selling livestock less attractive. One factor that contributes to the poor prices paid is that our communities typically lack good market information, and don't know what the prices are in the terminal market. One exciting opportunity that could help increase prices paid would be exporting to the Middle East, since this could greatly increase demand for our livestock products. Yet we would first need to meet certain quality standards, which is a challenge. (CONCERN implementing partner)
4	Having access to market information is key. Perhaps this information could be made available via mobile telephones, to ensure it reaches communities in a timely manner. Price information on types of livestock and key consumables would be particularly useful. (Trocaire implementing partner)
5	Our county is big but our infrastructure is poor, so different parts of the county are not readily accessible to one another, whether to do business, access services or obtain information. We are only now finally getting a tarmac road connecting the county with the rest of the country. Most of our roads are poor quality dirt roads that are difficult at the best of times and impassable at other times. (CONCERN implementing partner)
6	Institutionalising weekly or monthly markets in different villages or towns within the county could help foster market engagement by securing better prices. (Trocaire implementing partner)
7	For women to access markets they need the markets to come to them, since they are not mobile. (BOMA staff)
8	When you suggest that people sell animals then deposit the money with a bank, they are resistant because they fear this money may be stolen if they give it to someone they don't know. Fortunately, communities are now slowly coming to trust bank agents, since many receive their monthly HSNP stipend through them. MPESA is also a potential solution, though its current limit of 100,000 Ksh makes it problematic for livestock transactions. (World Vision staff)
9	Agro-vet stores are an important innovation, since they enable villagers to purchase livestock drugs within their villages, so that they can treat diseases in a timely manner. (Trocaire implementing partner)
10	One opportunity for our community is the abattoir being planned by the government, which could potentially increase demand and help us get better prices. Another is for the government to build a tarmac road to increase our access to other areas. Perhaps the most important solution to our problems however is praying for more rains. (BOMA villager)
11	The recent opening up of trade routes creates important new opportunities. This includes both the new tarmac road to Nairobi and the new open border agreement with Ethiopia. (BOMA staff)

#	Selected comments from interviewees
12	One key benefit of Turkana is that it is near to other countries, namely Uganda, Ethiopia and South Sudan, which potentially offers opportunities for trade if only these could be developed. (Trocaire implementing partner)
13	Most of the meat consumed in Kenya comes from the pastoral communities, but most pastoral communities are in a desperate situation. A key way to improve the welfare of communities is increased market engagement and securing increased value for producers. One promising initiative is the county government's plan to establish an abattoir just outside Marsabit town for slaughtering animals from the area. This could be important, since it could see pastoralists get better prices, instead of seeing the value of their animals being largely lost on transport costs and unscrupulous pricing by middlemen. But for the abattoir to work well would require good governance, including transparency and accountability. One barrier to the abattoir realising its potential is that we don't currently have a holding ground where livestock can be held under quarantine until they can be demonstrated to be healthy and free from disease. Some in the government do not recognise this need, and believe that meat from the area is already safe, yet outside buyers will need verification of this. Either government or entrepreneurs could establish a holding ground near the abattoir, with ample water and pasture for the animals kept there. Pastoralists could pay a daily fee for each animal kept there, and then earn this money back via higher sales prices for their animals following their release from quarantine. (CONCERN implementing partner)
14	Government policy could support pastoralism in various ways. One type of support that would be very helpful would be a system to share information on market prices, including prices in neighbouring countries. Establishing fattening grounds nearby to key markets like Marsabit town would also be very helpful, since it could enable herders to fatten up their animals prior to selling them. A system to verify the quality standards of livestock would also be helpful, since it could facilitate sales to other countries. (BOMA staff)
15	The County Steering Group is supposed to coordinate activities of actors in the county but not fulfilling this role. They could be asking questions such as how no strings food aid could potentially undermine the interventions of other actors. (BOMA staff)

8.4 Support promising livelihood diversification options

While pastoralism is the bedrock of the area's economy, it is also important to identify potential livelihood diversification options for the target communities. The following comments highlight various different options, including both options that depend upon the continued viability of livestock keeping in the area and others that do not. These contributions by interviewees do not constitute a definitive analysis of this question, merely inputs from stakeholders well-placed to comment. For many of the options cited, the role of government and donors in creating an enabling environment could be critical to their chances of success.

Charcoal production merits special mention given its status as a deeply problematic livelihood option for these communities. One problem is the continued environmental degradation of these lands and the dearth of remaining forest resources, while another is the fact that charcoal production is illegal in Kenya. In the ASP target communities, charcoal production is essentially a short-term coping strategy that undermines longer-term prospects and resilience. Yet in many areas it remains the first alternative villagers turn to when they struggle to meet their household needs via pastoralism, so interventions to support alternative livelihood options are needed.

#	Selected comments from interviewees
1	Livestock is the backbone of our culture and economy, so livestock marketing opportunities are of particular interest to us. What would make a big difference to us would be if we could get better prices for our animals. We are suggesting livestock marketing because that's what we know best, but we would also like to explore other livelihood diversification options. (World Vision villager)
2	Fostering value addition of local products such as milk, meat or honey could help ensure that they can be sold at higher prices. Value addition for meat holds particular promise, such as

#	Selected comments from interviewees
	producing biltong or sausages. Skin and bones could also be the basis of value addition activities, such as producing wallets or knife handles. (Trocaire implementing partner)
3	The key is to build on the various resources the county already has. Big firms are already seeking to develop some of our resources, such the Turkana Wind Power Company and Tullow Oil. Solar is another potential opportunity for the county. Still another is the Lamu Port Southern Sudan-Ethiopia Transport (LAPSSET) project linking two of our landlocked neighbours to the sea, since this planned corridor is set to run through Turkana. (Trocaire implementing partner)
4	Turkana County is food deficient, so promoting food production is one opportunity, as there is lots of food demand here. The county government and World Food Programme are buying food for use as food aid, so one solution would be for them to buy from local producers. The trouble is that government policy is to purchase from the lowest bidder, and our maize costs more to produce. (World Vision staff)
5	Honey is another potential opportunity. Honey Africa is a Kenyan firm that buys raw honey then processes it. Turkana County could provide to such a supply chain. One way this could work would be for the firm to distribute beehives, then sign an agreement committing to buy their production. Such a scheme could really help the communities. (World Vision staff)
6	Gums and resins could be an interesting livelihood diversification option, e.g., gum Arabic, frankincense. If we had policies and systems to support these products such as certification schemes, there could be real potential there. Yet it would be important for these products to be able to meet organic standards thanks to being handled in specific ways. (BOMA staff)
7	Irrigation is another option that would be of interest, since our village is near to the river. Some neighbouring village are now practicing rain-fed agriculture thanks to project support, and are benefitting from no longer just relying on livestock. (World Vision villager)
8	Support for SMEs is needed to help us develop stronger, more resilient value chains. In northern Kenya, most SMEs will be linked to livestock, since that is the bedrock of our economy. Challenges include things like improving the health and strength of our animals and developing associated industries like meat, milk and leather. Specific needs include training and finance. Training is needed in things like financial literacy, quality standards, hygiene, packaging, marketing, customer care and pricing. Financing options could include sharia-compliant banks, to better fit with the local culture. Some interventions have simply distributed finance without providing training, mentoring or follow up, but the funds in question often disappear quickly with little impact. (BOMA staff)
9	People can also sell animal hides. One person comes here from Lodwar to buy these, and pays 20 Ksh for sheep hides and 50 Ksh for goat hides. The sales prices in Lodwar are 40 and 70 Ksh. (World Vision villager)
10	Charcoal production is a shameful activity in our culture. If you are selling charcoal this shows everyone you are poor and lack alternatives. Yet this is changing now and more people are producing charcoal, because people know there is money in it. Also, producing charcoal might mean that you can avoid selling your livestock, which people like because selling livestock is viewed as the last option. Charcoal production is thus becoming socially acceptable. For instance, a charcoal producer is still seen as marriageable, as long as they also own livestock. All this being said, if people have another option for earning income they would take it. (World Vision staff)
11	Many Prosopis trees are growing here in the village and they grow very well. Their pods are greatly appreciated by both goats and donkeys, but consumption of these pods must be controlled to avoid harm to these animals. Donkeys can overeat Prosopis pods to the point of becoming constipated, while goats can have problems with their teeth if they eat these pods too much. To control charcoal production, the village elders passed a bylaw forbidding villagers from cutting branches from Acacia trees but permitting them to harvest wood from Prosopis. This law works well, and serves to both protect Acacias and control Prosopis growth, while also supporting charcoal production within the village. (World Vision villager)
12	Baringo County has a factory that produces livestock feed from Prosopis seeds, which addresses two key problems simultaneously. On the one hand, it controls the proliferation of Prosopis by paying local people to collect their seeds before they can be eaten by goats, thus breaking the pathway via which Prosopis is disseminated. On the other hand, the feed produced is nutritious and appreciated by livestock, thus offering a potent food supplement for use during the dry season when pasture availability is poor. For now this solution has only

#	Selected comments from interviewees
	been implemented in this one place, but it seems to hold promise for scaling. (World Vision staff)
13	Turkana County does not currently have market days, yet these are very helpful. Everyone knows they are happening and outside traders can visit that day, while local people also know what day to bring their wares. At present this doesn't happen within the county. (World Vision staff)

8.5 Harness neglected opportunities within schooling

Schooling in its current form is problematic in the target communities. Most basically, paying school fees is a major challenge for households, while the direct benefits of schooling to pupils are not always clear.

Schooling is clearly a high priority for communities, but to understand this it is necessary to consider how it is viewed. The testimony from villagers suggests that schooling is mostly seen as a way to get a family member into a job, so that their income can help support the family. However, this belief seems misplaced, since few school leavers from the target communities manage to secure formal sector jobs.

Fortunately, some villagers have an alternative view of schooling as a way to help them conduct business, solve problems and communicate with outsiders. This latter view holds great promise, given the myriad business opportunities that seem to exist in the area. In order to harness this potential, school curricula used in these communities should be revised to make them better suited to the local context, for instance by making them pastoralism compliant and supportive of entrepreneurship. Dynamic villagers who see these linkages could perhaps be engaged as local resource persons. Such a revised curricula could help address the fact that many people in the area have a narrow view of livelihood options focused on livestock keeping and producing charcoal.

Any revised curricula should also be made 'climate smart', by ensuring that they fully incorporate climate change considerations into their content. This should cover both the ways that climatic shocks represent major threats and how climate smart technologies offer promising solutions. The gender aspects of these linkages should also be included, since they are profound.

These contributions by interviewees do not constitute a definitive analysis of this question, merely inputs from stakeholders well-placed to comment.

#	Selected comments from interviewees
1	Sometimes we have to remove our children from school when our livestock die due to drought. They may be doing well, but if we have no money then we cannot pay the school fees. Some people here don't have any livestock, so they won't have money and their children may never go to school. (BOMA villager)
2	If someone doesn't have livestock, their only option may be to gather wood fuel or make charcoal in order to survive. This might be enough to feed them, but won't be enough to cover school fees. (BOMA villager)
3	Twenty years ago few people in the county had gone to school, and you wouldn't see a family selling an animal in order to send their child to school, yet nowadays this is common. Education is now seen as important. People say here, "it's hard for drought to kill the pen". They believe that people who are educated will find a way to live with drought, because their mind has been opened and maybe they see options. (Trocaire implementing partner)
4	If the drought persists like this, our children might end up having difficulty getting a job, since we won't be able to educate them. (BOMA villager)

#	Selected comments from interviewees
5	Illiteracy levels are high here, since most of us didn't even go to class 1. Even the few who are educated up to level 4 have a hard time getting a job. Only the few who get a degree can get a job. (BOMA villager)
6	Even if we don't get a job education can benefit us, since being literate is useful. Sometimes however, it may not help, since educated people could be frustrated about not getting a job and turn to drugs or other things. (BOMA villager)
7	Education is good for our children, so if we lack money for school fees we might beg others to help with this. Even if our children cannot get a job afterwards it may still help them. For instance, speaking English is useful. (BOMA villager)
8	Illiteracy is high among adults here, since many of us never had the opportunity to go to school, which means we have a communication barrier with all those outside our tribe. (BOMA villager)
9	Most of our people lack functional literacy, which makes it difficult for them to… understand relevant information. For instance, if they have access to a potential market opportunity, do they understand it? (CONCERN implementing partner)
10	Most people in our target communities are illiterate, which means they may struggle to solve their own problems. For instance, nowadays when drought hits many livestock die due to lack of pasture, yet this could have been anticipated and solved before. For instance, villagers could have sold animals early then used these funds raise to invest in a business, instead of simply keeping all their animals and hoping for the best. (BOMA staff)
11	People need to start thinking along the lines of business, entrepreneurship and delivering goods and services, as opposed to applying for advertised jobs. This is already happening to a point, but this trend could be better supported. (CONCERN implementing partner)
12	As things stand, people don't usually go to school to become entrepreneurs. They don't think much about entrepreneurship, but rather about livestock and formal jobs. Yet education can help people understand the need for alternative livelihoods, as well as how to pursue them. (BOMA staff)
13	Getting an education can help a person engage in business, so it can help them earn a livelihood. If you're educated you will also be more able to attract seed capital or other support for your business. (BOMA villager)
14	If you are jobless but educated, you can potentially be a good innovator. If something is not working, you will be able to recognise this and try something else. You will also be able to read and write and keep the books. (BOMA villager)
15	Schooling poses a major threat to pastoralism, since young people who go to school are not available to help their families with their livestock, and may not come back to pastoralism after completing their schooling. Potentially, however, schooling could help our children to appreciate the importance of livestock to their economic prospects. It could also help them to understand commercial approaches to livestock, including keeping smaller numbers of animals and actively maintaining pasture and water resources. (CONCERN implementing partner)
16	Ideally, our communities need schooling that is compliant with pastoralism. Currently, our schools use a *national* curriculum that talks about farming but not pastoralism, so children do not get a sense of what 'best practice' pastoralism looks like. This is a critical oversight and has to change, since you could argue that our present schooling is poisoning children's minds. Few children nowadays want to go into pastoralism or farming, when they are surveyed. Yet pastoralism is the only obvious way to use these lands, given how dry they are. So schooling should be used to convince children of this by showing them how they could manage this land in ways that deliver a decent livelihood. (CONCERN implementing partner)

8.6 Address the underlying causes of ethnic conflict

Conflict is another key barrier to developing livelihood options, since instability can undermine economic activity. If businesses are concerned about insecurity when accessing needed inputs or selling their outputs, this raises the costs of doing business while also increasing the risk of failure. An example from the ASP target population is that pastoralists from certain ethnic groups will avoid trading in certain markets due to fear of livestock raiding by neighbouring communities. The net effect is either that commercial activity is conducted in a way that is more costly (e.g., by travelling to a more distant market that is deemed safer) or is simply avoided.

In order to avert such adverse outcomes, intelligent measures are needed to address the causes of conflict. This must include both creating opportunities for those who might otherwise end up fighting and fostering cross-cultural understanding between enemy groups. The many downsides of conflict are clear. Yet finding ways to minimise conflict could represent an important opportunity for those communities caught up in it. Specifically, finding ways to manage or reduce conflict could enable new avenues of business activity to develop and flower.

The following contributions by interviewees do not constitute a definitive analysis of this question, merely inputs from stakeholders well-placed to comment.

#	Selected comments from interviewees
1	SI gave us 4 bucks […], but unfortunately […] all 4 were taken by bandits during an attack, due to our conflict with the Samburu. (Solidarites villager)
2	The milk jugs Solidarites provided could really help us… Unfortunately, however, due to our conflict with the Samburu most of these jugs are now gone, since some were stolen while others were pierced. (Solidarites villager)
3	Conflict nowadays is no longer about strength and skill; back when fighters used spears and engaged in hand to hand combat. Nowadays they use guns and sometimes even machine guns, so the person who wins is more the one who is best connected and hence has the best weapons. In our ethnic conflicts, fighters must prove it if they have killed someone to show their bravery, and they do this by cutting off their privates. Yet today's fighting is no longer about bravery, just shooting from afar, including killing women and children. This is no longer our culture, and none of it makes sense any more. (BOMA staff)
4	Conflict has been a big problem here, but recently things are better. Since the peace talks held last year we have not had any conflict with our neighbours. Because of this peace, no one from the village has died due to conflict in the past year, and no one has lost livestock to raiders. The youths who used to participate in livestock raiding are now trying to get involved in selling livestock instead. One thing that has really helped these youths are the loans to them from some NGOs, which have helped them conduct business and form marketing associations. These loans allow youths to reap benefits from the peace, and hence stop those who might otherwise break this peace. The only problem is that these loans are small, and hence cannot support many youths. The worst thing would be if the conflict started again. Our fear is that the existing loans don't provide enough opportunities for our youths, and hence that the peace may not last. (Trocaire villager)
5	Business people only invest where there is peace, so initiatives to foster conflict resolution are critical to our future. One good initiative is USAID's Development for Peace, which brings kids from different ethnicities together via schools. Another is the Kalacha Cultural Festival organised by government, which seeks to promote social harmony and development by showcasing the diversity of the region's heritage, including its dance, song and foods. (CONCERN implementing partner)
6	Hodi is a NGO based in Marsabit that has a "Football for Peace" scheme. It seeks to channel the passions of young people into football instead of fighting, and arranges matches between teams from different tribes. Their motto is "shoot to score, not shoot to kill". (BOMA staff)
7	In places where herders are afraid to cross into different tribal lands in search of markets, one solution would be to establish a local market for each major ethnic group within their territory. (CONCERN implementing partner)

8.7 Secure community ownership of interventions

Another major barrier to the success of interventions is ownership, i.e., whether or not target communities buy into and 'own' an intervention, or whether they instead see it as being imposed on them by outsiders. Interventions can enjoy short-term success in the absence of ownership, but it is essential for securing lasting impacts. The key question is what happens once the intervention is complete and its funding stops. Too often, interventions fall apart at

this point, but they need not do so, provided the target communities are committed to maintaining the activities or outcomes in question.

The importance of ownership makes it imperative that interventions are developed in a collaborative, consultative manner. It is often said that these interventions should be community-led, with communities determining their priorities and partner institutions addressing these needs. Yet arguably this is overstating matters, and could be counterproductive.

Reviewing the various challenges facing the ASP target communities shows that not all of the priorities and stated wishes of communities are helpful. Aspects of local culture and practice that seem unhelpful include gender dynamics, seeking to maximise herd size while relying on free grazing, and engaging in livestock raiding. Aspects of local culture and experience that are essential to build upon include indigenous knowledge regarding the local environment and livelihood activities, customary institutions such as risk sharing mechanisms, and cultural aspirations.

Efforts to secure ownership run a major risk, namely that they could end up supporting stated priorities that are in fact counterproductive for the target communities. Avoiding this pitfall requires a nuanced understanding of participatory engagement. An approach emphasising critical but sympathetic engagement could address these concerns. This could involve outsiders listening carefully to communities but also speaking freely about their observations and concerns instead of simply accepting villagers' stated wishes or priorities. Such an approach could help identify 'best bet' interventions that build on a range of insights and expertise, namely those of both villagers and the development practitioners who work with them. It appears that such an approach was used by the ASP partners in some cases, while in other cases is seems they may have followed a more literal interpretation of the principle that interventions should be community-led.

The following contributions by interviewees do not constitute a definitive analysis of this question, merely inputs from stakeholders well-placed to comment.

#	**Selected comments from interviewees**
1	A key benefit of CMDRR planning is a feeling of inclusion in development processes. It is important to villagers to see their development priorities addressed by the county government. If they are not listened to, then they can easily feel that they are not being respected and that government or donors are looking down on them. (Turkana implementing partner)
2	The communities don't simply develop these plans by themselves. Project staff probe their suggestions and discuss relevant issues in order to make sure the resulting plans make sense. The communities come up with suggestions (e.g., free vaccinations, boreholes), but the role of development partners is to facilitate and offer input, including pushing back on suggestions when they disagree. It's important to not just say 'yes' to whatever the communities suggest. For instance, if you uncritically asked for suggestions, they might say "give us more bullets" instead of requesting dialogue to find ways to resolve the ethnic conflict. (Turkana implementing partner)
3	When asked about environmental challenges, communities typically emphasise drought and flooding, so then we discuss options to respond to this, such as tree planting and building embankments. (Turkana implementing partner)
4	The project has given the communities insight into their problems and helped them to question things they never used to question. (Turkana implementing partner)