



Development and Challenges of Pastoralism in Ethiopia

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Abstract: This paper aims at reviewing available resources to identify pastoral development challenges and to suggest intervention options. Pastoralism is a type of livelihood whose income and social status depend mostly on livestock grazing on communal open rangeland. Livestock has diverse functions and services in the lowland pastoral production systems. Pastoral areas make significant contributions to the national economy and support millions of people. They are also areas of great untapped potential and can play an important role in satisfying an increasing demand for livestock and livestock products, fuels, (wild products?) etc. Despite such opportunities, pastoral areas of Eastern Africa and Ethiopia have not received investments to levels expected and continue to wallow in poverty, food insecurity, and conflict. To resolve these persistent challenges, the demands are increasing for scientific research to be explicitly and demonstrably policy relevant. Although pastoral development policy related studies are available, they are not sufficient in quantity. To date, there are a few attempts to effectively build linkages between scientists and policy makers, and particularly the role of science in making effective policies to address development hurdles in pastoral areas. In this light, many scholars have underlined the necessity to improve knowledge-exchange among scientists and decision-makers to support adaptation and sustainable development. To such end, this review paper shared insights on the pastoral development aspects and challenges, and finally forwarded a few intervention options for the betterment of the system.

Keywords: Development challenges, Economic significance, Livestock, Pastoralism, Pastoralists

1. Introduction

Understanding pastoralism and its future is the subject of fierce/hot debate (Nassef *et al.*, 2009). The term ‘pastoralism’ is used to describe societies that earn some, but not necessarily the majority, of their food and income from livestock. Pastoralism is more than livestock production. It is not only an economic activity aimed at animal production but a livelihood system and a lifestyle on its own (Mohammad, 2015). It is a type of livelihood in which income and social status depend mostly on livestock grazing on communal open rangeland where the availability of nutrients and water vary greatly over

both time and space (Lodwar, 2017). It develops out of the need to constantly adapt to the extreme climatic uncertainty and marginal landscapes of the world drylands (Nikola Rass, 2006), and has been practiced for centuries (Mohammad, 2015).

In economic terms, is a complex exercise in the perpetual analysis and management of costs, risks, and benefits. It is, therefore a very specialized system that requires extensive social networks and deep knowledge of weather patterns, breeding techniques, herd management, and the intricate characteristics of different species of animal and vegetation. It occupies a quarter of the world land area which is predominantly arid and semi-arid and supports tens of millions of pastoral households of which 60% are found in Africa. Pastoralists live in areas often described as marginal, remote, conflict-prone, food insecure, and associated with high levels of vulnerability (Abduselam, 2019).

Pastoralists can be defined both in the economic sense (i.e. those who earn part of their living from livestock and

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livestock products). And also, in the cultural sense, in which livestock does not form the main source of income, yet people remain culturally connected to a pastoralist lifestyle in which the significance of livestock is more cultural than economic (Nassef *et al.*, 2009). They are herders who are frequently on the move in inherently unstable environments. This characteristic of pastoralism is technically known as “strategic mobility.” It’s “strategic” because, while appearing aimless or haphazard to the layman, its purpose is to enhance production and herd size by ensuring that the livestock feed on the most nutritional grass available (Mohammad, 2015).

There is a woeful lack of data about pastoralist communities, and figures for their number varies greatly. This is partly because pastoralism is defined in different ways. Using the strictest definition – pastoral nomads depend on livestock, are mobile, use communal grazing areas, and recognize customary rules as a source of authority – there are at least 20 million pastoralists in Africa. However, a less rigorous definition suggests there may be some 200 million pastoralists in the continent (Pye-Smith and Jeremy Swift, 2012).

More than half of the landmass of Ethiopia belongs to pastoralists. Over 97% of the pastoral population lives in Somali, Oromia, Afar and Southern Region States of the country (Tenna, 2012). The rest are found in Gambella and Benishangul-Gumuz regional states (*Ibid*). Pastoral areas in Ethiopia, which cover about 0.7 million square km, are generally known as the rangelands. These areas support about 9.8 million people (12% of the total population of the country) of which 56 % are pastorals, 32% are agro-pastoral and the remaining 22% are urban dwellers (EEA, 2005). In the past, herders in the drylands were considered the wealthiest amongst rural people (Mohammad, 2015), nowadays the situation has reversed.

Worldwide, pastoralists constitute one of the poorest population sub-groups. Worldwide, pastoralists constitute one of the poorest population sub-groups. Among African pastoralists, the incidence of extreme poverty ranges from 25 to 55 percent, and in the Horn of Africa, it is 41 percent (WB, 2014). The Ethiopian case is no exception. Basic social services like health, education, electricity, road and communication, accessibility of agricultural extension service, access to credit and insurance service are usually less developed than in other areas, therefore pastoral areas are defined as the area with low health and education indicators than national-level figures at any time (Abduselam, 2019). This review paper attempts to unveil the challenges of development in pastoral areas of Ethiopia and suggest intervention options accordingly.

2. Materials and Methods

This review has relied heavily on secondary data gathered from reviews of previous studies on pastoralism undertaken in Ethiopia and other African countries.

3. Results and Discussion

3.1. Socio-economic Significance of Pastoralism

The pastoral system - the inter-relationship between livestock, natural resources, and people/institutions - has evolved to function effectively and efficiently in areas of low and unpredictable rainfall, using mobility as one of the key adaptation strategies (Nassef and Ludi, 2012). Although having changed over the years (Mohammad, 2015), the pastoralist system comprises fundamental elements that have allowed it to persist for millennia (Nassef *et al.*, 2009). Until today, pastoralists continue to make most of Ethiopia’s arid and semi-arid areas, contributing substantially to food security, to the national economy, and the efficient management of grazing land ((Nassef *et al.*, 2009; Nassef and Ludi, 2012). As Soboka (2015) reviewed the total direct economic contribution of pastoralism to the Ethiopian economy (through the production of milk, meat, skin, hides, etc.) is estimated at US\$ 1.53 billion, which accounts for about 6% of the agricultural GDP per annum.

The importance of pastoralism in Ethiopia depends on the – land area, size of the human and livestock population, the contribution of the sector to the national economy, etc. The pastoral population occupies a disproportionately large area of Ethiopia and produces much more than its share of national livestock output. About 62 million hectares or 60% of the total landmass -of Ethiopia, mostly the drier and hotter lowland parts is inhabited by pastoralists (PFE, 2009). Ethiopia’s livestock population is distributed over the highland and lowland areas. Ethiopia’s total livestock population has reached more than 88 million in headcount and is the largest in Africa (MoA, 2010). Of the total livestock population of the country, IGAD estimated in 2010 that pastoralist livestock makes up to 30% of the nation’s cattle, 70% of the goats and sheep, and all camels in the country. This reveals that the contribution of pastoralism in the livestock population of the country is significant. Generally, on average, the pastoral livestock population accounts for an estimated 40% of the total livestock population of the country (Pantuliano and Wekesa, 2008).

Livestock has diverse functions and services in the lowland pastoral production systems. Herders use the livestock and livestock products for food security, income, and income substitution for reduced expenditures, insurance for disaster, capital for investment in other sectors, social heritage, transportation services, and others. As Jahnke (1982) points, there is a clear distinction between livestock products and functions. As cited in IGAD (2010) the pastoral livestock population contributes to transport services and provides products such as milk, meat, skin, and hides (Barrett *et al.*, 2006). The contribution of pastoral livestock to Ethiopia’s GDP is very significant although it is underestimated as a result of lack of proper recording and methods of computing other services provided by different livestock species (*Ibid*). In this context, besides Soboka (2015), there are different

estimates found in the literature. For example, fourteen years ago Barrett *et al.* (2006) stated that it exceeds 90 billion ETB and four years later IGAD in the other hand estimated that pastoralist livestock contributed 35 billion Ethiopian Birr (ETB) out of the total national livestock value of 86.5 billion ETB to the national economy for 2008/09 (IGAD, 2010). Whatever the case is, the significance of pastoralists' livestock to the Ethiopian economy and the respective pastoral dominated regions are undoubtedly very huge.

More than half of the country's landmass belongs to pastoralists. Over 97% of the pastoral population lives in Somali, Oromia, Afar, and Southern Region States of the country (Tenna, 2012). The rest are found in Gambella and Benishangul-Gumuz regional states (*Ibid*). Pastoralists' livestock also serves as a measure of wealth and social status in pastoral communities. It also helps to keep the nutrient balance of the soil and support to sustain the biodiversity of flora in the lowland rangelands. The size of the livestock and human population, the breeding stock supplied from the pastoral areas to the highland, and the ecological significance of the pastoral areas of Ethiopia signifies the importance to be given to the system itself. Further, the biodiversity significance of the dry lands and pastoral systems is immense. Particularly, the low land areas of Ethiopia which are predominantly inhabited by pastoral systems harbor lots of wild animals and endemic bird species that attract tourist revenues (Gezahegn, 2016).

Although pastoralist areas often viewed as physically remote, universally poor, and subject to droughts and conflicts, in reality, these areas can also be regarded as economic hubs, with substantial livestock trade networks to local markets, and crossing borders to neighboring countries (Yacob and Catley, 2010; Catley, 2017). Ethiopia, in this context, is the major exporter of livestock with most of these animals sourced from pastoralist areas. The pastoral production systems and associated trades were found to be providing a steady stream of income to support both public and private provision of essential public services. They also established trade channels that support the flow of other essential goods (Gerald and Dorothy 2015). Ethiopian economy is poor, technologically underdeveloped, nonetheless integrated into the global capitalism. In terms of livestock exports, the country produces relatively unprocessed raw commodities for regional markets (Behnke, 2008). Pastoral households in the country are increasingly involved in commercial livestock production for sale (Behnke, 2008; Marcelino et al, 2015), in the aggregate, the results are impressive both in terms of the volume and value of international trade and foreign exchange earnings (Catley, 2017). In line with this, lowland grazing systems are thought to contribute 35 percent of red meat and 56 percent of milk to Ethiopia's livestock sector GDP (Shapiro et al., 2017). Between 2005 and 2013, official exports of live animals increased by 450 percent and exports of meat by 336 percent, most of these animal supplies were from pastoral areas (Catley *et al.*, 2016).

In sum, pastoral areas are a large part of Ethiopia. Their main defining characteristic is extreme climatic variability. Despite this variability, the pastoral areas make significant contributions to national economy and support millions of people. They are also areas of great untapped potential and can play an important role in satisfying an increasing demand for livestock and livestock products, fuels, (?), etc. Despite these opportunities, these areas in the country have not received investments to the level expected and continue to live in poverty, food insecurity, and conflict. Therefore, any attempt to meet the Sustainable Development Goals of poverty and food insecurity needs to include people in pastoral areas.

3.2. Pastoral Area Development Policies in Ethiopia

Mobile pastoralism in Sub-Saharan countries constitute a rational use of dryland environments, but this livelihood is undermined by lack of access to basic services, inappropriate policies on land use, repeated humanitarian responses to emergencies that fail to address root causes and structural issues, population growth and decades of economic and social marginalization (Nassef *et al.*, 2009). Although pastoralism plays a significant role in the Ethiopian economy, this sector with huge economic, social, and environmental roles and benefits has been largely marginalized by the development policies and strategies in the past (SOS-Sahel Ethiopia, Undated). The crucial policy question is whether it is preferable to invest in pastoral development, or whether it would be more appropriate to design exit-strategies for pastoralists allowing them to abandon livestock keeping (Nassef *et al.*, 2009). There are good economic reasons for investing in pastoral development. First, pastoralism for 7,000 years has flourished in the drylands because it is a rational, adaptable, tried, and tested production system uniquely suited to them (*Ibid*). Second, pastoralism is the best, if not the only, means to make productive and sustainable use of natural resources in arid and semi-arid areas that would otherwise remain unexploited (Nikola Rass, 2006). Third, pastoral people efficiently produce a large share of the meat supply per unit of land.

Despite the economic significance of pastoralism in Ethiopia, very little development consideration was given to pastoral areas and pastoralist until the mid-1960s (Abduselam, 2019). In the late 50th and early 60th, there were no development efforts made in these areas except one which was performed by the United States Agency for International Development (USAID), in collaboration with the imperial government-financed development of water resources and livestock market centers in the Borana area. However, it was after the formation of the Livestock and Meat Board (LMB) in 1964 that the government of Ethiopia began large scale efforts to develop the pastoral areas. These include Arero Range Pilot Project, Second Livestock Development Project, Third Livestock Development Project, Fourth Livestock Development Project, Southern Rangelands Development Project, and Pastoral Community Development Project.

Although pastoral development has never been part of the national development plan in Ethiopia until recently, currently there are offices actively engaged in planning and implementing pastoral development activities regularly. Research and academic institutions have also incorporated pastoralism in their research and teaching programs. Somali Region Pastoral and Agro-pastoral Research Institute and Afar Pastoral and Agro-pastoral Research Institute, Jijiga University, Haramaya University, and Semera University are few of the many institutions which are strongly engaged in pastoral research and teaching programs in the country. Further until recently, several international and local non-governmental organizations have been operating in the pastoral areas for several decades.

Despite all these development efforts, a number of studies are revealing that pastoral systems in Ethiopia which have been functioning well for centuries and which have provided livelihood to people are becoming unstable and less reliable to sustain pastoral livelihoods (Birhanu, 2016; Solomon, nd). The pastoral areas are currently being characterized by increasing food insecurity, decreasing income, increasing poverty, and environmental degradation. Hence, there is still a huge task ahead to bring sustainable development to the pastoral systems including the necessary economic and service infrastructure, environment and resources management, land rights and its management, the dynamism of the system, and livelihood.

3.3. Development Challenges of Pastoralism in Ethiopia

The list of development challenges of pastoralism is very long. Some are standing alone and others are interwoven. Hereunder, some of the key development challenges of the system are explained based on the existing body of knowledge in the subject of discussion.

3.3.1. Weak linkage between researchers and policy makers

Many studies and research projects/ programs are being implemented to improve pastoral livelihood and reduce related risks. However, the situation has not much improved. According to Miller and Neff (2013), years of scientific research and investment have resulted in little progress in social and political arenas in substantive policy.

Decision-makers formulate their decisions based on their own experiences or other secondary sources of information rather than scientific evidence (Cvitanovic et al., 2015). There is a prevailing concern in Africa that the public policymaking process is not adequately informed by science and is not reflective of research-based evidence (ESRF, 2011). This is largely due to limited interface between researchers and academicians, on one hand, and public policymakers in the government, on the other hand.

Demands are increasing for scientific research to be explicitly and demonstrably policy-relevant. Research funders are

requiring greater returns on their investments and scientists are expected to demonstrate clearly how their research can inform policy and regulation to result in positive consequences for societal, economic, and environmental wellbeing (Stringer and Dougill, 2002). In this regard, many scholars have underlined the necessity to improve the knowledge-exchange among scientists and decision-makers to support adaptation and sustainable development (Giebels and de Jonge, 2014). To date, there are a few attempts to have effectively build linkages between scientists and policy makers and particularly the role of science in making effective policies to address dryland and pastoral areas developments hurdles. In the face of this bringing East African Journal of Pastoralism (EAJP) on board is a commendable step to be taken by Jijiga University (JJU). This helps academicians and researchers to circulate or exchange their scientific information among themselves and to reach policymakers and development experts as well. Research outputs are public property. They should be used to the purpose vested for those research activities. Hence, to this end, EAJP will serve as a strong and regular means of scientific information, knowledge as well as technology in the country and beyond.

3.3.2. Policy and strategy challenges

For many decades, governments regarded pastoralism as 'backward', economically inefficient and environmentally destructive, leading to policies that have served to marginalize and undermine pastoralist systems (Nikola, 2006). Although recently, many have regarded pastoralism as a viable and economically effective livestock production system, the policies and strategies needed to reverse its historical marginalization and address the key development and policy issues of pastoralist communities have yet to be put in place.

The prime challenge for policymakers thus is to create an economic and institutional environment, which reduces the vulnerability of pastoral people to risks (FAO, 2006). The first important distinction policy-makers should make, therefore, is between risks, which affect single households and covariant risks, which affect larger regions and even countries (FAO, 2004). Otherwise, designing appropriate policies and strategies and implementing it in accord remains a daunting and challenging task if policy-makers are not properly advised based on information generated through research. Further, the lack of overall Pastoralism development strategies and policies emanate from the under valuation of the total economic benefits of pastoralism (SOS-Sahel Ethiopia, Undated). In recent years, however, the federal government has taken steps notable to bring services and development to the pastoral regions and areas of the country. Although these are so much appreciated, both the Federal and the regional governments have many tasks ahead to be instituted and implemented in the context of having sound policies and strategies to bring sustainable development to the pastoral systems.

3.3.3. The dearth of applied research outputs

There are a few in-depth studies that might help city-based decision-makers understand the dynamism, ecological soundness, and innovative potential of pastoral systems. Some producers and consumers are intuitively recognizing the comparative advantages of the pastoral production model (Mcgahey et al. 2014). Accurate livestock database disaggregated by the lowland and highland farming systems is lacking, which leads to a failure of properly informing the policy()makers to design appropriate national level livestock development strategies and policies (SOS-Sahel Ethiopia, Undated). The African Union's policy framework on pastoralism also recognizes the economic potential of the sector (African Union, 2014). However, a study suggests that institutionalized data collection systems in Ethiopia still do not capture the full value of pastoralism (Krätli, 2014); meaning benefits and development potential remain obscure, and so are frequently obstructed. Hence, national development policies will continue seeking to 'modernize' and replace these systems until a clearer evidence-based evaluation is provided to convince them that a different approach is needed. To this end, the African Union's policy framework on pastoralism (2014) strongly confirms the need for further research to fine-tune the pastoral development policies.

3.3.4. Challenges of equating pastoralism with poverty

Natural disasters in East Africa frequently spark calls for renewed efforts to transform – or even abandon – the area's prime livelihood system, mobile pastoralism (Hogg, 1992). The problem is often perceived to be an outdated way of life and a production system ill-adapted to 'modern' contingencies (Little *et al.*, 2007). Poorly understood and the natural bane of governments and administrations, mobile pastoralism serves as a convenient scapegoat for the many social and economic problems.

There is a long-standing perception of equating pastoralism and poverty among some scholars and donors (Little *et al.*, 2011). This type of understanding made policymakers and development planners to devise unsustainable development programs in the pastoral areas. Considerable confusion exists over the very language and evidence used to describe pastoral poverty (Little *et al.*, 2007). First, it is not always clear about whom one is speaking when characterizing poverty in pastoral areas. Is the concern poverty among pastoralists – i.e., mobile livestock herders – or poverty among those who live in areas where pastoralism is the primary economic activity? Second, a variety of different definitions of poverty exist (Horowitz and Little 1987). This should be made crystal clear when any development and policy-oriented social and economic studies are conducted in the pastoral areas of the country.

Understanding the complex relationships and causes of poverty in pastoral areas is a necessary first step toward informed and effective policymaking, project programming, and development efforts. The failure to understand the

dynamics of pastoral poverty has resulted in a range of costly development failures. There are many such cases. A case in point is the high-cost, small scale irrigation schemes of Turkana District of Kenya (Anderson 1999) the transitory poor settled after the 1984 drought (Hogg 1985); and the other is efforts of Ethiopia to encourage settlement among what were assumed to be chronically poor households (Moris 1999) were only to abandon them and return to pastoralism two to three years later when herds recovered and their status is improved (Anderson 1999; Moris 1999). Hence, what is not needed is another development label that equates pastoralism with poverty, thereby empowering outside interests to continue to attempt to transform rather than strengthen pastoral livelihoods (Little *et al.*, 2007).

3.3.5. Challenges on pastoralism due to loss of Land

The widespread and growing pressures that pastoralists confront with are often largely responsible for increased poverty in the east Africa (Little *et al.*, 2007). A few of the more important forces that have an especially large impact on pastoral welfare include land loss, conflict, depressed and stagnant livestock prices, etc. The loss of land in pastoral areas usually removes the most productive drought areas, which are so critical for the sustainability of a pastoral system, forcing herders to find grazing land and water in already overused areas (*Ibid*). Ethiopia's pastoral areas are highly threatened with the rangelands becoming increasingly fragmented and barriers to mobility (Flintan, 2011). The causes for these are complex and are related to historical, political, economic, and environmental factors that have influenced how the pastoral areas are valued managed, and changed (Helland 2006).

Today, many pastoralists have chosen and others have been forced to change their livelihood system from livestock production (Flintan, 2011). A key factor in these changes has been the lack of security that pastoralists and other rangeland users have over their land and resources as land is removed for commercial and subsistence agriculture; conservation, tourism and wildlife hunting; and dams and other infrastructure. In Ethiopia, land belongs to the State, and though pastoral rights have received recognition at the highest level, as enshrined by the Federal Constitution (1994- , they are not protected in practice nor has effective land tenure systems been developed for the pastoral areas (Flintan, 2011). As a result, pastoral lands have been encroached upon, enclosed, lost, leased, or because of the pressure on remaining land and resources is so high.

According to the data on land use coverage of the different pastoral regions at the time, in 2000 it was shown that there had been a dramatic increase in land-use change to crop agriculture with figures around 2 million hectares (Beruk Yemane 2000). These included 178,000 hectares in the Afar Region, 390,000 hectares in the Somali Region, 1,332,900 hectares in the Borena Zone of Oromia Region, 58,503 hectares in South Omo of SNNPR, 32,452 hectares in

Gambella Region, and 38,717 hectares in Benshangul Gumz Region (Ibid). To give more emphasis, 3.7 million hectares have already been identified by the federal government and delineated as agricultural investment areas where a significant number of pastoralists and agro-pastoralists reside (FDRE Embassy, Stockholm 2008).

3.3.6. Environmental Challenges

The challenges of environment to the pastoral system have been redundantly explained. A lot of researches, reports, conferences, and workshops have widely documented and discussed the growing environmental challenges of the pastoral system in Ethiopia. The dryland ecosystems of Ethiopia have suffered from huge land and vegetation degradation due mainly to poor management, population growth, traditional open grazing systems, deforestation, continuous heavy grazing, as well as land use and climate changes (Flinton et al., 2013). Drought being a natural shock that has been occurring in the past, the aggravating factors for drought incidence in Ethiopia and Kenya have been lack of proper management of the natural resources, and lack of disaster oriented development strategy and policy in the areas which are prone to such natural shocks like drought (Homewood, 2004). Pastoralists and agro-pastoralists living in semi-arid and arid lowlands are heavily reliant on rain-fed agriculture and livestock rearing. Thus, when water is scarce due to drought or erratic rainfall, crops face greater risks of failing, more livestock resources perish, and pastoralists and agro-pastoralists have to travel greater distances to access water for their households and animals. Climate change and the resulting unfavorable weather pattern is also a great worry for the sensitive pastoral ecologies (Nassef *et al.*, 2009). The increasing population and livestock pressure coupled with the disruption of the traditional management system and alternation of land uses have also lead to significant rangeland s degradation (Stringer and Dougill, 2012)

4. Conclusion and Intervention Options

4.1. Conclusion

Pastoralism is more than livestock production. It is not only an economic activity aimed at animal production but a livelihood system and a lifestyle on its own. Pastoral areas have great untapped potential and can play an important role in the economy as a whole and satisfying an increasing demand for livestock and livestock products, fuels, wild products, etc. Despite these opportunities, these areas in the country have not received investments to the level expected and continue to live in poverty, food insecurity, and conflict due to multiple challenges. Overcoming these negative outcomes requires strong research-policy makers-development linkages, avoidance of the misperception of equating pastoralism with poverty, sound environmental management system, workable development policies, etc.

4.2. Intervention Options

1. Organize regular and periodic discussion and debating forums at the national/regional/institutional level that would focus on various development themes of pastoral areas.
2. Develop Strategic directives to direct researchers towards research for development or development-oriented research and to make research demand-driven.
3. Establish a strong knowledge base and network academics, research institutes, and development organizations (GOs and NGOs) that have pastoral development interests and programs.
4. Gradually, shift from donors' fire brigade and humanitarian approach of addressing the recurring problem of pastoral communities to sustainable pastoral development to resolve their issues for long.
5. Make most of the development activities climate-smart.
6. Establish a pastoral research and development fund through regional, national, and international resource mobilization.
7. Development, as usual, may not help to improve the pastoral areas and welfare of pastoral communities. Menu of development approaches should be implemented according to the resource availability and the social and natural environment bases of the different zones and districts within the pastoral areas.
8. Deliver capacity building training services at every administrative level of the regional states of pastoral areas. The capacity building should be based on demand-driven that could be identified through need assessment. It should include elders, women, and youths, technocrats, and development workers.
9. Improve the productivity and competitiveness of pastoralism to improve the welfare of pastoralists and increase the regional and federal governments' revenue from the sector.
10. Improve service infrastructures (roads, markets, veterinary clinics, etc.) and attract meat and milk processing industries to increase the livestock off-take from the system and improve the income of the herders.
11. Establish a strong research hearing and information exchange system that periodically bring all policy and development relevant research projects and outputs along with relevant stakeholders to strengthen the researcher policymaker linkage
12. The pros and cons of the currently existing communal land tenure system in pastoral areas and the general land tenure system of the country needs detailed and critical

study for guaranteed sustainable pastoral areas' ecosystem and livelihood of the pastoral community.

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Conflict of Interest

The authors declare that they have no competing interests.

References

- Abduselam, A. (2019). Pastoralism and development policy in Ethiopia: A review study. *Budapest International Research and Critics Institute- Journal (BIRCI-Journal)*, 2(4), 01-11.
- AU (2010). Policy framework for pastoralism in Africa: Securing, protecting and improving the lives, livelihoods and rights of pastoralist communities. Addis Ababa, Department of Rural Economy and Agriculture, African Union.
- Barrett, C.B., Marenya, P., McPeak, J., Minten, B., Murithis, F., Oluch-Kosura, W., Place, F., Randrianarisoa, J.C., Rasambainarivo, H., & Wangila, J. (2006). Welfare dynamics in rural Kenya and Madagascar. *Journal of Development Studies*, 42 (2): 248–277.
- Behnke et al. (2007). Piloting the productive safety net programme in pastoral areas of Ethiopia. Revised Programme Proposal.
- Behnke, R. H. (2008). The economic contribution of pastoralism: Case studies from the horn of Africa and southern Africa. *Nomadic Peoples*, 12(1), 45–79.
- Catley, A. (2017). Pathways to resilience in pastoral areas: A synthesis of research in the horn of Africa. Retrieved from: <http://fic.tufts.edu/publication-item/pathways-to-resilience-in-pastoralist-areas-a-synthesis-of-research-in-the-horn-of-africa/>
- Catley, A., Lind, J., & Scoones, I. (2016). The futures of pastoralism in the horn of Africa: Pathways of growth and change. *Revue Scientifique et technique - Office international des epizooties*, 35(2), 389-403.
- Cvitanovic, C., Hobday, A.J., Van Kerkhoff, L., Wilson, S.K., Dobbs, K., & Marshall, N.A. (2015). Improving knowledge exchange among scientists and decision-makers to facilitate the adaptive governance of marine resources: A review of knowledge and research needs. *Ocean & Coastal Management*, 112, 25-35.
- Economic and Social Research Foundation (ESRF) (2011). Research-policy linkages of science-related ministries and their research organizations.
- Ethiopian Economic Association (2004/05). Transformation of the Ethiopian agriculture: Potentials, constraints, and suggested intervention measures. *Report on the Ethiopian Economy. Vol. 4*, Addis Ababa.
- FAO (2004). The political economy of the pro-poor livestock policy –making in Ethiopia. *PPLPI Working Paper, No. 19*.
- FAOSTAT data (2004). Retrieved from: <http://apps.fao.org/faostat/form?>
- FDRE Embassy of Ethiopia (2008). *Agriculture investment opportunities in Ethiopia*. A PowerPoint presentation made at the Embassy of FDRE Stockholm, Sweden. Retrieved from: www.ethemb.se/ee_eth_investment.html.
- Flintan, F. (2011). The political economy of land reform in pastoral areas: Lessons from Africa, implications for Ethiopia. A paper presented at the Conference: *Future of Pastoralism*. Addis Ababa.
- Flintan, F., Behnke, R., Neely, C. (2013). Natural resource management in the dry lands in the horn of Africa: Brief prepared by a technical consortium hosted by CGIAR in partnership with the FAO Investment Centre, *Technical Consortium Brief 1*; International Livestock Research Institute: Nairobi, Kenya.
- Gebeye, B.A. (2016). Unsustainable the sustainable: An evaluation of the legal and policy interventions for pastoral development in Ethiopia. *Pastoralism* 6(2).
- Gerald, J., & Dorothy, R. (2015). Pastoralism pays: New evidence from the horn of Africa. *Policy Briefing*, The International Institute for Environment and Development (IIED). Retrieved from: <http://pubs.iied.org/17312IIED>.
- Gezahegn, A. (2016). Supporting sustainable pastoral livelihood in dry lands of Ethiopia: Unlocking untapped potential. *3rd National research symposium on sustainable livelihood development: Pastoral and agro-pastoral context*. Samara University, Samara, Ethiopia.
- Giebels, D., & de Jonge, V.N. (2014). Making ecosystem-based management effective: Identifying and evaluating empirical approaches to the governance of knowledge. In J.W. Meek & K.S. Marshall (Eds.), *Administrative strategies for complex governance systems* (pp. 199-220). Litchfield Park Arizona: Emergent Publications.
- Helland, J. (2006). *Land tenure in the pastoral areas of Ethiopia*. Paper presented at the International Research Workshop on Property Rights, Collective Action and Poverty

- Reduction in Pastoral Areas of Afar and Somali National Regional State, Ethiopia, 30-31 October.
- Homewood, K. (2004). Policy, environment and development in African rangelands. *Environmental Science and Policy*, 7, 125-143.
- Horowitz, M., & Little, P. D. (1987). Pastoralism and poverty: Some implications for drought and famine. In Glantz, M. (ed), *Drought and famine in Africa: Denying hunger a future* (pp. 59-82). Cambridge: Cambridge University Press.
- IGAD (2010). The contribution of livestock to the Ethiopian economy—Part II. *IGAD LPI Working Paper No. 02–11*. Roy Behnke, Odessa Centre, Great Wolford, and United Kingdom.
- Jahnke, H. E. (1982). Livestock production systems and livestock development in tropical Africa. Kieler Wissenschaftsverlag Vauk.
- Krätli, S. (2014). If not counted does not count? A programmatic reflection on methodology options and gaps in total economic valuation studies of pastoral systems. *Issue Paper*. London, IIED .
- Little, P.D., McPeak, J., Barrett, C.B., & Kristjanson, P. (2007). Challenging stereotypes: The multiple dimensions of poverty in pastoral areas of east Africa. Retrieved from: http://www.fao.org/fileadmin/user_upload/drought/docs/Challenging-Stereotypes-Multiple-Dimensions-Poverty-Pastoral-Areas.pdf
- Little, P.D., McPeak, J., Barrett, C.B., & Kristjanson, P. (2011). Challenging orthodoxies: Understanding poverty in pastoral areas of east Africa. *Economics - Faculty Scholarship*, 83. Retrieved from: <https://surface.syr.edu/ecn/83>
- Lodwar, A. (2017). Pastoralism and its future. Retrieved from: <https://www.irinnews.org/analysis/2017/10/24/pastoralism-and-its-future>.
- Marcelino, N. I., Oliver V. W., & Robinson, K N. (2015). The economic contribution of the pastoral meat trade in Isiolo County, Kenya: Findings from Oldonyiro and Garbatulla towns. Retrieved from: <http://pubs.iied.org/10126IIED.html>
- Mcgahey, D., Davies, J., Hagelberg, N., & Ouedraogo, R. (2014). Pastoralism and the green economy – a natural nexus?. IUCN and UNEP.
- Miller, R. T., & Neff, W. M. (2013). De-Facto science policy in the making: How scientists shape science policy and why it matters. *Minerva*. Doi: 10.1007/s11024-013-9234-x.
- MoA (2010). Ethiopia animal health year book (2009/10). Addis Ababa: Federal Ministry of Agriculture Animal and Plant Health Regulatory Directorate (APHRD).
- Mohammad, Y. (2015). Pastoral development pathways in Ethiopia: The policy environment and critical constraints.
- Nassef, M., & Ludi, E. (2012). Providing and managing water in Ethiopia's pastoral regions – Lessons learned in the last 40 years. Save the Children, USA.
- Nassef, M., Anderson, S., & Hesse, C. (2009). Pastoralism and climate change: Enabling adaptive capacity. Overseas Development Institute (ODI).
- Nikola, R. (2006). Policies and strategies to address the vulnerability of pastoralists in Sub-Saharan Africa. *PPLPI Working Paper No. 37*. Retrieved from: <http://www.fao.org/ag/againfo/projects/en/pplpi/policybriefs.html>
- Pantuliano, S., & Wekesa, M. (2008). Improving drought response in pastoral areas of Ethiopia. Overseas Development Institute.
- Shapiro, B.L., Gebru, G., Desta, S., Negassa, A., Nigussie, K., Aboset, G., & Mechale, H. (2017). Ethiopia livestock sector analysis. ILRI Project Report. Retrieved from: <https://cgspace.cgiar.org/bitstream/handle/10568/92057/LSA-Ethiopia.pdf?sequence=3>
- Soboka, G. (2015). Assessing the total economic value of pastoralism in Ethiopia, Munich, GRIN Verlag, Retrieved from: <https://www.grin.com/document/467916>
- Stringer, L.C., Dougill, A.J. (2012). Channelling science into policy: Enabling best practices from research on land degradation and sustainable land management in dryland Africa. *Journal of Environmental Management*.
- Tenna, S. (2012). Ethiopia Country Report.
- World Bank (2014). World Bank boosts support for pastoralists in horn of Africa. Retrieved from: <https://www.worldbank.org/en/news/press-release/2014/03/18/world-bank-pastoralists-horn-africa>
- World Initiative for Sustainable Pastoralism (WISP), Global Environmental Facilities, UNDP And IUCN (YNA). Pastoralism in Ethiopia: Its total economic values and development challenges. A knowledge management study implemented by SOS SAHEL ETHIOPIA.
- Yacob, A., & Catley, A. (2010). Mind the gap: Commercialization, livelihoods and wealth disparity in pastoralist areas of Ethiopia. TUFTS University.
- Zekarias, B., & Teshale, W., (2015). Value chain analysis of the cattle trade in Moyale, southern Ethiopia: An economic assessment in Oromiya Regional State. Retrieved from <http://pubs.iied.org/10121IIED.html>