

Socio-political and ecological stresses on traditional pastoral systems: A review

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Abstract: Pastoralism is a viable socio-economic system-shaped by landless and agro-pastoral communities in many pastoral regions of the world. This system is mainly based on seasonal migration of pastoralists and their livestock herds between upland and lowland pastures. Traditionally pastoral activities make significant contributions to mountain livelihood subsistence, regional economies and environmental sustainability. However, the pastoralist's lifestyle and their economies are increasingly confronted to various socio-political, economic and ecological stresses from the last few decades. Extensive literature reviewed on this subject with the aim to explore the current emerging challenges faced by pastoral communities in different pastoral regions. It has been revealed from literature that the prevalent socio-political and economic stress on pastoralism caused by modernization, insecure land tenure, integration of market economy, civil insecurities and pastoralist's exclusion in states policies while ecological stress on pastoral activities emerged with increasing focus on nature conservation in pastoral regions and climate change induced hazards and disasters. As a consequence of these challenges, pastoral households are abandoning livestock herding—as a traditional way of life and are in continuous transition to transform their pastoral practices and institutions. Thus, the attention and consultation of key stakeholders are needed toward pastoral resource development that improve and sustain traditional pastoral practices in a socio-politically and ecologically stressed environment of the world.

Keywords: pastoralism; marginalization; pastoral system; pastures; livestock; pastoralists

1 Introduction

Pastoralism is a form of agriculture production system based on livestock rearing and continuous livestock mobility between upland-lowland pastures (Kreutzmann, 2012). This traditional livelihood system is adopted and shaped by pastoralists in which they are deriving more than (50%) gross-revenue from livestock and livestock related activities (Niamir,

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1999). Pastoral land resources (rangelands/pastures) are the heterogeneous landscapes-covering more than one third land surface of the earth that are mostly managed and used by these pastoral communities (Ellis and Ramankutty, 2008), where a sustainable pastoral system significantly contributes to food and water security, national economies, support resilient pastoral livelihoods and provides important ecosystem services such as biodiversity conservation, carbon sequestration and sustainable land management (Devies *et al.*, 2014).

Pastoral livelihood is mainly characterised by socio-ecological stress, risk and uncertainties due to changing conditions of socio-political, economic and natural environment (Scoones and Graham, 1994). Traditionally, pastoralists are reducing and overcoming these vagaries through their resilience and adaptive capacities (Fernandez-Gimenez and Febre, 2006; Tache, 2008). However, last few decades have witnessed that numerous socio-economic and political factors combined with ecological-changes stressed and reduced the capabilities and adaptive livelihood measures of pastoral communities to sustain pastoralism as a way of life and sustainable a means of natural resources use (Fernandez-Gimenez and Febre, 2006; Davies and Bennett, 2007; Dong *et al.*, 2011). The nature and magnitude of the stress on pastoral livelihoods is varying in the socio-economic conditions and the ecosystems on which the pastoralists rely for their livelihood subsistence (Davies and Bennett, 2007; Wu *et al.*, 2014).

This paper is presenting a theoretical framework on the base of extensive literature review to examine whether pastoral systems are indeed weakened and exposed to prevalent socio-political and ecological stress. First, we presented an overview of pastoral livelihood management strategies followed by the socio-political scenario of pastoral stress in the context of modernization, insecure land tenure, civil insecurities-wars and social conflicts and unsustainable pastoral resource development. We then focused on pastoral stress in the context of environmental changes: conservation policies and climate change-induced hazards and disasters.

2 Pastoral livelihood management strategies in the context of stresses

Stress imposed by changing socio-economic and ecological conditions is always remained a critical constraint in meeting livestock demand and livelihood subsistence needs in pastoral systems (Sheehy *et al.*, 2006). The need of sustainable pastoral system must continuously be balanced with forage, water availability and secure access to grazing niches in different time-frames. Mobility, flexibility and diversity are the traditional management strategies adopted by pastoral communities to reduce various types of stresses on their livelihoods (Fernandez-Gimenez and Febre, 2006; Sheehy *et al.*, 2006). However, the pastoral institutions and traditional management strategies are weakened due to emerging socio-economic, political and ecological changes that posed threats to sustainability of pastoral resources and livelihoods.

Pastoral livelihood management strategies have been developed over centuries in response to different environmental and socio-economic settings (Markakis, 2004; Desta *et al.*, 2008). Key pastoral livelihood strategies are comprised of pastoralist's capabilities, assets (resources, stores), flexibility, adaptation, diversification and open mobility. These are enabling pastoralists to make the most efficient use of scarce natural resources in arid and

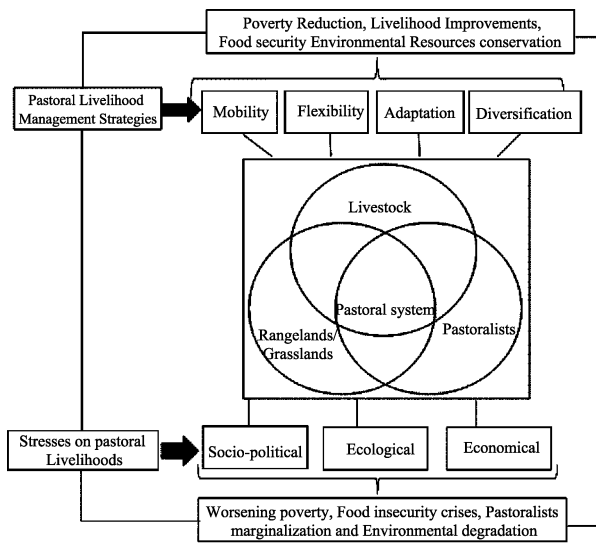


Figure 1 Pastoral livelihood system in the context of livelihood management strategies and stresses

semi-arid environment that attain sustainable livelihood outcomes such as poverty alleviation, food security and improved livelihoods within the context of natural resources management (Figure 1).

The pastoral system is representing a complex human-environment interaction within the context of livestock, grasslands and pastoralists (Figure 1) that is mainly based on socio-ecological and geographical systems (Pratt *et al.*, 1997). However, it has been increasingly recognised that the traditional pastoral strategies have been significantly stressed due to complex and multidimensional

socio-ecological, economic and political processes in different pastoral regions of the world (Markakis, 2004; Kandagor, 2005). These multidimensional stresses on pastoral livelihoods are subsequently reducing the capabilities of pastoralists to resist or recover from socio-economic and political shocks that are directly or indirectly exacerbating poverty, food insecurity crises, pastoralist's marginalization and environmental degradation. Furthermore, the prevalent environmental changes- induced contingencies, shocks and stresses have also exposed pastoral communities to uncertainties, vulnerabilities and social marginalization that lead to an unbalanced human-environment system (Figure 1).

3 Socio-political stresses on pastoral livelihoods in different perspectives

3.1 Modernization

Modernization is a continuous and open ended process that enables nations to transform traditional societies, institutions and practices into modern ones. The modernization approaches started in the West and East after World War II and within the framework of early post-colonial-development decades. The interventions toward modernization initiated in many pastoral regions during pre-colonial time but they intensified during post-colonial periods (Khan, 2009; Sati, 2014). The concept of pastoralist's modernization emerged in the 20th century with the aim to settle pastoralists and adapt their traditional practices to modern expectations and perceptions (Kreutzmann, 2013). For example, modernization of pastoral systems in Iran started soon after the replacement of Qajar dynasty by Reza Khan Pahlavi regime in 1926, as pastoralists exercised relatively an autonomous life style during the Qajar dynasty. But the situation changed for pastoralists with the fall of Qajar dynasty and prevalent approaches of Reza Khan toward the country modernization and independency of the state. In this context, Reza Khan was of the opinions that the tradition lifestyle of pastoralists, their institutions and culture are the major threats to the unity of the country and barriers to the developmental programs. So they should be replaced with modern values and

practices. For this, Reza Khan adapted forced sedentarization process of pastoralists with the aim to completely eliminate pastoralism from the country. As a consequence of these initiatives, pastoral communities lost their traditional pastures, practices, cultural norms and institutions and compelled on forced sedentarization, migration and agriculture (Tahmasebi, 2013). Kreutzmann (2013) showed that during the 20th century, numerous packages (cash and kinds) and support programmes offered to mobile pastoral communities in Central Asian region with the aim to modernize their traditional livelihood practices and institutions. This process of pastoral settlement or modernization led to disrupt the customary pastoral norms and activities and further weakened their economic viability. Similarly agriculture reform-policies considered an example of modernization in South America, where the agrarian policies designed and implemented particularly in highland areas (Dong *et al.*, 2011). These policies replaced the traditional management system of land use with a collaborative land tenure that showed an irrational resistance to modern agrarian approaches (Swift, 2004; Westeicher *et al.*, 2007). The implementation of modern agrarian policies sub-divided the productive pastoral areas into smaller units (Swift, 2004), that have been produced widespread socio-economic consequences for pastoralists such as poverty, social differentiation, conflict and disruption of customary pastoral land tenure system (Postigo *et al.*, 2008).

The sedentarization of pastoralists in response to internal and external factors is mainly supported by governments, development experts, academicians and even stakeholders within the pastoral communities itself (Wu and Richard, 1999). For example, some nomadic pastoralists settled in the former Soviet Union, Iran and Israel in response to state enforced measures; others including Saami in Norway and Bedouins in Saudi Arabia in response to suitable changing economic opportunities. Similarly pastoralists are settled as sedentary households or diversifying their pastoral activities in African pastoral regions due to prolonged droughts, population pressure and political insecurities that is mainly adopted by pastoralists itself (Fratkin and Roth, 2005).

The modern approaches such as improved access to markets, natural resources, better education and health infrastructure and higher level of production/breeding technologies and the provision of alternative livelihood opportunities are considered right kind of investments for pastoral communities (Kreutzmann and Schutte, 2011). However, these approaches delivered important outcomes for the wellbeing of pastoralists in some areas, but produced worsened outcomes in the others (Kaukab, 2005).

3.2 Insecure pastoral land tenure

Pastoralists are often living in spatio-temporal variable environments – where as a system of land use, pastoralists on one hand need adequate and secure access to productive grazing niches and on the other hand they need to be flexible in their resource use pattern and social relationships to accommodate ecological and socio-political uncertainties. However, inappropriate management of pastoral land resources and its subsequent complexities in land tenure system are considered key factors behind marginalization of pastoral practices and ecological degradation (Fernandez-Gimenez, 2002; Nautiyal, 2003). Lack of clear property rights is reducing pastoralist's access to productive grazing niches and restricts open livestock mobility between different ecosystems. Furthermore, this land tenure ambiguity is reducing the long-term investment in land use management and other natural resource conser-

vation that subsequently leads to environmental degradation.

Elhadary (2010) studied pastoral land tenure issues in connection with pastoral livelihood security in Eastern Sudan. Pastoralists access to grazing land mainly governed by the customary communal rules or rights though there were some shortcomings such as lack of transparencies, social understanding and gender biases. The successive governments attempted several times to control the pastoral land resources and undermine communal land tenure system. In this context, unregistered Act (1970), was such an initiative of the government in Eastern Sudan that grabbed pastoral land and reallocated to the public and other private sectors without considering the communal rights to resource utilization and access to land. As a result of this land grabbing under unregistered Act (1970), mechanized farming system expanded and caused significant implications for pastoral systems and economy. Similarly, pasture land privatization in Central Asia and Inner Mongolia of China fragmented rangeland resources into smaller units; the imposed restrictions on livestock mobility to seasonal pastures and water resources that have negatively affected both pasture conditions and livestock productivity (Coughenour *et al.*, 2008).

In 2002, Kyrgyz Government instituted legal changes in pasture tenure laws that are leasing pastures on territorial base to individual or community groups through local administration (Undeland, 2005). However, this pasture lease system was more complicated than the previous one and had produced profound implications for pastoral livelihoods and questioned the long term sustainability of pastures. For example, the accessible areas overused wealthy and influential people excluded poor households from productive areas and limited their access to larger and remote pastures (Jones, 2003; Lerman and Sedik, 2009). In 2009, this lease system abandoned and transferred local administrative authority over pastures use to local grazing committee at community level. This changing pasture tenure system created social tension for pastoral communities particularly poor due to the dominance of wealthy and influential herders who excluded the poor from larger pastures i.e. larger herd owners privatized remote and larger pastures while those having smaller herds lose access to these larger pastures and are compellingly overgrazed the accessible pastures (Steimann, 2011). Furthermore, pastoral land is also privatized in other Central Asian countries that has increasingly considered a key factor in pastoral livelihood vulnerability and pasture resource degradation (Peyrouse, 2009; Rowe, 2010).

3.3 Civil insecurity: Wars and violent conflicts

Civil insecurity is one of the most important factors contributing to social tension and stress among pastoral communities (Nori *et al.*, 2005). The socio-political insecurity situation leads to violent conflict or wars that poses a great threat to pastoral livelihoods in terms of human and livestock loss, limited access to markets, water and pasture resources and ultimately compelled them on forced migration. Conflict in the broadest sense can be defined as “*forceful interaction as a result of opposing views*” (Schilling *et al.*, 2012), particularly emerged in pastoral regions due to resource scarcity and ownership, transboundary movement between regions or countries and political instability (Shettima and Tar, 2008).

Scarcity of resources is primarily associated with social conflict within pastoral communities in Sub-Saharan African drylands (Nori *et al.*, 2005) that is mainly caused by demographic pressure, land use changes and shrinking grazing lands for pastoralists (McCabe,

2004). Numerous studies revealed that a number of large scale clashes occurred during the past few decades among Ethiopian pastoralists and led to severe human loss, casualties and family's displacement (Gebre, 2001; Abdullah, 2005). Among the most publicized incidents occurred are Afar-Issa (Afar and Somali region), Anuak-Nuer (Gambella), Sheikash-Ogaden (Somali region) and the Guji-Borana (Oromiya region) disputes. However, the government regularly monitor these pastoral zones through concern and inter-governmental authorities to avoid conflicts within pastoral communities (Hagmann and Mulugeta, 2008).

Dispute over land ownership is another factor contributing to conflicts and wars, especially occurred in Hindu Kush-Himalayan (HKH) region (Afghanistan, Pakistan and India), East Africa (Sudan, Somali, Kenya and Ethiopian-Somali border regions). For example, in Afghanistan, there is a long-standing social conflict over pastures ownership between Pash-tun nomads and Hazara communities in highlands. This conflict is further triggered by Taliban regime in Kabul who are the direct supporters of Pashtun-nomads (Wiley, 2004; Robinett *et al.*, 2008). Similarly, the absentee landlords evicted landless and agro-pastoralists from their upland pastures in Swat district of Khyber Pakhtunkhwa through influential rule of Taliban (Irfanullah, 2002). Similarly, a conflict over resources ownership became severe in Sudan when government mobilized an armed militant group among pastoralists in fight against opposing group with whom they are competing for access to natural resources (Young, 2012).

3.4 Unsustainable pastoral resource development

Some of the pastoral communities are residing in the vicinity of international or regional borderlands where they are moving through their traditional routs and often crossing regional or country borders. Such trans-boundary movement of pastoralists between different countries have greatly enhanced their pastoral activities i.e. petty trading, labour migration and seasonal exploitation of grazing resources (Nori *et al.*, 2005). However, pastoral communities are continuously under stress and suffering in these frontier-border regions due to transitional situations of political wars, theft and social insecurity and further end-up far away from decision making institutes (Galaty *et al.*, 1994; Leff *et al.*, 2009).

Pastoral development is generally perceived as a social activity-aimed to improve pastoralist's access to key social and veterinary services together with pastoral institutions development for rangeland resource management (Salih, 1985; Butcher, 1994). The implementation of development policy interventions through good pastoral governance not only provides standard life opportunities for pastoralists but also endeavours to conserve the traditional socio-cultural features of the pastoral society. Furthermore, specifically livestock development projects attempt to improve the quality and quantity of livestock and their products through improved breeding strategies and marketing which are linked with better infrastructure (roads, water) improved natural resources (pastures, land) and superior-technology (education, skills) (Nyariki and Ngugi, 2002). Sustainable development in the context of pastoralism means to maintain livestock productivity in the long run, ensure pastoralists secure access to natural resources i.e., grazing and water etc, and to provide socio-political security to pastoralists. However, many developmental interventions in different pastoral regions across the world are inadequately addressing these human-capital (health, education, gender etc), social capital (institutional development) and natural capital (natural resources)

due to the stereotype views that pastoral activity is economically irrational, environmentally unsuitable (destructive) and wasteful (Fratkin and Mearns, 2003). According to Admasu *et al.* (2010) and Wallner *et al.* (2007) such pastoral development programs are often failed because of less recognition of pastoral knowledge and interest in development process and policies. As a result these programs are negatively affecting both local inhabitants and the environment in which they live.

Pastoralists are among the most geographically, socially and politically marginalised social group, inhabiting in the regions that are mainly characterised by rough topography, extreme climatic conditions, limited accessibility and poor infrastructure development (Zinsstag *et al.*, 2006). The main reason behind the socio-political marginalization of pastoralists is their exclusion from development process due to weak pastoral governance or pastoralist's representation in decision making institutions (Ogachi, 2011).

The research study of Wangui (2008) in Kenya revealed that during the past few decades, the developmental interventions brought significant changes in pastoral practices such as sedentarization, land use changes, new grazing system, new livestock breeds and increased child enrolment in schools. As a result of these changes family labour distribution pattern is affected and a fundamental shift observed in gender role among pastoralists in livestock production. A balanced gendered aspect of pastoral society has ignored in these developmental programs, though the effects of developmental programs on man and woman are varying, as observed in other regions also (Schroeder, 1999). A balanced gender-consideration among pastoralists is accounted as a central component to the success of pastoral development projects while un-balanced gender may lead to failure of the projects (Wangui, 2008). Similarly Rai *et al.* (2005) research study in the HKH region showed that foreign donors and British government have been supported particularly natural resource management projects in South Asian countries during past few decades. Case studies of forestry projects from Nepal and India showed that seasonal grazers (pastoralists) being a dis-advantaged and marginalized group excluded from the direct benefits of these initiatives and restricted their access to forest zone under participatory resource management regimes. As a result, pastoralists lost access to many productive grazing niches due to their curtailed mobility; compellingly pastoralists are now restructuring their traditional livelihood activities through off-farm employment and out-migration.

Different research studies on pastoral areas across the world revealed that sustainable pastoral resource development requires not only technical expertise but also social dimensions such as indigenous pastoral practices, pastoral institutions and socio-economic capitals. Without considering these factors in state policies and development schemes related to pastoral resource development, sustainable natural resource management will not be possible that subsequently may lead to effect on sustainability of pastoral system (Banks *et al.*, 2003; Dong *et al.*, 2009).

4 Ecological and climate change induced stresses

According to Anderson (1999), many attempts made in arid and semi-arid landscapes aimed to modernize the traditional pastoral practices through sedentarization policies and projects. Failure of these schemes led to unwanted socio-economic and ecological consequences and

increased social tension among pastoral communities and development experts who in turn blamed pastoralists for being their conservative attitudes toward development and wide-spread consequences.

4.1 Ecological consideration: a challenge for sustainable pastoralism

Conservation-induced displacement or eviction of indigenous people-pastoralists from their land is an important issue of concern, as conservation policies are negatively affecting pastoralists in many pastoral regions of the world; compelling them to evacuate the areas allocated for conservation (Brockington and Igoe, 2006). Though pastoralism itself increasingly acknowledged and appreciated as a conservation strategy and environmentally friendly practice in the world (Nori and Gemini, 2011), this emerging debatable point the so-called dispute between conservationists and pastoralists has increasingly recognised the importance of balancing natural resource conservation with local community interest (Roe, 2008).

The enforcement of policies towards nature conservation often resulted in the establishment and creation of national parks, protected areas and game reserves aiming to conserve local biological diversity (Saberwal, 1996). However, these initiatives either minimised access of local residents/community to natural resources within the conservation site or evicted particularly pastoralists from conservation site for being their mobile status (Mattee and Shem, 2006). Conservation-oriented policies suffered pastoralists mainly due to little understanding the ecological significance of pastoralism by government stakeholders, policy makers and development planners.

The current increasing international emphasis on biodiversity conservation led to the declaration of new protected areas, sanctuaries and national parks in the rangeland areas (Nusrat, 2011), where several productive alpine pastures or rangelands converted into national parks, game reserves and world heritage sites. As a result pastoralists are evicted from their traditional pastoral habitat and pushed their herds to unproductive marginal lands, though pastoralists play a central role in nature conservation. The China-Grassland Ban Policy (GBP) initiated in 2002 aimed to restore and conserve the degraded grassland ecosystem. Initially the policy implemented in Inner Mongolia and Xinjiang and later extended to all pastoral areas in Western and Northern China. The GBP combined with other conservation policies for biodiversity reduced pastoralist's free access to diverse grazing niches and water resources. These emerging conservation efforts stressed pastoral livelihood and challenged its sustainability in the long-run (Mehta and Heinen, 2001).

As a result of current global efforts for conservation, protected areas have been expanded three-fold during last few decades and occupied 6% of the land surface of the earth. However, conservationists are not seriously considering the rights and social status of indigenous people living in the territory of protected areas or conservation sites. Though the importance of social impacts of conservation for indigenous people was recognised in the last Conference of the Parties of the Convention of Bio-diversity and World Conservation Congress of IUCN held in 2004 (Brockington *et al.*, 2006).

4.2 Climate change-induced hazards and disasters

Climate change has always been remained a key challenge to human livelihood (Sewando *et al.*, 2016). As climatic changes lead to severe natural hazards and disasters that are adversely

affecting millions of livelihoods in the world (IPCC, 2007). Poor are more vulnerable to climate changes – among 1.3 billion poor people in the world, at least 90% of them are living in Asia and Sub-Saharan Africa, where 600 million people are extremely vulnerable to climate changes who primarily depend on livestock production for their livelihoods (Thornton *et al.*, 2002). This climate change is affecting livestock production in term of quantity and quality of feeding resources, water availability, mobility, livestock diseases and species in the herds (Thornton *et al.*, 2002). However, the impacts of climate change and its related hazards on livestock production systems are varying in degree and nature mainly depend on the ecosystem and pastoralists response-strategies to climatic shocks (Morton, 2007).

Climate change-induced hazards such as droughts, desertification, famine and floods have imposed significant stresses on pastoral livelihoods (Eriksson *et al.*, 2009), as pastoralists are mainly living in more risk-prone environment i.e. high mountain-steppes, savannas and deserts (Tahmasebi *et al.*, 2013). These ecosystems are extremely sensitive to climate changes on a global scale due to their natural exposure and geographical settings; sometimes even small change in climatic conditions may directly affect traditional nomadic people, their economy and lifestyle and the ecosystems on which they are dependent (Tahmasebi *et al.*, 2013). Livestock mobility, changing herd structure (multi-species herds), cash saving, provision of supplementary feeding for livestock and livelihood diversification are adaptive strategies of pastoralists in response to climatic changes (Morton, 2007). However these adaptive strategies of pastoralists to climatic shocks are varying from region to region and mainly depend on their socio-economic and ecological systems (Smit and Wandel, 2006).

Climate change is increasingly changing socio-economic and ecological systems at different spatial and temporal scales in Hindu Kush-Himalayan region (Shaoliang and Sharma, 2009). Joshi *et al.* (2013) studied herder's perceptions toward climate changes in Hindu Kush-Himalayan region particularly in arid and semi-arid environment of Northern Pakistan. According to herder's perception, the current prevailing climate changes are directly impacting pasture resources and livestock production by altering vegetation composition and reducing forage yields. As a consequence, pastoralists have adopted migration and livelihood diversification as adaptive strategies to climate changes.

5 Conclusions

The dryland pastoral areas are severely affected by climatic hazards i.e. desertification, droughts and famine (Haile, 2005). The severity of these climatic hazards is continuously increasing from the last few decades and the impacts of these hazardous situations are mainly experienced by poor-inhabiting in the dryland areas who depend on natural resources such as rangelands, livestock and agriculture for their livelihoods (Hulme, 1996). The climatic events are affecting livestock health, forage availability, carrying capacity of the rangelands and agricultural production systems (Galvin *et al.*, 2004; Mertz *et al.*, 2009). Pastoral communities have been adapted diverse coping strategies to sustain their production systems on these marginal environment. Pastoral strategies for sustaining their production included livestock mobility according to the forage and water availability, keeping hazard-resilient species in their herds, livelihood diversification through agriculture, wage labouring and out-migration. However, there are certain constraints in these adaptive strategies

that make pastoralists more vulnerable to climatic changes and climate-induced hazards. For example, unclear land tenure system, population growth, poverty and livestock diseases reduced the capacity of pastoralists to keep larger herds for their livelihood dependency whereas opportunities for livelihood diversification are lacking (Galvin *et al.*, 2004).

Pastoralism is increasingly recognised as an efficient means of natural resource management and appreciated as an environmentally friendly practice both in the arid and semi-arid environment. This role of pastoralism in the provision of key ecosystem services has also been acknowledged in different multi-lateral conventions such as biodiversity conventions. However, the traditional pastoral systems are continuously eroded in many pastoral regions particularly in developing world due to current socio-political and ecological challenges.

The extensive review on pastoralists livelihood marginalization showed that the current prevalent socio-political and economic stress on pastoralism caused by modernization, insecure land tenure, integration of market economy, civil insecurities and pastoralist's exclusion in states policies while ecological stress on pastoral activities emerged with increasing focus on nature conservation in pastoral regions that is further triggered by climate change induced hazards and disasters. All these factors have affected the ability of pastoralists to sustain traditional pastoral system as a way of life, culture and traditional grazing resource management.

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