

Simultaneous Scarcity and Eroding Social Capital: Reciprocity under Drought among Maasai Pastoralists

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Abstract

Original Research Article

Reciprocal resource sharing and collective action have historically enabled pastoral communities to cope with drought. However, when drought affects entire communities simultaneously, the material basis for reciprocity collapses. This paper examines how recurrent drought erodes social capital among Maasai pastoralists in Monduli District, northern Tanzania. Drawing on a qualitative case study involving 38 in-depth interviews, 8 focus group discussions, 7 key informant interviews, and participant observation, the study reveals a central paradox: households remain committed to mutual support and cultural norms of reciprocity, yet widespread resource scarcity severely constrains their ability to assist others. This dynamic reveals the limits of traditional coping mechanisms under synchronous shocks. Rotational grazing systems and osotua partnerships persist but operate under increasing strain, while wealthier households maintain stronger reciprocal networks than poorer ones. The findings demonstrate that the erosion of reciprocity is driven primarily by simultaneous scarcity, material constraints rather than cultural decline. This study extends Social Capital Theory and Collective Action Theory by highlighting the limits of cooperation when shocks are widespread and synchronous. It concludes that effective drought adaptation policies must strengthen social institutions alongside technical interventions to build genuine resilience in dryland pastoral systems.

Keywords: Drought, Social Capital, Reciprocity, Simultaneous Scarcity, Pastoralism, Maasai, Tanzania.

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1. INTRODUCTION

1.1 Background

Drought is one of the most damaging climate-related hazards globally, affecting more than 55 million people annually (UNDRR, 2022; FAO, 2023). Pastoralist communities in semi-arid East Africa are disproportionately affected due to their dependence on rainfall, grazing land, and water sources that dry up quickly during dry spells (Catley et al., 2013; Little et al., 2016).

In northern Tanzania, rising temperatures have increased evapotranspiration, leading to more frequent and prolonged droughts. Between 1981 and 2020, vegetation cover in Monduli and neighbouring Longido districts dropped by 9.7 percent, a decline driven primarily by worsening drought conditions rather than changes in land use (Verhoeve et al., 2021). For Maasai pastoralists in Monduli District, livestock are not merely economic assets but foundations of social identity, reciprocity, and cultural continuity (Homewood et al., 2009; Moti et



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al., 2026).

Historically, the Maasai have navigated drought through seasonal mobility, communal grazing arrangements, and strong reciprocal networks that redistribute milk, livestock loans, and labour across households. However, as droughts become more recurrent and widespread, these social institutions are under strain. This paper examines how recurrent drought erodes reciprocity and cooperation among Maasai pastoralists in Monduli District. It argues that drought weakens social capital not primarily through cultural breakdown but through the material reality of simultaneous scarcity: when entire communities face resource depletion at the same time, the surplus required for mutual assistance disappears.

1.2 The Gap

Existing research on drought impacts in East Africa has focused largely on ecological and economic outcomes, including livestock mortality, distress sales, and declining household food security (Herrero et al., 2022; McCabe et al., 2025). Less attention has been given to how drought reshapes social relations and community structures. Yet social infrastructure, including reciprocity, trust, and collective action, is as critical to pastoral resilience as livestock numbers (Catley et al., 2013; Little et al., 2016). When drought affects entire communities simultaneously, the conditions that sustain reciprocity change fundamentally. Surplus for sharing disappears, and households that once lent livestock or shared milk find themselves unable to do so, even when cultural norms of mutual obligation remain strong.

1.3 Research Questions

This paper is guided by three research questions. First, how does recurrent drought affect reciprocity and cooperation when whole communities face scarcity simultaneously? Second, what institutional mechanisms persist or weaken under sustained environmental pressure? Third, what are the implications of these findings for Social Capital Theory and adaptation policy?

1.4 Significance

This paper contributes empirical evidence on social transformations driven by climate stress in a pastoral system. It tests Social Capital Theory under conditions of simultaneous scarcity, extending existing frameworks by highlighting that collective action fails not from declining social commitment but from the material conditions necessary to enact cooperative behaviour. The findings inform policies that strengthen social institutions alongside technical interventions, recognising that adaptation requires attention to both material resources and social relations.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Reciprocity and Social Capital in Pastoral Systems

Social Capital Theory posits that social networks constitute valuable resources for individuals and communities. Putnam (2000) distinguished between bonding capital, which refers to strong ties within homogeneous groups such as kin or close neighbours, and bridging capital, which encompasses weaker ties across diverse groups. Both forms are critical for community resilience, particularly in resource-scarce environments, yet both can be undermined by prolonged environmental stress through the erosion of trust and weakening of reciprocal networks (Bourdieu, 1986; Putnam, 2000).

Ostrom's Collective Action Theory (1990) further demonstrates that communities endowed with strong social capital are better able to govern common-pool resources such as grazing land and water. Users develop informal rules, monitor compliance, and enforce sanctions without relying on external authorities. This self-governance depends heavily on trust and reciprocity.

Among the Maasai, need-based sharing has long operated through the *osotua* system. The term literally means "umbilical cord" and is based on two core principles: one should only ask for help when genuinely in need, and when asked, one should share

what one can (Cronk, 2007; Lightner et al., 2023). Importantly, *osotua* partnerships do not involve scorekeeping; notions of debt and repayment are culturally absent. This system has historically enabled households to survive drought cycles by redistributing milk, livestock loans, and labour from those with surplus to those facing acute shortages.

2.2 Drought and the Erosion of Reciprocity

Empirical studies from East Africa indicate that recurrent drought progressively erodes these traditional support systems. In Kenya and Ethiopia, clan-based mutual assistance has weakened as drought intensifies, with households increasingly turning to external aid rather than traditional reciprocity (Majid & McDowell, 2012; Little et al., 2016). When scarcity affects entire communities simultaneously, the surplus required for redistribution disappears and competition over remaining resources intensifies (Catley et al., 2013; Tache & Oba, 2010).

This pattern suggests that the observed decline in reciprocity is driven less by cultural erosion than by the material realities of simultaneous scarcity. Even when cultural norms of mutual obligation remain strong, households simply lack the resources needed to enact them. In Monduli District, similar dynamics have been observed, with recurrent drought placing increasing strain on traditional governance institutions and reciprocal arrangements (Mwangi et al., 2020; Moti et al., 2026).

2.3 Theoretical Framework

This paper is guided by two complementary theoretical lenses. Social Capital Theory (Bourdieu, 1986; Putnam, 2000) provides the conceptual tools to analyse how networks, trust, and reciprocity function as resources that shape community responses to environmental stress. Collective Action Theory (Ostrom, 1990) explains the conditions under which communities successfully manage shared resources such as pasture and water.

The concept of simultaneous scarcity serves as a bridging idea that extends both frameworks. It

highlights that collective action and reciprocity can fail not because of declining social commitment or trust, but because the material conditions necessary to sustain cooperative behaviour are eroded when drought impacts entire communities at once. This framework guides the analysis of how Maasai households in Monduli District navigate reciprocity under recurrent drought, offering a more nuanced understanding of resilience in dryland pastoral systems.

3. METHODOLOGY

This study employed a qualitative case study design to explore the lived experiences and socio-cultural processes through which recurrent drought reshapes reciprocity and cooperation among Maasai pastoralists in Monduli District, northern Tanzania (Yin, 2018; Creswell & Creswell, 2018). A qualitative approach is particularly suitable for capturing the nuanced meanings, everyday practices, and context-specific dynamics that shape social relations in complex social-ecological systems (Creswell & Creswell, 2018). The case study design enabled the researcher to examine how drought influences reciprocity and cooperation within a specific cultural and ecological setting, while remaining attentive to the perspectives and experiences of participants.

The research was conducted in three purposively selected wards in Monduli District: Lolkisale, which is predominantly pastoral and semi-arid; Monduli Juu, an agro-pastoral highland area; and Esilalei, which is influenced by Lake Manyara and wildlife-livestock interactions. These wards were chosen to reflect ecological and livelihood variation while remaining within the same administrative and cultural context. Monduli District has a semi-arid climate with highly variable rainfall averaging 450 to 750 millimetres annually. Drought frequency and severity have increased in recent decades due to rising temperatures and evapotranspiration (Verhoeve et al., 2021).

The sample comprised 38 in-depth interviews with household members, 7 key informant interviews with local government officials and NGO staff, and 8

focus group discussions. Each focus group included 6 to 8 participants, with separate groups convened for women and youth across the three wards. Purposive sampling, assisted by local leaders and gatekeepers, was used to select information-rich participants, including elders, women, youth, livestock herders, and persons with disabilities. Snowball sampling was employed to reach less visible groups. Sampling continued until thematic saturation was achieved, meaning that additional interviews and focus groups yielded no substantially new themes or insights (Guest et al., 2006; Braun & Clarke, 2019). Particular attention was given to capturing perspectives on grazing management, resource sharing, and customary governance, as these were central to understanding reciprocity and cooperation.

Fieldwork was conducted between August 2024 and January 2025. Data were collected through four complementary methods. Semi-structured in-depth interviews lasting 45 to 60 minutes explored personal experiences of drought, social relations, resource sharing, and cooperation. Key informant interviews lasting 60 to 90 minutes provided institutional perspectives on drought impacts, governance, and adaptation. Focus group discussions captured collective norms and shared experiences regarding grazing rotation, water sharing, and conflict resolution. Participant observation of livelihood activities, resource access, grazing practices, and social interactions supplemented the interview data. Interviews were conducted primarily in Kiswahili, with translation into Maa when necessary. All sessions were audio-recorded with informed consent and transcribed verbatim.

Data were analysed using reflexive thematic analysis (Braun & Clarke, 2021). The iterative process involved repeated reading and familiarisation with the transcripts, generating initial codes, developing and reviewing themes aligned with the research questions, and interpreting findings in relation to theory and existing literature. Analysis was conducted manually with peer review to enhance rigour. Inter-coder agreement reached approximately 85 percent. The researcher maintained a reflexive journal throughout the analysis to critically examine assumptions and potential biases, particularly

regarding the interpretation of reciprocity norms and governance practices.

Ethical clearance was obtained from the National Commission for Science, Technology and Innovation (NACOSTI) in Kenya and the Commission for Science and Technology (COSTECH) and Tanzania Forestry Research Institute (TAFORI) in Tanzania. Informed consent was obtained from all participants prior to data collection. Participation was voluntary, and respondents could withdraw at any time without penalty. Confidentiality was ensured through anonymisation of transcripts, secure data storage, and culturally sensitive procedures.

4. FINDINGS

The thematic analysis of 38 in-depth interviews, 8 focus group discussions, and 7 key informant interviews revealed five interconnected patterns regarding reciprocity and cooperation under recurrent drought in Monduli District. These themes demonstrate how simultaneous scarcity erodes social capital while certain elements of traditional mutual support persist in modified forms.

4.1 Erosion of Reciprocity and Mutual Support

The majority of participants described a significant decline in everyday resource sharing during drought periods. A male elder from Lolkisale expressed the widespread sentiment:

“Everyone is struggling at the same time. There is no surplus to give. How can I lend an animal when my own children have nothing?” (IDI_012)

A female elder echoed this:

“In the past, if your neighbour’s child was hungry, you gave milk. Now, all children are hungry at the same time. There is nothing to give.” (IDI_007)

Another elder from Monduli Juu highlighted the systemic nature of the decline:

“Traditional support systems are still practiced,

but they are weaker now. People are educated and civilised. They think more about themselves.” (IDI_005)

A respondent from Lolkisale added:

“We are weaker now. People take their land too personally. No one can access what belongs to others.” (IDI_009)

A female youth from Lolkisale described the exhaustion of communal resources:

“The severity of the drought has exhausted community resources. There is nothing left to share. Everyone is struggling to survive.” (IDI_002)

Focus group participants reinforced these views. A woman from Monduli Juu stated:

“Kabla ya ukame tulisaidiana kwa maziwa, chakula na mifugo, lakini sasa hali imekuwa ngumu kwa kila mtu.” [Before the drought we supported one another through sharing milk, food and livestock, but now conditions have become difficult for everyone.] (FGD_W_02)

Another woman from Lolkisale noted:

“Tunasaidiana pale inapowezekana, lakini si kama zamani kwa sababu watu wengi hawana rasilimali za kutosha.” [We still help one another whenever possible, but not as much as before because many people no longer have sufficient resources.] (FGD_W_01)

A respondent from Esilalei confirmed:

“We still share with relatives and neighbours when we can. But we cannot give as much as before because we have less.” (IDI_038)

A key informant summarised the pattern:

“Community support remains important, but drought has reduced the amount of assistance that households can provide because many families face similar challenges.” (KII_01)

These accounts consistently show that the erosion of reciprocity results not from the abandonment of cultural values, but from the material reality of **simultaneous scarcity**. Households expressed a continued desire to help others, yet widespread

resource depletion left them with little or nothing to share.

4.2 Persistence of Rotational Systems

Despite the overall decline in reciprocity, rotational grazing and water-sharing arrangements continue, albeit with reduced effectiveness. Communities still coordinate access to remaining pasture and water points, and collective resource management retains legitimacy. However, enforcement has become challenging. One elder described the tension:

“We can tell a man not to graze in the dry season reserve. But if his animals are dying, he will go anyway. What can we do? We cannot let his cattle die.” (IDI_008)

A respondent from Monduli Juu explained:

“People come together to share pasture through agreed rotation schedules. We try to use the available grazing land carefully because drought has reduced the amount of pasture.” (IDI_005)

A farmer from Lolkisale added:

“We move our animals from one grazing area to another to allow the pasture to recover. This is how we have always done it, and it still works.” (IDI_009)

Youth in focus groups emphasised controlled grazing:

“Tunajaribu kuepuka kuweka mifugo mingi sehemu ndogo kwa sababu malisho yanaweza kuharibika haraka.” [We try to avoid keeping too many animals in a small area because pasture can be destroyed very quickly.] (FGD_Y_01)

A community leader from Lolkisale noted:

“We have agreed schedules for grazing rotation. This helps ensure everyone gets fair access, and it prevents the stronger families from taking all the best pasture.” (IDI_010)

Another from Esilalei confirmed:

“Rotation is how we manage the little pasture

that remains during drought. It is not easy, but it is the only way to make sure everyone's animals survive." (IDI_034)

A key informant reinforced its importance:

"Grazing rotation is a traditional practice that helps maintain pasture sustainability. It remains one of the most important strategies for managing grazing resources during drought because it reduces pressure on the land." (KII_01)

This illustrates the tension between the persistence of customary rules and the practical limits of enforcement when survival pressures override collective agreements.

4.3 Shifting from Collective to Individual Strategies

As drought intensifies, households increasingly prioritise individual survival. Competition over water and pasture has grown. One respondent captured the shift:

"Nowadays each family looks for its own grazing area because water and pasture are no longer sufficient for everyone. Cooperation still exists, but it is not as strong as before." (IDI_009)

A female participant from Lolkisale elaborated:

"Things have changed. People now think more about themselves because there is not enough to share." (FGD_W_01)

A respondent from Esilalei observed:

"In the past, we shared everything. Now, everyone is struggling. You cannot help others when you are also suffering." (IDI_035)

A community leader highlighted inter-community tensions:

"There is more competition over resources not only within the community but also with other communities and wildlife." (IDI_020)

Women in FGDs described water competition:

"Visiwa vya maji vinapopungua, watu

wanashindana. Wakati mwingine kuna ugomvi kuhusu maji." [When water sources decrease, people compete. Sometimes there are arguments about water.] (FGD_W_01)

A youth participant from Monduli Juu added:

"Tunapaswa kuepuka kuweka mifugo mingi sehemu moja kwa muda mrefu. Kama tutafanya hivyo, malisho yataharibika na hakutakuwa na chakula kwa wanyama wetu." [We should avoid keeping many animals in one place for a long time. If we do that, the pasture will be destroyed and there will be no food for our animals.] (FGD_Y_03)

A key informant observed:

"Competition over water and pasture intensifies during drought, creating tensions within and between communities. However, sharing arrangements and rotation systems continue to operate as mechanisms for managing resource access." (KII_01)

A climate expert noted the regional pattern:

"Climate variability increases the risk of resource-based conflict through competition over scarce water and grazing land." (KII_04)

This shift reflects pragmatic adaptation to simultaneous scarcity, where broader reciprocity diminishes even as cultural ideals of cooperation remain.

4.4 Kinship Exceptions and Osotua Partnerships

Kinship-based assistance and *osotua* partnerships remain active during extreme shocks, though significantly stretched. One elder explained:

"A bond-friend is a person with whom one formally contracts [reciprocal stock] rights for reasons of mutual convenience and trust." (IDI_014)

A respondent from Lolkisale confirmed:

"When serious problems occur, community members still come together to help one another. Cooperation has not disappeared completely." (IDI_004)

A respondent from Esilalei added:

“We still share with relatives and neighbours when we can. But we cannot give as much as before because we have less.” (IDI_038)

Youth acknowledged elders’ guidance:

“Wazee wanatupa ushauri kuhusu jinsi ya kukabiliana na ukame. Tunawasikiliza kwa sababu wana uzoefu.” [Elders give us advice about how to cope with drought. We listen to them because they have experience.] (FGD_Y_01)

A key informant noted:

“Elders play a central role in resolving conflicts. They use traditional mechanisms to maintain peace and ensure that agreements are respected.” (KII_03)

Wealthier households participate more meaningfully in *osotua*, while poorer ones are often excluded or shift toward transactional exchanges. Thus, *osotua* operates selectively along wealth and kinship lines.

4.5 Differential Impacts by Wealth

The erosion of reciprocity is experienced unevenly. Wealthier households (>50 cattle) sell some animals to buy feed and preserve capacity for reciprocity. Poorer households (<20 cattle) often lose most animals. One participant lamented:

“The rich lose animals and recover. The poor lose animals and stay poor.” (IDI_035)

Fathers from Esilalei described livestock suffering:

“Cattle lack pasture and water. Without these basic needs, they cannot survive.” (IDI_029)
“We have seen how cattle suffer first.” (IDI_030)

A female youth observed reduced milk:

“We cannot produce enough milk because the animals are too weak.” (IDI_017)

Women in FGDs described poverty:

“Ukame umetufanya kuwa maskini. Tumepoteza mifugo yetu na sasa tunajitahidi

kuishi.” [Drought has made us poor.] (FGD_W_02)

A women leader noted economic impacts:

“Income decreased because livestock price fall during drought.” (IDI_021)

A youth explained distress sales:

“We sell animals to survive, but this makes us poorer in the long run.” (IDI_004)

Key informants confirmed:

“Lack of financial capital is a fundamental constraint.” (KII_05) “Income decline is one of the most significant consequences.” (KII_03)

This differentiation reinforces inequalities: richer households maintain stronger networks, while poorer ones are marginalised. Simultaneous scarcity thus weakens overall social capital *and* amplifies intra-community differentiation.

5. DISCUSSION

The findings from Monduli District illustrate how recurrent drought acts as a powerful driver of social institutional change in pastoral systems. While some elements of traditional cooperation persist, the dominant pattern is one of eroded reciprocity and weakened social capital under conditions of simultaneous scarcity. This section interprets the key findings through the lenses of Social Capital Theory and Collective Action Theory, highlights theoretical contributions, compares the results with existing literature, and discusses policy implications.

5.1 Simultaneous Scarcity as the Primary Mechanism of Reciprocity Erosion

A central insight emerging from the data is that the observed decline in reciprocity stems not from the erosion of cultural values or declining willingness to help, but from the material reality of simultaneous scarcity. When drought affects entire communities at once, the surplus required for mutual assistance largely disappears. Multiple participants across IDIs, FGDs, and KIIs repeatedly emphasised this dynamic: households still desired to support neighbours and

kin, yet had "nothing left to share" (IDI_007; IDI_002; FGD_W_01; KII_01).

This finding extends Collective Action Theory (Ostrom, 1990). Traditional frameworks assume variation in exposure to shocks, enabling unaffected or less-affected actors to support those in greater need. In Monduli, however, widespread and simultaneous resource depletion constrains the very material basis for reciprocity. Even strong *osotua* norms and cultural commitments to mutual aid become difficult to enact when nearly every household faces acute shortages of milk, livestock, and fodder. The result is not cultural breakdown, but a pragmatic contraction of reciprocal networks.

This pattern was articulated by a male elder who stated, *"Everyone is struggling at the same time. There is no surplus to give"* (IDI_012). A female elder similarly observed that while in the past one could give milk to a hungry neighbour's child, now all children are hungry at the same time (IDI_007). A key informant confirmed that community support remains important, but drought has reduced the amount of assistance households can provide because many families face similar challenges (KII_01).

5.2 Institutional Resilience amid Strain

Despite clear erosion, the findings also reveal important elements of institutional resilience. Rotational grazing and water-sharing systems persist (Section 4.2), and kinship-based *osotua* partnerships continue, albeit selectively (Section 4.4). Elders and community leaders still play important coordination roles, and customary rules retain legitimacy even when enforcement is challenging (IDI_008; IDI_010; KII_01; KII_03).

One elder captured this tension when he explained that while they can tell a man not to graze in the dry season reserve, if his animals are dying, he will go anyway, and they cannot let his cattle die (IDI_008). A community leader from Lolkisale noted that agreed schedules for grazing rotation help ensure everyone gets fair access, preventing stronger families from taking all the best pasture (IDI_010).

A key informant confirmed that grazing rotation remains one of the most important strategies for managing grazing resources during drought because it reduces pressure on the land (KII_01).

This tension between persistence and strain is significant. Customary institutions are not collapsing but are being stretched to their limits. When survival pressures become overwhelming, immediate individual and household needs override collective agreements. The data show a gradual shift toward more individualistic strategies and intensified competition over remaining resources (Section 4.3), particularly for water and pasture. This pragmatic adaptation helps households survive in the short term but risks further weakening broader social cohesion over time.

5.3 Theoretical Contributions

This study makes two main theoretical contributions. First, it advances Social Capital Theory (Bourdieu, 1986; Putnam, 2000) by demonstrating how bonding capital, referring to intra-community ties, and bridging capital are differentially affected under climate stress. Wealthier households maintain stronger reciprocal networks, while poorer households are increasingly excluded, leading to amplified differentiation rather than uniform erosion (Section 4.5).

A poorer household head captured this differentiation when he stated, *"The rich lose animals and recover. The poor lose animals and stay poor"* (IDI_035). This pattern was reinforced by a key informant from the NGO sector who observed that lack of financial capital is a fundamental constraint for pastoral households, and without access to credit or savings, households cannot invest in alternative livelihoods or rebuild their herds after drought (KII_05).

Second, the concept of simultaneous scarcity offers a useful extension to both Social Capital and Collective Action theories. It explains why reciprocity and cooperation can weaken even when trust, norms, and cultural commitment remain relatively intact. This insight is particularly relevant for climate-vulnerable dryland communities where

shocks are increasingly widespread and synchronous. The findings suggest that resilience-building efforts must address not only social norms but also the material conditions that enable those norms to function.

5.4 Comparison with Existing Literature

The patterns observed in Monduli align with broader East African pastoral research. Studies in Kenya and Ethiopia have documented the weakening of clan-based support systems and increased reliance on external aid during prolonged drought (Little et al., 2016; Majid & McDowell, 2012; Catley et al., 2013). Similarly, Tache and Oba (2010) noted intensifying competition over resources under scarcity.

However, the Monduli findings add nuance. While many studies emphasise overall social fragmentation, this research highlights partial resilience, particularly the continued, though strained, operation of rotational systems and selective *osotua* partnerships. This suggests that customary institutions in Maasai communities retain adaptive capacity longer than sometimes assumed, though this capacity is not unlimited. The clear wealth-based differentiation also reinforces findings on increasing inequality in pastoral systems under climate stress (Homewood et al., 2009; McCabe et al., 2025).

5.5 Policy and Practical Implications

The findings carry important implications for drought adaptation policy in pastoral areas. Technical interventions such as water infrastructure, livestock insurance, and drought-tolerant forage are necessary but insufficient if implemented in isolation. Adaptation strategies must also strengthen the social infrastructure that underpins resilience.

Specific recommendations include:

- i. Supporting community-managed livestock contingency funds or restocking programmes that explicitly rebuild reciprocal capacity
- ii. Legally recognising and integrating customary governance institutions, including

elders' councils and rotation systems, into district-level drought preparedness plans

- iii. Designing interventions that reduce wealth-based exclusion from reciprocal networks, for example through targeted support for poorer households
- iv. Promoting hybrid approaches that combine indigenous practices (*osotua*, rotational grazing) with formal support systems

Ultimately, effective adaptation in pastoral contexts requires addressing both material vulnerabilities and the social relations that determine how communities respond collectively to environmental stress.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

This study demonstrates that recurrent drought in Monduli District erodes reciprocity and cooperation among Maasai pastoralists primarily through the mechanism of simultaneous scarcity. When entire communities experience acute shortages of pasture, water, and livestock simultaneously, the material surplus required to sustain traditional mutual support systems largely disappears. Although households remain committed to cultural norms of reciprocity and express willingness to help others, widespread resource depletion severely constrains their capacity to do so.

Importantly, social capital has not collapsed entirely. Rotational grazing systems and selective *osotua* partnerships persist, and elders continue to play important coordination roles. However, these institutions operate under growing strain, with enforcement becoming increasingly difficult when immediate survival needs override collective agreements. The erosion of reciprocity is also uneven: wealthier households maintain stronger networks, while poorer households are progressively marginalised, amplifying existing inequalities.

Overall, the findings illustrate that drought is not merely an environmental or economic shock but a

profound social process that reshapes the foundational relationships underpinning pastoral resilience. By highlighting the limits of cooperation under simultaneous scarcity, this study extends Social Capital Theory and Collective Action Theory, offering a more nuanced understanding of how climate stress transforms pastoral communities.

6.2 Recommendations

For Policy and Practice

- i. Strengthen customary governance institutions, particularly elders' councils and rotational grazing systems, by integrating them into district-level drought preparedness plans.
- ii. Establish community-managed livestock contingency funds or restocking programmes that prioritise poorer households to help restore the material basis for reciprocity.
- iii. Adopt hybrid adaptation approaches that combine indigenous practices (*osotua*, rotational grazing) with technical interventions such as water infrastructure and livestock insurance.
- iv. Design targeted support for vulnerable groups to reduce wealth-based exclusion from reciprocal networks.

For Research

- i. Longitudinal studies tracking changes in social capital across multiple drought cycles.
- ii. Comparative research across different pastoral contexts to assess the generalisability of simultaneous scarcity.
- iii. Investigation of practical strategies for strengthening reciprocal systems under intensifying climatic stress.

6.3 Limitations of the Study

As a qualitative case study conducted in three wards of Monduli District, the findings are context-

specific. Reliance on self-reported experiences carries potential recall bias, though this was mitigated through triangulation of multiple data sources. Despite these limitations, the study offers rich, grounded insights into the social dynamics of drought in a key pastoral setting.

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