Providing and Managing Water in Ethiopia's Pastoral Regions – Lessons Learned in the Last 40 years

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Introduction: Water as a range management tool

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. Although having undergone changes over the years, the pastoralist system comprises fundamental elements which have allowed it to persist for millennia. Until today, pastoralists continue to make the most of Ethiopia's arid and semi-arid areas, contributing substantially to food security, to the national economy, and to the efficient management of grazing land.

Pastoralists understand the dynamics of rangelands and use water as a means to manage pasture. In the wet season, both water and pasture are abundant and easily available. As the rainy season subsides and water becomes scarce, livestock are moved to dry season grazing areas where water sources are more reliable but forage is finite. This finite stock of forage must last until the next rains, requiring strict management of water to limit the number of livestock allowed to graze.

Over the last 40 years a lot has changed in pastoral areas of Ethiopia: Droughts have brought in actors such as government, international agencies, and NGOs to alleviate suffering, and despite many positive efforts, rangelands are littered with failed development interventions, degradation of natural resources is widespread around water points, and competition and conflict over water by a growing population with competing demands have become more common. National strategies still lean towards intensive crop production as the vehicle for economic growth, and towards the eventual sedentarisation of pastoralists, despite a substantial body of evidence demonstrating the value of pastoral land use/management systems. The opportunity to learn from pastoralists' skills as effective managers of dryland resources – using access to water as a management tool – is one that deserves more attention.

The paper 'Water Development in Ethiopia's Pastoral Areas. A synthesis of existing knowledge and experience' (Nassef et al, 2012), which is the basis of this brief, highlights that inappropriate water interventions in rangelands can hamper sustainable development and economic growth in the long term, despite stemming water shortages in the short term. The aim of this paper is to promote discussion and debate on the subject of water development in pastoral regions, based on an in-depth review of national and international literature, and over 40 interviews with key stakeholders and experts on pastoralism, conducted in 2009.

Pastoralists and water resource management

Pastoralists have developed and managed water resources for millennia, harvesting rainwater, and managing access to rivers and seasonal or permanent water points. They recognise the fundamental role that water plays in managing rangelands with dry and wet season pastures. For example among the Borana, strict oversight and management of wells exists. These management systems regulate time of access and number of animals and are based on clearly defined roles and responsibilities, rights to the well and priority of access (Bassi, 2005; Helland, 1980).

However, not all pastoral water schemes were suitable and sustainable. In the 1960s, pastoralists imported *birkado* (cement lined underground cisterns) into Ethiopia's Somali region. Though there is nothing intrinsically wrong with *birkado*, their construction in wet season grazing areas encouraged people to settle permanently around them, and to use rangelands year-round, leading to rangeland degradation and disease proliferation (Gomes, 2006).

Non-pastoral engagement in water development

The drought of 1973 brought the first serious engagement of non-pastoral actors in water source development, including government, donors, and development organisations. Introduced solutions were technocratically driven and top-down, with little participation by water users and no understanding of the logic and importance of pastoralists' natural resource management strategies and institutions. This led to water point construction in wet season grazing areas, aimed at opening up pasture perceived to be under-utilised, not realising that the absence of permanent water, and thus livestock at certain times, allowed plants in rangelands to regenerate. Interventions also aimed to settle pastoralists, not recognising that pastoral mobility evolved as part of a sophisticated response to unpredictable and locally variable climate. The construction of large ponds, for example, made water available year-round, encouraging permanent settlement and non-stop grazing, degrading pasture which was previously allowed to seasonally regenerate. Early water interventions thus contributed to the erosion of traditional water management systems and to land degradation and conflict (see box overleaf).

The RDP was cited by many actors as a project demonstrating what not to do in rangelands. As Helland (1980) pointed out, although, technically, available pasture can easily be expanded by digging ponds or sinking boreholes, making water available freely strips existing social organisations of major functions, including

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Timeline of events influencing water development and the rangelands in Ethiopia

1974 *The Derg regime comes to power, and central government extends reach to community level through the Peasant Associations (PA), established as lowest administrative units. PA boundaries were based on ethnic boundaries, legitimizing clan-based claims to resources.*

Major events and policies:
1) ban on use of controlled burning for range management, 2) emphasis on agricultural expansion,
3) enforcement of policy to sedentarise pastoralists.

1975 *Rangeland Development Project (RDP) – first major non-pastoral development intervention in the rangelands.*

1973 *Severe drought*

1984 *Severe drought*

1991 *Ethiopian People's Revolutionary Democratic Front (EPRDF) comes to power, introducing a decentralization policy with emphasis on participation in development planning.*

Water as well as pastoral development become regional responsibilities. Regional governments are responsible for drafting/implementing policies and plans in line with federal policies, plans, and strategies. Though central ministries still play an important role, especially in Afar and Somali regions.

Derg's sedentarisation policy revoked.

1994 *Pastoralism as a livelihood acknowledged in the Federal Constitution of 1994, but emphasis on expansion of agriculture continues.*

1970s	1980s	1990s	2000s	2010s
Increasing government, donors and development organizations interest in developing the rangelands.	Considerable research undertaken refuting the 'tragedy of the commons' scenario in rangelands – much of it based on lessons learned from the RDP. Global pressure for democratization and increasing emphasis on participation in development planning.	Development partners continue to address service provision and respond to emergencies in pastoral areas, though donors shift focus away from development in lowlands. Water Resources Management Policy (1999) to promote national coherence on water development.	Major shift in pastoral development thinking towards holistic and participatory development (Pastoral Community Development Project (PCDP), Pastoral Livelihoods Initiative (PLI)). However, this is slow to translate into practice.	National strategies focusing on resilience, food security and livelihood transformation to achieve growth and climate change adaptation. Activities identified to achieve these objectives such as expanding irrigated agriculture or promoting social and economic services designed for settled communities, might, in the longer term, undermine pastoralists resilience.

Rangeland Development Project (RDP)

The RDP, a large-scale range improvement effort, was initiated in 1975, and funded by the Ethiopian government and the World Bank. Water development featured heavily with boreholes and ponds constructed in wet and dry season grazing areas. The rationale for water points in wet season grazing areas was that it would open up, and thus allow more 'efficient' use of pastures, reducing pressure on dry season grazing (Gebre Mariam, 1982). Large ponds were also constructed in dry season grazing areas, increasing livestock numbers there (World Bank, 1991). This resulted in overgrazing, soil erosion and the increased incidence of human and livestock disease.

These water points were completely external to traditional systems and were government owned and managed. The local administration often lacked sufficient resources to effectively manage and maintain water points, resulting in a loss of control over who, how many, and when people and livestock had access to water and grazing, and created room for conflict over access and control. Many of the water points fell into disrepair. The World Bank completion report, published in 1991, admitted that planners lacked knowledge of what drives pastoralists' traditional land use practices.

regulating labour inputs, access to water and control over pasture. He predicted that weakening social control of existing management systems could lead to long-term degradation despite short-term expansion of pastoral resources. Though factors implicated in rangeland deterioration are multiple and complex, Helland's hypothesis of 30 years ago seems to have come to bear.

The introduction of the RDP also occurred at the same time that a complex relationship began to evolve between politics, policy and pastoral development in Ethiopia (see figure above).

Changes in thinking and practice

Early experiences in water development provided valuable lessons for later interventions, and some significant changes in approach and thinking have been observed[1]. The RDP and similar projects across eastern Africa led researchers to critically review the suitability of these early approaches to rangeland development. Since the 1980s, a wealth of research has demonstrated that approaches based on equilibrium grazing systems are inappropriate in pastoral disequilibrium environments, and that common property regimes, where groups of resource users have strong incentives to maintain the health of their resource, are not to be confused with a 'tragedy of the commons' scenario (e.g. Behnke, 1994).

Today, several changes in thinking and practice are observed. These include:

Understanding context

- Greater awareness that pastoral areas require a different development approach to farming areas, as they are in different agro-ecological zones where different ecological principles apply (Behnke, 1994). There is greater understanding that

1. E.g. the pastoral production system is now a recognized form of land use, mentioned explicitly in the country's Federal Constitution (1994), as well as in national development strategies and programmes.

mobility is an important strategy which helps pastoralists respond quickly to uncertain spatial and seasonal resource availability.
- Increased recognition that pastoralism is influenced by internal and external social, cultural and political aspects, which differ between locations and which must be understood to inform decision-making.
- Increased focus on identifying natural resources in a location and understanding the way people use them. This recognises that water points can alter resource use patterns, since they function within the broader ecosystem.

More than just water points

- More focus on 'software' alongside the hardware, i.e. increased attention to planning, management and sustainability of water points.
- More focus on coupling water development with livelihood support, such as improving livestock marketing, veterinary services, and rangeland rehabilitation.
- More focus among many NGOs and donors on pastoral development which aims to promote resilient livelihoods rather than sectoral development which targets the development of a single resource, like rangeland, water or livestock development.
- Greater emphasis on rehabilitating existing water points in short projects (e.g. emergency relief interventions) to avoid the pitfalls of water point development when there is little time to plan.
- More focus on sustainability of water point development, through community contributions, selection of appropriate technologies which are simple to construct, maintain, and obtain spare parts for, training of local artisans to decrease dependency on external support, and involving users and customary institutions in management.

Building on local knowledge

- Increased emphasis on combining technical, scientific and customary knowledge systems for water and pastoral development. This is done through greater community participation, which evolved from water users simply expressing demand to encouraging a more participatory approach to planning, construction, and maintaining investments.
- Greater understanding of the relevance of pastoralists' customary institutions, and their roles and functions for effective resource use and sustainable development.

Coordination

- Emphasis on the need for a coherent approach to water development, through increasing partnerships and better communication between stakeholders.

Changes in thinking are also observed among pastoralists. For example, Gomes (2006) notes that agreements have been forged between Somali elders to limit the construction of new *birkado* in wet season grazing areas. These agreements represent a firm attempt to preserve grazing land and to mitigate the use of water points as a means of territorial encroachment between clans.

Obstacles to sustainable water development

Despite these positive trends, much that is done in the water development sector continues to follow business as usual practices. Rangelands are still littered with non-functional and disused water points, and settlement, environmental degradation and conflict are still evident around them. A number of issues pose considerable challenges to the resilience of pastoral livelihoods, including:

Policies which contradict government's pro-pastoral language

The Ethiopian government aims to support customary pastoral production systems in the short-term, but promotes 'voluntary' settlement of pastoralists in the long-term. The long-term policy vision for pastoralism is influenced by the belief that increased population, poverty, and competition over natural resources, coupled with reduced quality and extent of the rangelands, and increased incidence of climatic shocks, renders the pastoral system incapable of surviving.

Lack of impact assessment on livelihoods

Impact assessments, such as the ones conducted under USAID's Pastoral Livelihoods Initiative, would better help practitioners make informed choices regarding 'best' approaches to developing water. Most projects currently focus on reporting outputs, such as numbers of water points constructed, at the expense of quality, effectiveness or impact.

Ambitious government targets for water supply and irrigation

Pressure to meet targets, based in part on meeting the Millennium Development Goals and the government's own target for drinking water coverage, could see continued emphasis on water point construction at the expense of sustainability and appropriateness. Targets for the area under irrigation have also been increased recently. Estimates in 2003 indicate that about 1.9 million hectares have been excised from rangelands for crop production, (Yemane, 2003) and today this figure is undoubtedly higher as irrigation expansion is a key government strategy.

Insecure tenure in rangelands

Despite some positive support to communal tenure arrangements (e.g. in SNNPR, Abdulahi and Adenew, 2007), communal grazing land remains vulnerable to conversion for land uses perceived as economically more productive.

Conclusion and ways forward

Much has been learned from the past, and the language of pastoral development has evolved dramatically. Although examples exist of how this new language translates into practice, too often overall practice still lags behind.

Findings emerging from this review indicate that water point development requires an understanding of rangeland dynamics and of local context (social, political, and environmental). Resource users should be involved in planning and decision-making to guide and inform what is and isn't appropriate. Academics and development experts should complement this process with locally relevant assistance. Effectively addressing inappropriate water development in drylands requires combining the best that the technical and scientific communities have to offer with customary knowledge.

The following recommendations build on the findings of this review, and provide a basis for discussion and debate on water development with a view to promoting approaches which support national development without compromising sustainable livelihoods in the drylands of Ethiopia:

Strategy

- ***Develop common guidelines for water development*** in drylands which are flexible enough to allow for context specific planning. Streamline the use of these guidelines through existing coordination forums dealing with development and emergency interventions.

- ***Build on local knowledge***, combining technical, scientific and customary knowledge systems as a means to develop more appropriate systems for water and pastoral development.
- ***Ensure that water is developed as part of a participatory natural resource development and management process***, informed by in-depth analysis of broad political, institutional and funding priorities and moving away from a commodity or sector-based approach. Water development should serve the multiple users of the drylands, including mobile pastoralists as well as sedentary populations. Communities need to play an important role and customary institutions should be learned from and built upon where appropriate.
- ***Better understand the role and evolution of customary institutions.*** Customary institutions are changing in response to changing circumstances. These dynamics must be acknowledged and understood, and institutional strengths and weaknesses identified and considered. Modalities of engagement with and support to these institutions should also be explored to strengthen their capacities for sustainable water and natural resource management.
- ***Create an enabling environment*** for either local groups who represent water users, by building their capacity and giving authority to construct, operate, manage, and maintain water points, making them implementers rather than recipients of development; or by strengthening local government capacity to do this, with participation and involvement of local users in managing water distribution and access. The preferred option will depend on the context.
- ***Learn from existing research*** to inform water development planning and implementation, and share knowledge and experience.

Implementation

- ***Measure the impact of water developments on livelihoods*** (e.g. USAID's PLI program) and learn from documented 'good' and 'poor' experiences.
- ***Understand the local social, economic and political context*** to inform planning.
- ***Identify existing natural resources users and their patterns of resource use*** in areas of intervention before planning and constructing water points, recognising that water affects the way broader natural resources are used and managed.
- ***Integrate water development with water use and management.*** This approach provides both a systematic focus on software development as well as the choice of appropriate water systems, e.g. permanent water supply systems for human settlements and seasonal supply for migrating livestock.
- Conduct ***feasibility studies that include technical, managerial as well as sustainability*** (economic, social, environmental) ***factors***.
- ***Rehabilitate existing water points rather than construct new points***, especially in short-duration projects (e.g. emergency relief).
- ***Combine water development with livelihoods support*** (e.g. human and livestock health and access to markets) to effectively address vulnerability and poverty in the long-term.
- ***Promote effective and equitable participation*** by involving legitimate institutions/groups that are representative of local communities. These may already exist (customary institutions, water user associations, pastoral associations, etc.) or may need to be established.
- ***Combine the best of customary and 'modern' systems.*** For example, customary institutions may not represent all livelihood groups in an area (Muir, 2007) and often do not represent the views and priorities of women, yet members understand rangelands and have a long institutional memory. On the other hand, water user associations may not sufficiently respond to pastoral needs and concerns, and generally do not build on existing natural resource management strategies, but they can be more inclusive, for example in capturing women's concerns and strengthening their participation and voice.

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