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Understanding the causes of water conflicts in the Afar Region of the Awash River Basin, Ethiopia: a hermeneutic study of the perspectives of parties

Abstract

Water conflicts pose serious threats to peace, security and stability of low-income developing countries and the potential for future water conflicts to create conflicts that are more violent or even war, is a view that is widely held. This paper applied a combination of qualitative and quantitative approaches to investigate the causes of the frequent water conflicts in the Afar region of Ethiopia and identified ten factors from the perspectives of leaders of both the Issa and Afar communities and senior management staff of government agencies involved in water resources management and allied sectors. Analysis revealed that Water scarcity due to drought, Water pollution due to human activity, and the Entrenched Suspicion Enmity and Rivalry are the three most impactful catalysts for water crisis in the region. It further showed the divergence between the views of the community leaders and government agencies on key factors and highlighted the associated risks. The paper recommended the integration of *dagu*, the traditional system of information dissemination, into future water-conflict prevention and resolution policy framework.

Keywords: Local, water, conflict, early warning, Afar region, Ethiopia

1 Introduction

By their nature, “water conflicts”, that is, contentions arising over access to water resources between countries, states or groups have resulted in violence in many instances. However, the possibility of future ones to result in violence that is more serious or even war is a view that is widely held. For example, the former United Nation’s General Secretary in his remark to the Association of American Geographers in 2001 noted the possibility of fierce competition for fresh water to become a source of conflict and wars in the future (Annan, 2001) while the Fourth World Water Forum expressed the view that the next world war will be fought over water (see Gleick et al., 2007). Data of the Pacific Institute (2017) shows that the Horn of Africa, the region containing the countries of Djibouti, Eritrea, Ethiopia, and Somalia is one of the regions of the world that is most exposed to water conflicts and that despite the reduction in the frequency of water conflicts since the 2000s, intra-national or local water conflicts in Africa have consistently been on the rise and unabated since the earliest recorded occurrence in 1898 between Britain and France over the control of the headwaters of the White Nile with over 100 incidences recorded as of 2017. While the data showed that water conflicts have occurred in 30 countries on the continent with the highest frequencies in Somalia (13), Kenya (13), South Africa (12) and Ethiopia (10), here, the focus is on Ethiopia, where the Afar and Issa ethnic nationalities living within the Awash River Basin have had persistent water conflicts over many generations (Menbere, 2013) and the level of disagreement has not shown any significant de-escalation (Alemu, 2015).

To help understand the context of the research, we note that the Federal Republic of Ethiopia comprises of nine States that are principally ethnic divisions (*kililoch*) and two chartered cities (*yeketema-astedader*) of Dire Dawa and Addis Ababa - the capital of the country (Figure 1). The Afar National Regional State (ANRS) and Somali National Regional State (SNRS) are

of interest to this study. The two states share a border, part of which is in dispute, and have similar demography: both are predominantly rural (Afar - 92.2%, Somali 85.98%), largely pastoral (Afar - 90%, Somalia - 40%) and mainly Muslims (Afar - 96% and Somalia - 98.7%) - see www.ethiopia.gov.et. The Afar tribe are in the ANRS while the Issa are a clan of the SNRS and are distinct from the Republic of Somalia, a neighbouring country to the eastern border. Both tribes are linked with shared natural resources including water, wetland and grazing land and the complexity has made conflict resolution process difficult and in most cases unachievable (Alemu, 2015). Unfortunately, many of the conflicts, despite been violent are not reported in local and international media. An example is the 2015 violent water conflict in Gedamayitu, which claimed many lives and left properties destroyed.

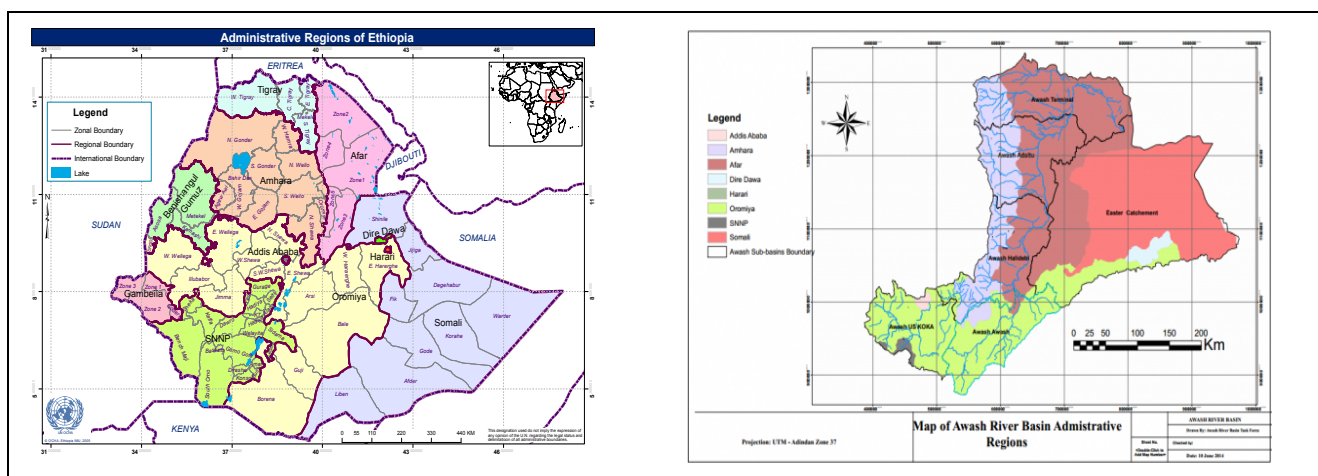


Figure 1: Map of Ethiopia and Awash River Basin
 Source: United Nations Office for the Coordination of Humanitarian Affairs (2005)

While Ethiopia is divided into 12 hydrological basins comprising of eight river basins, one lake basin and three dry basins, the Awash River basin is the principal source of water conflict between the Afar and Issa tribes. Information of the Awash Basin Authority (2015) indicates that Awash is an endorheic trans-regional basin that stretches about 1,200 km entirely within the boundaries of Ethiopia covering about 10% of the country including parts of the Amhara, Oromia, Somali and Afar Regions. The basin is a source for national hydroelectric power generation, irrigation, fishing and local water consumption and it is the most utilized among the eight river basins in the country. It rises at an elevation of 3000 m in the central parts of the country and flows to the North eastern parts, discharging into a network of interconnected lakes that ends in Lake Abe, near the Djibouti border, in the Afar region at an elevation of 250 m (ibid.). Due to the low elevation, the people in the River Basin in the Afar region are repeatedly exposed to flooding in addition to drought and seismic activity with occasional earthquakes and often lack adequate firewood - used as a fuel - and grazing land for livestock.

As noted by Whetten et al., (1996), conflict is a challenging and controversial topic that has many dimensions and diverse definitions. Albeit, as a general term, conflict can be considered as an expression or exhibition of anger, hostility, negative

attitudes, antagonism, resentment, aggression, rivalry or misunderstanding between two or more opposing parties due to contradictory or irreconcilable interests. As observed by the Conflict Resolution Centre (2007), conflict often arises from unmet needs, unrecognized differences and difficulties coping with life changes. It is an endemic, natural and inevitable characteristic of modern societies, which is part of human social relationships. It occurs at all levels of the society including the intra-psychic, interpersonal, intra-group, intra-national and international (Sandole, 1987).

In relation to water, Gebremariam (2006) observed that conflict occurs among a group of water users due to the presence of a water stress situation, poor management of water resources and unfair water rights separately or in combination while Thomasson (2005) identified limited water resources, the control of the distribution, the quality of the water resources and influence of large infrastructure projects as causes. In addition, the Conservation Technology Information Centre, CTIC (2000), categorized Needs, Perceptions, Power, Values, Feelings and Emotions as the five sources of disagreement within watershed partnerships describing them as an ingredient for conflicts between people but was short on the level and amounts with respect to conflict occurrence or prediction. These characterisations though overlooked potential contribution of local water-resource management efficiency; they are broad taxonomies which may only be applied as a guide especially as the models for realistic analysis of conflicts such as classical game theory, Stackelberg equilibrium, Meta-game analysis and graph model show that potential conflict resolutions are through stability analysis, where stability definitions have precise mathematical structures that reflect the behaviour of decision makers, predict patterns, and suggest the resolutions or equilibria. Furthermore, as observed by Madani and Hipel (2011), models can better simulate real conflicts if the stability definitions applied reflect characteristics of the parties. While we note the media remarks that conflicts between Afar and Issa pastoralists frequently occur because of the lack of adequate clean water, a shortage of grazing land, low level of awareness on information related to resources, conflicts and early warning situations, and a high level of exposure to risks associated with natural and manmade hazards among others, we are not aware of any study of the water conflicts in the Afar region from the perspective of parties in the Afar and Issa community that may enable realistic stability definitions. Hence, the aim of this article is twofold: first is to explore how the different actors involved in water conflicts in the Afar region perceive and identify the reasons that could explain these conflicts and thus gain insights that could be used in further studies to develop stability definitions, pre-identification, early warning and neutralization of local water conflicts; second is to contribute to inform public policy in ways that may help to identify emerging causes of conflict, to anticipate, defuse or mitigate the impact of such conflicts, and strengthen local capacities for cooperation and development. The study applied a mixed methodology with interpretive epistemology and hermeneutic ontology to the primary research question " What are the causes of water conflicts between the Isa and Afar communities in the Afar Region of Ethiopia?" as both the research aim and question fit the hermeneutic understanding category of research purpose (see Willis, 2007). The rest of the paper presents the Materials and Methods, Results, Analysis and Discussion, and the Conclusions and Policy Implications

2 Materials and Methods

The mixed methods approach involved data collection and analysis from a quantitative survey and qualitative enquiry using semi-structured interviews. The issues investigated were discovered through an exploratory study that involved the use of semi-structured interviews and in-depth review of literature. Twenty-two interviews were conducted with senior management staff of key government agencies involved in Water Resources Management, Conflict Prevention and Management, Media, and Advisory and Advocacy while the review of literature covered local water and hydro-climatic information, local and international water conflicts and early warning systems. The data analysis employed hermeneutics principles; the theory of interpretation and achieving an understanding of texts and utterances, and commenced with the first interview. This method allowed themes to emerge from data, promoted a holistic understanding and enabled the application of emerging insights on subsequent interviews. Analyses were conducted at the individual level (idiographic) and across individual (nomothetic). Analysis of the participants' responses revealed ten factors, which were identified, either as directly expressed by the participants or inferred from their views as the root causes of water conflicts. These are (1) Entrenched suspicion enmity and rivalry, (2) Water scarcity due to drought, (3) Water pollution due to human activity, (4) Water pollution due to livestock activity, (5) Water consumption, (6) Animal husbandry, (7) Misinformation and falsehood, (8) Natural disaster, (9) Development and infrastructure projects and (10) Public-health epidemic.

2.1 Design of questionnaires

The design of the questionnaire involved five steps; conceptualization, drafting, review, modification and piloting. Conceptualisation and drafting involved a cyclical iterative process that focused on simplicity and clarity of the questions, thematic arrangement and alignment, design of appropriate scales of measurement and the matching of the questions to the appropriate analytical methods. The review assessed the draft with the view for modification and involved face validity to determine the extent to which each question covered the concept it measured and construct validity to assess the degree to which each question measured the variables under investigation. Modification involved the revision of the questions based on the outcome of the review process. The pilot run employed the Test-retest reliability field-test method where a measure of reliability was obtained by administering the same test twice over a period of four weeks to a group of individuals. There was correlation in the scores from Time 1 and Time 2 suggesting stability. The questionnaire used a combination of open-ended, categorical, rating and ranking questions and applied nominal, ordinal unipolar (one-directional) and ipsative (forced choice) measurement scales. The unipolar scale comprised of the word labels "High", "Medium" and "Low" while the ipsative scale ranged from 1st to 10th, inclusive of both ranks. The questionnaires are available with the corresponding author.

2.2 Study sample and data collection

The population of interest for the study is twofold; the first, the community leaders in the Afar and Issa communities and second, the institutions involved directly in water resources management and peace and conflict resolution. Consequently, a purposive sampling (non-probability) method was used for the selection. The homogeneous sampling technique was employed amongst the wide range of purposive sampling techniques considering that the research question is specific to the characteristics of the particular group of interest and the method achieves a sample whose units share the same or close characteristics or traits: in this instance, community leadership in the case of individuals and sectoral relevance, in the case of institutional stakeholders as shown in Tables 1 and 2. Participants were identified through a formal which process involved a request for participation to the identified organisation and an informal process, which involved intensive fieldwork to identify community leaders. The questionnaire was administered in person over 10 months to 160 participants comprising of 134 community leaders and 26 institutional representatives (Tables 1 and 2) in a mix of vernacular and English language based on the language proficiency level of the respondent. The institutional representatives are senior management staff with knowledge of the subject matter.

Table 1: Distribution of individual study respondents

	Afar community	Issa community	Totals
1. Heads of households	39	34	73
2. Leaders of socio-cultural groups	4	5	9
3. Tribal chiefs	6	6	12
4. Women leaders	16	13	29
5. Youth leaders	6	5	11
Totals	71	63	134

Table 2: Distribution of the participating institutional stakeholders

	National organisations	Regional organisations	Community-based organisations	Totals
1. Water Resources Management	3	6	1	10
2. Orientation, Public Health and Education	1	4		5
3. Pastoral Development		3	1	4
4. Security	1	2		3
5. Early warning preparedness		2		2
6. Urban Development	1	1		2
Totals	6	18	2	26

2.3 Analytical methods

Analysis of the data employed a combination of descriptive statistics including a set of percentages, measures of central tendency and hermeneutic principles. Analysis of the rating question was limited to number count, percentages, mode and measure of the degree of polarization between groups while Kendall's coefficient of concordance (W), statistical measure of agreement and the most popular due to its simplicity, was applied to test the ranking order generated from the ranking question. Kendall's W is expressed as: $W = \frac{12R}{m^2(k^3 - k)}$. Where R, the sum of the squared deviation of the ranking for each variable is expressed as: $R = \sum_{i=1}^k (R_i - \bar{R})^2$, m is the number of panellists; and k is the number of variables ranked. It is always the case that $0 \leq W \leq 1$. Schmidt (1997, p.757) presents the interpretation of W in five bins and shows that W in the

range of 0.7 to 0.89 indicate strong agreement among the panel and suggest a high confidence in the rank. The other relevant statistics for the interpretation of the significance test include the Degree of freedom (df) - the number of variables that may vary independently and expressed = $k - 1$, where k is the total number of variables, Chi-squared (X^2) - the product of the number of participants, the degree of freedom and Kendall's W, the *p-value* - the probability of obtaining a result equal to or 'more extreme' than what was actually observed, if the null hypothesis is true (Hubbard, 2004) and the Significance level (α) - the threshold value for a test, where α is a value for which a *p-value* less than or equal to α is considered statistically significant. The α value for the study was set at 0.001 in line with common practice for ranking questions (See Schmidt, 1997), implying a confidence level of 99.9%, i.e., $p < 0.001$.

The nomothetic analysis applied two criteria to interpret the views expressed by the respondents; the primary condition for convergence and the secondary condition for plurality. For the rating questions, the primary condition for convergence was set at 70% of responses of all the participants' opinion falling within two adjacent points on the three-point scale while the secondary condition for plurality was a simple majority, that is, 50.1% of the responses of each of the three stakeholder groups falling in these adjacent points. For the ranking question, the primary condition for convergence was a simple majority, where 50.1 % or more of the respondents choose the same rank while the secondary condition for plurality was 50.1% of the responses of each of the three stakeholder groups fall on the same rank.

3 Results, Analysis and Discussion

While the study sample is not statistical, the distribution of both the indigenous and institutional respondents satisfied the goal of the study as participants broadly represent the purposive sample. Analysis revealed that over 90% of the respondents from the Issa and Afar communities are illiterates and are Muslims while about 84% had lived in the region for over 10 years and this is consistent with official records that indicate that over 90% of the population of the region is pastoral and Muslims. As shown in Table 5, when asked to rate the impact of the 10 factors investigated as catalyst for water conflicts, the views of the respondents from both the Afar and Issa communities met the condition for both primary and secondary convergence on all the factors with more than 70% of responses of all the participants and 50.1% of the responses of each of the three stakeholder groups falling within two adjacent points of "High" and "Medium". Moreover, Table 5 further showed that over 50.1% of respondents in each of the three groups expressed the view that Animal husbandry, Public health epidemic, Water pollution due to human activity, Water pollution due to livestock activity and Water scarcity due to drought have high impact as a catalyst for water conflict. While the impact of water consumption appears to be moderate with more than 40% of respondents from each of the three stakeholder groups expressing the view that it has a "Medium" impact, Water scarcity due to drought recorded the highest percentage of respondents (84.4%) who share the view that it has a high impact. These findings are partly consistent with the observation of Shore (2017) that Ethiopia is located in Africa's Horn where drought

and politics are two leading causes of water shortage. Besides, they support the findings of the semi-structured interviews that local conflicts mainly between Afar and Issa communities, frequently occurs not because of the source of water but because of the lack of adequate clean water and questions the practice where calves consume the same water supplies as human beings because they are considered as members of the household. 73% and 69% of respondents from the Issa and Afar communities respectively expressed the view that Entrenched suspicion, enmity and rivalry has a High impact as a catalyst for water conflict, in contrast, only 26.9% of the institutional respondents share this view (Table 3). These results reveals that the officials of government agencies, ministries and departments who are responsible for the management of water resources and the prevention and resolution of conflicts do not have the same understanding as to the possible root causes and contributory factors to the perennial conflicts between the communities and this might explain why the conflicts are unabated. The analysis support the interview findings that show that government institutions believe that the indigenes are less informed especially as they are mostly illiterates and these sentiment shows through in the disparity in the views of the participants from both communities and the institutional respondents. It is important to note that many of the officials in leadership position in the organisations that participated are not from either Issa or Afar communities and this might also explain the divergence of opinion on the impact of the sentimental factors such as the role of entrenched suspicion, enmity and rivalry. Despite this, there was convergence among all the groups on the level of the impact of Water scarcity due to drought and Water pollution caused by livestock activity. As seen in Tables 6 and 7, the three stakeholder groups consistently ranked these two factors 1st and 2nd. Kendall's W for the ranking by the Issa and Afar community leaders was 0.89 which indicates a strong level of agreement between the responses of both communities. In addition, the $p\text{-value} = 6.6\text{E-}22 < .001 = \alpha$, thereby allowing the study to reject the null hypothesis that there is no agreement among the respondents. The Kendall's W for the ranking by all respondents was lower at **0.76**; it still indicates a strong level of agreement. The $p\text{-value} = 5.4\text{E-}22 < .001 = \alpha$, allows the study to reject the null hypothesis that there is no agreement among the respondents. Moreover, the mean ranks derived from the computation of Kendall's W compared favourably with the ranking outcome. It is however noted that the "mean rank" has no statistical meaning, as the measurement scale is an ordinal scale.

Contrary to expectation, Misinformation and falsehood ranked 7th from the perspectives of respondents from both the Issa and Afar communities and ranked 8th from the perspectives of the institutional respondents. However, further analysis revealed that the traditional ways of communication referred to, as "*dagu*" is a sophisticated system for news exchange which functions within a defined set of unwritten regulations and expectations. As remarked by Menbere and Skjerdal (2008), *dagu* is more than a package of hard or soft news; it is a social institution and one of the keys to successful mass communication in the Afar region. It is an established culture that failure to pass on relevant information is regarded as both an offence and a harm to the community and any misuse of *dagu* is subject to punishment within customary law (*Mada'a*). Thus, disseminating

false or fabricated information is prohibited and unforgivable and any person who passes on unverified information is liable to punishment.

Although Development and infrastructure projects ranked 9th, it was rated by a majority of the respondents from both Issa and Afar communities as having a high potential as a catalyst for conflict. The analyses of the semi-structured interview suggest the absence of efficient or well-organised municipalities, inadequate coordination between water, hygiene and sanitation-related activities. It further revealed that the environmental impact assessments on large projects are inadequate. Other prominent issues include the perceived lack of accountability and capacity on water quality assurance, weak cooperation between Federal and Regional governments and weak coordination among institutions working on early warning systems. In addition, the interviewees expressed the view that the lack of coordination of various sectors during construction works creates many problems for the water quantity of the region. Although only about 30% of the institutional respondents rated Development and infrastructure projects “High” as against more than 50% amongst community respondents, some of the interviewees expressed concern about the lack of an adequate budget for improving the quality and quantity of water supply, the incompatibility, the high cost and poor quality of water pumps and generators, lack of efficient follow-up for hand-dug wells which exposes water to pollution and the absence of an appropriate policy for water sector development in the region. They further identified low or absence of a community participatory approach in activities related to water sector development projects as a major cause of project implementation challenges and difficulties.

Table 3: Respondents view on the impact of factors investigated as catalyst for water conflict

	Issa community (% of group responses)			Afar community (% of group responses)			Institutional respondents (% of group responses)			All respondents (% of all responses)		
	H	M	L	H	M	L	H	M	L	H	M	L
Animal husbandry	55.6	33.3	11.1	63.4	31.0	5.6	61.5	38.5	0.0	60.0	33.1	6.9
Development and infrastructure projects	54.0	31.7	14.3	56.3	33.8	9.9	30.8	46.2	23.1	51.3	35.0	13.8
Entrenched suspicion enmity and rivalry	73.0	20.6	6.3	69.0	28.2	2.8	26.9	23.1	50.0	63.8	24.4	11.9
Mis-information and falsehood	49.2	36.5	14.3	53.5	28.2	18.3	65.4	23.1	11.5	53.8	30.6	15.6
Natural disaster	58.7	31.7	9.5	53.5	33.8	12.7	46.2	38.5	15.4	54.4	33.8	11.9
Public health epidemic	50.8	44.4	4.8	50.7	46.5	2.8	50.0	46.2	3.8	50.6	45.6	3.8
Water consumption	39.7	50.8	9.5	43.7	46.5	9.9	46.2	46.2	7.7	42.5	48.1	9.4
Water pollution due to human activity	71.4	27.0	1.6	69.0	29.6	1.4	76.9	23.1	0.0	71.3	27.5	1.3
Water pollution due to livestock activity	60.3	34.9	4.8	62.0	32.4	5.6	73.1	19.2	7.7	63.1	31.3	5.6
Water scarcity due to drought	84.1	15.9	0.0	85.9	12.7	4.2	80.8	19.2	0.0	84.4	15.0	1.9

H= High, M= Medium, L = Low

Table 4: Frequency of ranking of factors investigated by all respondents

	Frequency of Ranking										Mean	Rank
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th		
Animal husbandry	-	-	-	14	54	63	22	7	-	-	5.71	6 th
Development and infrastructure projects	-	-	-	-	-	-	26	34	67	33	8.67	9 th
Entrenched suspicion, enmity and rivalry	45	48	55	12	-	-	-	-	-	-	2.21	2 nd
Mis-information and falsehood	-	-	-	-	-	38	54	27	32	9	7.50	7 th
Natural disaster	-	-	-	-	-	-	26	47	55	32	8.58	8 th
Public health epidemic	-	-	-	-	-	-	23	45	6	86	8.97	10 th
Water consumption	-	-	-	21	71	59	9	-	-	-	5.35	5 th
Water pollution due to livestock activity	13	24	5	83	35	-	-	-	-	-	3.64	4 th
Water pollution due to human activity	37	37	73	13	-	-	-	-	-	-	2.39	3 rd
Water scarcity due to drought	65	51	27	17	-	-	-	-	-	-	1.98	1 st

Table 5: Percentage of respondents with ranking

All respondents	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Mean	Rank
Animal husbandry	0.63	2.50	0.63	8.75	33.75	38.75	11.88	3.13	0.00	0.00	5.52	5th
Development and infrastructure projects	3.75	1.25	0.00	1.25	0.00	0.00	16.88	18.75	38.13	20.00	8.23	8th
Entrenched suspicion enmity and rivalry	22.50	24.38	28.13	8.13	1.25	0.63	5.00	4.38	5.63	0.00	3.19	3rd
Misinformation and falsehood	0.00	0.00	0.00	0.00	0.00	23.75	32.50	16.88	20.00	6.88	7.54	7th
Natural disaster	1.88	1.88	0.00	1.88	0.00	0.00	13.13	29.38	31.88	20.00	8.27	9th
Public health epidemic	0.00	0.00	0.00	0.00	0.00	0.63	16.25	26.25	4.38	52.50	8.92	10th
Water consumption	0.00	0.00	0.00	14.38	45.00	36.25	4.38	0.00	0.00	0.00	5.31	6th
Water pollution due to livestock activity	8.75	16.88	4.38	48.75	20.00	0.00	0.00	1.25	0.00	0.00	3.61	4th
Water pollution due to human activity	22.50	22.50	46.25	8.75	0.00	0.00	0.00	0.00	0.00	0.00	2.41	2nd
Water scarcity due to drought	40.00	30.63	20.63	8.13	0.00	0.00	0.00	0.00	0.00	0.63	2.02	1st
Issa community respondents	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Mean	Rank
Animal husbandry	0.00	0.00	0.00	9.52	33.33	39.68	14.29	3.17	0.00	0.00	5.68	6th
Development and infrastructure projects	0.00	0.00	0.00	0.00	0.00	0.00	15.87	22.22	41.27	20.63	8.67	9th
Entrenched suspicion, enmity and rivalry	25.40	28.57	33.33	9.52	1.59	1.59	0.00	0.00	0.00	0.00	2.38	3rd
Misinformation and falsehood	0.00	0.00	0.00	0.00	0.00	23.81	33.33	17.46	20.63	4.76	7.49	7th
Natural disaster	0.00	0.00	0.00	0.00	0.00	0.00	15.87	30.16	33.33	20.63	8.59	8th
Public health epidemic	0.00	0.00	0.00	0.00	0.00	0.00	14.29	26.98	4.76	53.97	8.98	10th
Water consumption	0.00	0.00	0.00	14.29	44.44	34.92	6.35	0.00	0.00	0.00	5.33	5th
Water pollution due to livestock activity	6.35	19.05	3.17	50.79	20.63	0.00	0.00	0.00	0.00	0.00	3.60	4th
Water pollution due to human activity	25.40	22.22	44.44	7.94	0.00	0.00	0.00	0.00	0.00	0.00	2.35	2nd
Water scarcity due to drought	42.86	30.16	19.05	7.94	0.00	0.00	0.00	0.00	0.00	0.00	1.92	1st
Afar Community respondents	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Mean	Rank
Animal husbandry	0.00	0.00	0.00	13.41	46.95	55.89	20.12	4.47	0.00	0.00	5.72	6th
Development and infrastructure projects	0.00	0.00	0.00	0.00	0.00	0.00	22.36	31.30	58.13	29.06	8.62	9th
Entrenched suspicionsuspicion, enmity and rivalry	35.77	40.24	46.95	13.41	2.24	2.24	0.00	0.00	0.00	0.00	2.24	2nd
Misinformation and falsehood	0.00	0.00	0.00	0.00	0.00	33.53	46.95	24.59	29.06	6.71	7.56	7th
Natural disaster	0.00	0.00	0.00	0.00	0.00	0.00	22.36	42.48	46.95	29.06	8.59	8th
Public health epidemic	0.00	0.00	0.00	0.00	0.00	0.00	20.12	38.01	6.71	76.01	8.92	10th
Water consumption	0.00	0.00	0.00	20.12	62.60	49.18	8.94	0.00	0.00	0.00	5.27	5th
Water pollution due to livestock activity	8.94	26.83	4.47	71.54	29.06	0.00	0.00	0.00	0.00	0.00	3.72	4th
Water pollution due to human activity	35.77	31.30	62.60	11.18	0.00	0.00	0.00	0.00	0.00	0.00	2.41	3rd
Water scarcity due to drought	60.36	42.48	26.83	11.18	0.00	0.00	0.00	0.00	0.00	0.00	2.21	1st
Institutional respondents	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Mean	Rank
Animal husbandry	3.85	15.38	3.85	7.69	34.62	34.62	0.00	0.00	0.00	0.00	4.58	4th
Development and infrastructure projects	23.08	7.69	0.00	7.69	0.00	0.00	19.23	0.00	19.23	23.08	6.08	6th
Entrenched suspicionsuspicion, enmity and rivalry	0.00	0.00	0.00	7.69	0.00	0.00	30.77	26.92	34.62	0.00	7.73	9th
Misinformation and falsehood	0.00	0.00	0.00	0.00	0.00	23.08	30.77	19.23	19.23	7.69	7.58	8th
Natural disaster	11.54	11.54	0.00	11.54	0.00	0.00	0.00	26.92	19.23	19.23	6.62	7th
Public health epidemic	0.00	0.00	0.00	0.00	0.00	3.85	15.38	26.92	7.69	46.15	8.77	10th
Water consumption	0.00	0.00	0.00	11.54	46.15	38.46	3.85	0.00	0.00	0.00	5.35	5th
Water pollution due to livestock activity	15.38	15.38	11.54	38.46	19.23	0.00	0.00	0.00	0.00	0.00	3.31	3rd
Water pollution due to human activity	15.38	23.08	50.00	11.54	0.00	0.00	0.00	0.00	0.00	0.00	2.58	2nd
Water scarcity due to drought	30.77	26.92	34.62	3.85	0.00	0.00	0.00	0.00	0.00	3.85	2.42	1st

Most of the interview respondents averred that the persistent conflict between the Issa and the Afar communities have significantly hampered the socio-economic development of the people in the Afar Region and in many instances, disagreements related to women, children and calves lead to serious conflicts. They further observed that vulnerability has increased with regard to cattle weaknesses, as the animals are much less drought resistant and now amplifies the potential for conflict. These views align with Piguet (2003) who made similar observations. Besides, this study suggest that the lack of adequate clean water and shortage of grazing land which are sometimes reported in the media as among causes of tribal conflict in the region are likely effects of water scarcity due to drought. Unfortunately, as observed by Shore (2017) droughts have affected several areas of the country in the past twenty years and have been a major source of the spread of diseases as water sources become contaminated with human and animal waste.

Whereas the quality of responses rather than the number of participants is the true measure of the outcome of qualitative research, the difficulty in finding pastoral communities because of their nomadic way of life and the need to manoeuvre and navigate the restrictions imposed on female respondents by both the tradition and religion which made it difficult to talk privately with women respondents were major limitations. These limitations though extended the study period by about six months; they did not have any adverse effect on both the quality of data and the outcome of the analysis. However, it was possible that extraneous factors, which are beyond the control of the researchers, such as personal biases, influenced some of the views expressed. Moreover, all the subjects who participated in the study were susceptible to external stimuli from diverse sources outside the control of the researchers unlike experimental studies or studies conducted with control groups in a laboratory.

4 Conclusions

This study applied a multidimensional approach to examine local water conflicts in the Afar of Ethiopia and identified ten root causes from the perspectives of leaders of both the Issa and Afar communities, the principal conflicting parties, as well as senior management staff of government agencies involved in water resources management and allied sectors. Among the ten factors, identified, the study concludes that Water scarcity due to drought, Water pollution due to human activity, and the Entrenched Suspicion, Enmity and Rivalry are the three most impactful catalysts for water crisis. The views of the three groups of stakeholders studied converged on high potential of Animal husbandry, Public health epidemic, Water pollution due to human activity, Water pollution due to livestock activity and Water scarcity due to drought as catalysts for conflict. Conversely, there was divergence of views between the community leaders and participating institutional representatives on the impact of Development and Infrastructure Projects, Entrenched Suspicion, Enmity and Rivalry and Natural Disaster. The paper concludes that this divergence could contribute to the failure of the government agencies in preventing conflicts especially as the role of Development and Infrastructure Projects, Entrenched Suspicion, Enmity and

Rivalry may be under estimated in policy formulation. Moreover, the study found that the Afar community rely strongly on *dagu*, the traditional system of information dissemination and therefore recommend its integration into the development of a water-conflict prevention and resolution policy framework.

The study gained valuable insights that could be used in further studies to develop technique of pre-identification an early warning system for local water conflicts in the Afar region and other forms of communal conflicts in Ethiopia and countries with similar dynamics. These insights will be useful in the development of models for realistic analysis of conflicts in the region with clearly defined stability definitions that reflect characteristics of the players.

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