

**41<sup>st</sup> WEDC International Conference, Egerton University, Nakuru, Kenya, 2018**

**TRANSFORMATION TOWARDS SUSTAINABLE  
AND RESILIENT WASH SERVICES**

## **Emotional wellbeing as a proxy indicator for water security among pastoralists in Afar, Ethiopia**

*S. Cooper, P. Hutchings, J. Butterworth, A. Kebede, A. Parker, Terefe, B. and Van Koppen, B. (United Kingdom)*

**PAPER [OFFICE USE ONLY]**

---

*Recent thinking proposes a more holistic approach to measuring household water security. In addition to conventional service-level based indicators, assessments should account for broader social, political and cultural structures which shape how households interact with water. Contributing to this agenda, the paper introduces new research that aims to evaluate the relationship between emotional wellbeing and water security among pastoralists in the Afar region of Ethiopia. It is hypothesised that the measurement of emotion could have potential value as an indicator of water security among vulnerable populations who have particularly complex water use patterns that are poorly captured by conventional indicators. Within the pastoralist context, preliminary data collection has indicated an emotional response to seasonality in resource availability and distance travelled to infrastructure points. Further research is underway to explore the complexity of emotion and its interrelation with water security to better understanding the needs of pastoralists in Afar.*

---

### **Introduction**

Subsistent livelihoods such as pastoralism have very diverse and complex needs in terms of water which are often poorly captured by conventional water access and security indicators (Van Koppen et al. 2009). To address this gap, recent research has called for a more holistic approach to account for the complexity and the dynamism of water use at the household scale (Jepson et al., 2017; Wutich et al., 2017). This work builds on the conventional parameters of water access including quantity, quality and affordability but seeks to incorporate other aspects such as political, social and cultural influences which could inevitably shape household behaviour and its relation to water security (Jepson et al., 2017). As part of this new paradigm there is also a focus on the psychological distress that water insecurity causes for households and how this potentially impacts on the functioning and capability of the household (Wutich and Ragsdale, 2008; Sultana, 2011; Stevenson et al., 2012; Jepson, 2014; Sahoo et al., 2015; Bisung and Elliot, 2017, White, 2017). This paper introduces a new research project which intends to complement and advance this emerging literature through an investigation of the relationship between water security and emotional wellbeing among pastoralists in Afar, Ethiopia. It starts by explaining the potential relevance of this thinking for understanding water use in a pastoralist context. This is followed by a discussion about the conceptual challenges of developing an indicator which involves an assessment of emotional response, before some preliminary findings are presented and future plans outlined.

### ***Pastoralism and water security***

There are over 200 million pastoralists in the world that follow a livelihood that is now considered extremely vulnerable to water scarcity (IFAD, undated). Yet, traditionally, pastoralists have used mobility and a flexible system of common property rights to cope with drought, rainfall variability and other vagaries of living in arid and semi-arid rangelands (Tsegaye *et al.*, 2013; Schmidt & Pearson, 2016). In regions such as the Horn of Africa it is more recent political, economic and climate trends that have stressed the resilient capacity of these populations. For example, in Ethiopia, there are two major driving

factors which have undermined pastoralist livelihoods (Tsegaye *et al.*, 2013; Schmidt & Pearson, 2016). The first is relating to various changes in the economic and political landscape which has resulted in increased land fragmentation and reduced access-rights thus restricting pastoralist's mobility. The second refers to the changing climate which has increased incidences of drought and rainfall variability thus leading to increased scarcity in water and pasture (Tsegaye *et al.*, 2013). These stressors among others have significantly impacted on the pastoralist's livelihoods including their water security which has led to negative impacts on their livestock and increased the incidences of disease and conflict (Nassef and Belayhun, 2012).

Partly in response to these pressures the Government of Ethiopia and international agencies have supported pastoralists to diversify their livelihood strategies, with many now practicing agro-pastoralism (whereby they combine arable farming with herding). Yet there is evidence that because this strategy reduces the mobility of the population it can increase vulnerability to water security risks as pastoralists are less able to access distant water points (Nassef and Belayhun, 2012). Furthermore, field-experience indicates that interventions to help address water security issues, such as reducing contamination by providing protected animal access points, often have unintended consequences such as driving demand to certain watering points leading to conflict and over-use (RWSN, 2015). This evidence indicates weaknesses in the conventional water management paradigm for pastoralists, specifically, that it is poorly equipped to provide water sources which meet the populations' needs and can underpin a resilient livelihood.

Relatedly, we argue that conventional indicators, such as the WHO-UNICEF Joint Monitoring Program Service Ladder, are inappropriate for these populations on a number of grounds: (i) the distinction they make between domestic and productive water does not correspond with pastoralists' multiple-uses of water; (ii) the emphasis on measuring service quality from single-water points does not capture pastoralists' customary approach of sharing numerous water sources; (iii) the household-level unit of analysis can mask inequalities between household members, this is particularly pronounced when members of pastoralist households spend long periods away from the homestead. In short, they are considered to poorly reflect actual patterns of pastoralist water use which leads to a misunderstanding of pastoralists' water-related resilience strategies and vulnerabilities to risks such as climate change, conflict and poverty. As indicators tend to drive water sector strategy, we believe developing improved indicators that are more sensitive to the specific needs and resilience strategies of pastoralists is one of the best ways we can help these populations deal with water security risks.

### ***A proxy water security measure – the potential for emotional wellbeing***

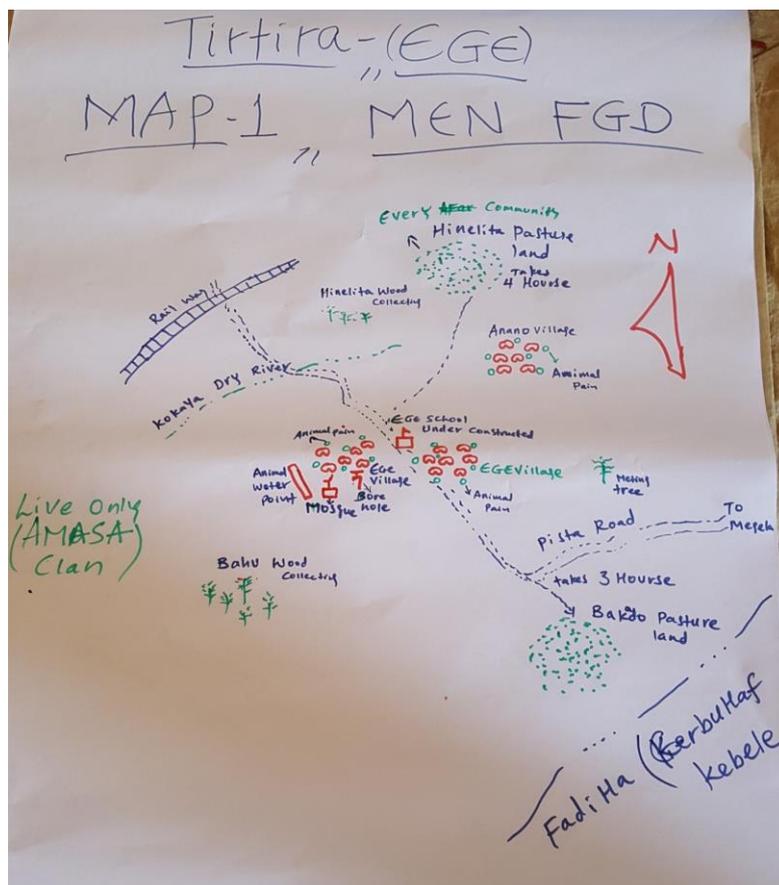
The challenge with developing alternative indicators for pastoralists is that the water-use patterns of this group are extremely complex and involve various sources over extended range land and, so, measuring the cumulative level of service is extremely challenging. Instead, we are examining a proxy indicator in the form of emotional wellbeing. Cross-cultural studies have shown that high exposure to water security risks has detrimental impact on emotional wellbeing and there is now an emerging literature into experience-based measures of water use (Wutich and Ragsdale, 2008; Sultana, 2011; Stevenson *et al.*, 2012; Jepson, 2014; Sahoo *et al.*, 2015; Bisung and Elliot, 2017, White, 2017). For example, Sultana (2011) argues that conflict over water resources is as much about emotion, the lived experience and the meaning behind accessing resources as property rights and entitlements. Jepson (2014) illustrate how negative emotional responses to water quality results in anxiety and feelings of shame which transgress social and cultural expectations which in turn can impact on the household's water security. Whilst, Subbaraman *et al.* (2015) highlights women's distress over the inability to finish chores, strained relationships with relatives, conflicts over water, compromised community cohesion, and resentment against water vendors and government officials (Bisung and Elliot, 2017).

This emphasis on the significance of emotion and its interrelation with water security highlights that it could have a role as an important proxy measure of success in water projects, particularly for groups that are poorly served by conventional approaches. This raises the challenge of how to measure emotion in relation to water security and whether emotion has the potential as an indicator equivalent to other commonly-used indicators such as water quality, access and affordability (Jepson, 2014). There have been numerous studies which outline experience-based measures of water security which have resulted in

culturally sensitive analyses of emotion (Jepson, 2014). The majority use an inductive mixed methods approach to collect data but there is significant scope for innovation in terms of the approach and methodology used. For example, Wutich and Ragsdale, (2008) used a Guttman Scale to measure respondent's emotional distress to inductively selected indicators of water security. Hadley and Wutich (2009) describe the USDA Household Security Survey Model that is a tool used to measure experiences to food security but could be adapted for studies on water security. Building on these studies we intend to evaluate the emotional response of pastoralists to water security in the Afar Region of Ethiopia, with a view to informing a novel indicator for this group.

### *Applying the thinking in Afar, Ethiopia*

To achieve this aim a sequential mix-methods approach was used with initial formative qualitative fieldwork, comprising of two rounds of participatory focus groups across three villages in *Dulecha* Woreda. These villages have different levels of water access (ranging from access to protected borehole to no access to any improved water sources). A quantitative survey will follow later in the project to test and validate a new indicator. The first round of focus groups was undertaken in December 2017 was designed to help us understand the overall water (and broader natural resource) management practices within the villages, which was captured from participatory mapping exercises across six gender-differentiated focus groups (see: Photograph 1 as an example of an output).



Photograph 1. WEDC - Photo title

Source: WEEP Fieldwork Report Unpublished (2018)

Emerging data from the first round of focus groups has already highlighted interesting findings such as the relationship between reported wellbeing and seasonality, and the role that water plays within this

relationship: “During the rainy season, even older women look beautiful”, as one focus group participant said reflecting very strong seasonal link to wellbeing. During times of adequate rainfall, pastoralists (both men and women) discussed feelings of happiness and wellbeing due to the abundance of pasture, water and healthy livestock which contributed to a healthy household. Whereas in times of drought the pastoralists (men) mention sadness over the loss of livestock and the stress and exhaustion of traveling long distances on foot searching for water and pasture. The emerging data has also shown a strong gender difference in water use patterns and needs, which follows from previous studies that have indicated a disproportionate burden of responsibility for household water on women and girls (Wutich and Ragsdale, 2008, Sultana, 2011; Stevenson *et al.*, 2012; Stevenson *et al.*, 2016; Bisung and Elliot, 2017).

These results provided a broad account of water security issues and their potential impact on emotional wellbeing among the pastoralists. They also provide the platform on which to design the following two phases of data collection. This analysis of emotion and wellbeing presents significant complexity due to the subjective influences of interpretation and context (Lazarus, 1991, Scherer, 2005). Additionally this complexity is heightened by this cross-cultural analysis of emotion, as culture can influence interpretation of emotion via the set of internalised meanings, beliefs, perceptions which people carry with them throughout life (Lazarus, 1991, Diener *et al.* 2009). For example, some words denoting emotion in some cultures do not exist in English and vice versa (Diener *et al.* 2009). This complexity is a defining feature in shaping the inductive approach used to explore the range of emotions connected to issues of water security in the second round of focus group discussions. These discussions will investigate perceptions of positive and negative water security scenarios among the pastoralists and set the scene in questioning the emotions felt during these scenarios. Elicitation of emotions will be assisted with predefined dictionaries of words for emotion in Afar (previously translated from English-Afar-English by Afar associates) and example words for emotion in English to be used as prompts when necessary. Emotion itself will be defined using the dichotomous approach of valence and arousal, where valence refers to the degree that an emotion ranges from positive-negative and arousal refers to the degree that an emotion ranges from calm-excited, for example ‘depressed’ is an emotion with low levels of excitation as compared to ‘anger’ with higher levels (Scherer, 2005).

Outputs from this second round will be used to develop the survey which will be used to provide a quantitative measure of emotional wellbeing to water security and to develop the emotion-based indicator. Important considerations for the development of this survey will be to identify emotional concepts that provide sufficient meaning and interpretation across the population so that the survey is meaningful to participants. Additionally, in eliciting emotional response across a breadth of possible water security risks, the survey will be exposed to recall bias; to minimise this a specific set of questions will focus on emotional wellbeing over a recent timeframe. Also to ensure convergent validity through the use of proxies with similar underlying concepts, for example, within the survey, conceptually similar ‘life satisfaction’ will also be a focus and serve as a proxy, and construct validity to ascertain the data is showing what is intended, which will be attained through the second round of formative data collection to inductively obtain local notions on water security and associated emotions (OECD, 2013).

Recent focus on the reconceptualisation of water security and the subsequent holistic focus on the impact of water stress on well-being, has resulted in the proliferation of studies in this area. This research will significantly add to this field of knowledge by understanding the emotional wellbeing of an under-researched, little understood, vulnerable community, and to design a unique tool focusing primarily on the impact of water stress on emotional well-being. Therefore, the outcome of this assessment is to develop an effective indicator on water-related wellbeing, which can be used alongside other conventional indicators thus overcoming some of the limitations experienced using these conventional approaches, and ultimately contribute to the policy and practice of broader water projects and programmes.

---

### Acknowledgements

This paper forms a preliminary output of research funded by the Economic and Social Research Council and Department for International Development as part of the Development Frontiers Research Scheme (Grant: ES/R001049/1). The grant is managed by Cranfield University with IRC Ethiopia, the International Water Management Institute and Oxfam as partners. The authors would like to thank the communities of *Dulecha*

Woreda, Afar, for hosting us during our first round of fieldwork. We would also like to thank the Friendship Support Association (FSA) for helping to facilitate access to the area.

---

## References

- BISUNG, E. and ELLIOT, S.J. 2017 *Psychosocial Impacts of the Lack of Access to Water and Sanitation in Low- and Middle-Countries: A Scoping Review* Journal of Water and Health Vol 15, No 1, pp. 17-30.
- DIENER, E., WIRTZ, D., BISWAS-DIENER, R., TOV, W. KIM-PRIETO, C., DONG-WON, C. and OISHI, S. 2009 "New Measures of Well-Being" in E. Diener (ed.) *Assessing Well-Being: The Collected Works of Ed Diener*, Social Indicators Research Series 39, DOI 10.1007/978-90-481-2354-4\_12.
- HADLEY, C. and WUTICH, A. 2009 *Experience-Based Measures of Food and Water Security: Biocultural Approaches to Grounded Measures of Insecurity* Human Organisation Vol 68, No 4, pp. 451-460.
- IFAD Undated *Livestock and Pastoralists. Livestock Thematic Papers: Tools for Project Design*. Accessed: 14/02/18. Available from: <https://www.ifad.org/documents/10180/0fbc4134-4354-4d08-bf09-e1a6dbec3691>
- JEPSON, W. 2014 *Measuring 'no-win' Waterscapes: Experience-Based Scales and Classification Approaches to assess Household Water Security in colonias on the US-Mexico border* Geoforum Vol 51, pp. 107-120.
- JEPSON, W., BUDDS, J., EICHELBERGER, L., HARRIS, L., NORMAN, E., O'REILLY, K., PEARSON, A., SAMEER, S., SHINN, J., STADDON, C., STOLER, J., WUTICH, A. and YOUNG, S. 2017 *Advancing Human Capabilities for Water Security: A Relational Approach* Water Security Vol 1, pp. 46-52.
- LAZARUS, R.S. 1991 *Emotion and Adaptation*. Oxford University Press.
- NASSEF, M. and BELAYHUN, M. 2012 *Water Development in Ethiopia's Pastoral Areas: A Synthesis of Existing Knowledge and Experience* Save the Children. USA Accessed: 16/02/2018. Available from: [https://www.usaid.gov/sites/default/files/documents/1860/Water%20Development%20in%20Pastoral%20Areas%20of%20Ethiopia\\_0.pdf](https://www.usaid.gov/sites/default/files/documents/1860/Water%20Development%20in%20Pastoral%20Areas%20of%20Ethiopia_0.pdf).
- OECD 2013 *OECD Guidelines on Measuring Subjective Well-Being*, OECD Publishing. <http://dx.doi.org/10.1787/9789264191655-en>.
- RWSN. 2015 *Water for Pastoralists and Livestock. Rural Water Supply Network Online Seminars. Online*. Accessed: 19/01/2017. Available from: <https://vimeo.com/148336972>
- SAHOO, K.C., HULLAND, K.R.S., CARUSO, B.A., SWAIN, R., FREEMAN, M.C., PANIGRAHI, P. and DREIBELBIS, R. 2015 *Sanitation-related Psychosocial Stress: A Grounded Theory Study of Women across the Life-Course in Odisha, India* Social Science and Medicine Vol 139, pp. 80-89.
- SCHMIDT, M. and PEARSON, O. 2016 *Pastoral Livelihoods under Pressure: Ecological, Political and Socioeconomic Transitions in Afar (Ethiopia)* Journal of Arid Environments Vol 124, pp. 22-30.
- SCHERER, K.R. 2005 *What are emotions? And how can they be measured?* Social Science Information. Vol 44, No 4, pp 693-727.
- SULTANA, F. 2011 *Suffering for Water, Suffering from Water: Emotional Geographies of Resource Access, Control and Conflict* Geoforum Vol 42, pp. 163-172.
- STEVENSON, E. G. J., GREENE, L. E., MAES, K. C., AMBELU, A., YIHENEW A. T., RHEINGANS, R. and HADLEY, C. 2012 *Water Insecurity in 3 Dimensions: An Anthropological Perspective on Water and Women's Psychosocial Distress in Ethiopia* Social Science and Medicine Vol 75, pp. 392-400.
- STEVENSON, E.G.J., AMBELU, A., CARUSO, B.A., TESFAYE, Y. and FREEMAN, M.C. 2016 *Community Water Improvement, Household Water Insecurity, and Women's Psychological Distress: An Intervention and Control Study in Ethiopia* PLoS ONE Vol 11 No 4, pp. 1-13.
- SUBBARAMAN, R., NOLAN, L., SAWANT, K., SHITOLE, S., SHITOLE, T., NANARKAR, M., PATIL-DESHMUKH, A. and BLOOM, D.E. 2015 *Multidimensional Measurement of Household Water Poverty in a Mumbai Slum: Looking Beyond Water Quality* PLoS One Vol 10 No 7, pp. 1-19.
- TSEGAYE, D., VEDELD, P. and MOE, S.R. 2013 *Pastoralists and Livelihoods: A Case Study from Northern Afar, Ethiopia* Journal of Arid Environments Vol 91 No 13, pp. 8-146.
- VAN KOPPEN, B., SMITS, S., MORIARTY, P., PENNING DE VRIES, F., MIKHAIL, M. and BOELEEE, E. 2009 *Climbing the Water Ladder: Multiple Use Services for Poverty Reduction*. IRC

International Water and Sanitation Centre and IWMI. Accessed: 16/02/2017. Available from:  
[www.irc.nl/publications](http://www.irc.nl/publications).

- WHITE, R.G. 2017 *Mental Wellbeing in the Anthropocene: Socio- Ecological Approaches to Capability Enhancement* Transcultural Psychiatry in press.
- WUTICH, A. and RAGSDALE, K. 2008 *Water Insecurity and Emotional Distress: Coping with Supply and Access, and Seasonal Variability of Water in a Bolivian Squatter settlement* Social Science and Medicine Vol 67, pp. 2116-2125.
- WUTICH, A., BUDDS, J., EICHELBERGER, L., GEERE, J., HARRIS, L.M., HORNEY, J.A., JEPSON, W., NORMAN, E., O'REILLY, K., PEARSON, A.L., SAMEER, H.S., SHINN, J., SIMPSON, K., STADDON, C., STOLER, J., TEODORO, M.P. and YOUNG, S.L. 2017 *Advancing Methods for Research on Household Water Insecurity: Studying Entitlements and Capabilities, Sociocultural Dynamics, and Political Processes, Institutions and Governance* Water Security Vol 2, pp. 1-10.

---

### Note/s

Add your notes here using the WEDC - Body text P1. Please use endnotes. Do not use footnotes.

---

### Contact details

*Dr Sarah Cooper is a Research Fellow in Water Security and Livelihoods working under Dr Paul Hutchings on the Water-Security in Ethiopia and the Emotional Response of Pastoralists (WEEP) Project. Dr Paul Hutchings is a Lecturer in WASH Impact Evaluation at Cranfield University.*

Dr Sarah Cooper  
Cranfield University  
Tel: +44 (0) 1234 750111 x3336  
Email: [Sarah.J.Cooper@cranfield.ac.uk](mailto:Sarah.J.Cooper@cranfield.ac.uk)

Dr Paul Hutchings  
Cranfield University  
Tel: +44 (0) 1234 750111 x8352  
Email: : [p.t.hutchings@cranfield.ac.uk](mailto:p.t.hutchings@cranfield.ac.uk)  
www: <https://www.cranfield.ac.uk/people/paul-hutchings-805215>

John Butterworth  
IRC Ethiopia  
Email: [butterworth@ircwash.org](mailto:butterworth@ircwash.org)

Abinet Kebede  
IRC Ethiopia  
Email: [kebede@ircwash.org](mailto:kebede@ircwash.org)

Dr Alison Parker  
Cranfield University  
Email: [a.parker@cranfield.ac.uk](mailto:a.parker@cranfield.ac.uk)

Bethel Terefe  
Oxfam Ethiopia  
Email: [BTerefe@oxfam.org.uk](mailto:BTerefe@oxfam.org.uk)

Barbara van Koppen  
International Water Management Institute  
Email: [b.vankoppen@cgiar.org](mailto:b.vankoppen@cgiar.org)

---

PLEASE NOTE: **ALL PAPERS** INCLUDING IMAGES REFERENCES, ACKNOWLEDGEMENTS AND CONTACT DETAILS, MUST NOT EXCEED **6** PAGES .

**Papers not set in this template or which exceed the required maximum number of 6 pages will be rejected without review.**