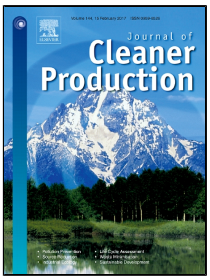
Accepted Manuscript



Social network analysis reveals that communication gaps may prevent effective water management in the mining sector

N.C. Kunz, T. Kastelle, C.J. Moran

PII:	S0959-6526(17)30197-X
DOI:	10.1016/j.jclepro.2017.01.175
Reference:	JCLP 8922
To appear in:	*Journal of Cleaner Production*
Received Date:	06 March 2016
Revised Date:	31 December 2016
Accepted Date:	31 January 2017

Please cite this article as: N.C. Kunz, T. Kastelle, C.J. Moran, Social network analysis reveals that communication gaps may prevent effective water management in the mining sector, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.01.175

Article Title: Social network analysis reveals that communication gaps may prevent effective water management in the mining sector

Author byline and affiliations:

Authors: NC Kunz*[1], T Kastelle[2], CJ Moran[1],

1. Sustainable Minerals Institute, The University of Queensland, St Lucia, Queensland, 4072, Australia.
2. UQ Business School, Colin Clark Building, Blair Drive, University of Queensland, St Lucia Queensland 4072, Australia.

* *Corresponding author:* nadjakunz1@gmail.com

ABSTRACT

Sustainability issues are often difficult for companies to manage because they require communication across organisational departments and divisions. This paper provides some of the first empirical evidence that communication "silos" exist within the mining sector, and that they may be impeding effective water management. Results of a social network analysis at a mining company revealed gaps in direct communication about water-related issues between the two largest production departments. This gap was particularly surprising because the departments were connected in the other communication networks studied, namely: information, ideas, problem-solving and friendship. The Health, Safety and Environment department played a crucial brokerage role within the water network, suggesting that water is primarily perceived as an environmental issue. A lack of direct communication between the major production departments could pose a barrier for recognising and responding to production-critical water risks. The work also found that the water network was characteristic of a core-periphery structure, such that communication was vulnerable to the removal of central "hubs". These hubs were dominated by senior management, which may present a risk for responding promptly to water-related crises. Further research is needed to investigate the impacts of a siloed communication structure for managing other sustainability issues including energy and community development.

KEYWORDS:

Mining; water; social network analysis; cleaner production; business strategy; sustainability; industrial ecology