

Making Growth Inclusive: The Role of Mining in the Post-2015 Development Agenda for Africa

"How Infrastructure Can Benefit From the Presence of Mining: A Case Study in Water Delivery in Mozambique"

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World Health Organization

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WHO strengthens focus on water, sanitation and hygiene to accelerate elimination of neglected tropical diseases

STOCKHOLM, GENEVA | 27 August 2015 – The World Health Organization (WHO) today unveiled a global plan to better integrate water, sanitation and hygiene (WASH) services with four other public health interventions to accelerate progress in eliminating and eradicating neglected tropical diseases (NTDs) by 2020.

“Millions suffer from devastating WASH-related neglected tropical diseases – such as soil-transmitted helminthiasis, guinea-worm disease, trachoma and schistosomiasis – all of which affect mainly children” said Dr Maria Neira, WHO Director for Public Health, Environmental and Social Determinants of Health.

“Solutions exist, such as access to safe water, managing human excreta, improving hygiene, and enhancing targeted environmental management. Such improvements not only lead to improved health, but also reduce poverty.”



The Importance of Improved Water, Sanitation, and Hygiene in Developing Countries



Health Impacts:

Rank	Cause of Death	Number of Deaths	Percentage of Deaths
1	HIV/AIDS	1,088,000	11.7%
2	Lower respiratory infections	1,039,000	11.2%
3	Diarrhoeal diseases	603,000	6.5%
4	Malaria	554,000	6.0%
5	Stroke	437,000	4.7%

Table: Leading causes of death in Africa Region ([World Health Organization 2012](#)).





The Importance of Improved Water, Sanitation, and Hygiene in Developing Countries



Economic Impacts:

- Savings in terms of health costs alone making investment in water, sanitation, and hygiene (WASH) cost-effective, particularly in those regions where incidence of diarrhoeal diseases are a leading cause of death ([Evans et al. 2004](#)).
- Even under pessimistic data assumptions, the total socio-economic benefits of water supply and sanitation interventions outweigh the costs in all developing world regions. For the Africa region, the benefit-cost ratio is estimated to range between 2.1 and 5.7 ([Hutton et al. 2007](#)).
- For sub-Saharan Africa, more recent benefit-cost ratios of interventions to attain universal access of improved water and improved sanitation are estimated at 2.0 and 2.8, respectively ([World Health Organization 2012](#)).





The Importance of Improved Water, Sanitation, and Hygiene in Developing Countries



Economic Impacts:

- Inadequate sanitation is estimated to cost Nigeria roughly 455 billion NGN (\$3 billion USD) annually, a total comprising 1.3% of annual GDP ([Water and Sanitation Program 2012](#)).
- Less time missed from work, greater educational opportunities, etc., increase earning potential ([Bartram et al. 2008](#)).





The Water and Sanitation Situation in Nigeria



	MICS	DHS
	2011	2013
Improved Water:		
Rural	51.32%	49.20%
Urban	72.56%	75.60%
Improved Sanitation:		
Rural	26.15%	38.50%
Urban	40.50%	76.80%

Table: Estimates of improved water and sanitation usage for rural and urban areas as estimated by the [National Bureau of Statistics \(2013\)](#) and [National Population Commission and ICF International \(2014\)](#).





The Need for Investment in Water and Sanitation



- Nigeria is ranked 153 out of 187 countries on the 2013 Human Development Index, placing it in the low human development category ([Human Development Report Team 2014](#)).
- Nigeria has significant infrastructure needs with the African Development Bank estimating a \$350 billion USD investment required over ten years (from 2012) to implement the Infrastructure Action Plan (IAP).
 - IAP emphasises 100% access to improved water supply by 2020, decentralisation, cost recovery, and greater private sector participation ([African Development Bank Group 2013](#)).
 - [McKinsey Global Institute \(2013\)](#) estimates that 70% of water used in Nigeria is non-revenue.





The Need for Investment in Water and Sanitation



- The Institute of Appraisers and Cost Engineers estimated that \$2.9 trillion would be required over the next 30 years to address infrastructure gaps ([Elebeke and Udofia 19 June 2015](#)).
 - \$180 billion needed for the area of water supply alone.
- Rural and peri-urban areas tend to be unattractive investment destinations for private WASH projects unless they are bundled with other investments ([Budde and McGranahan 2003](#)).





What Does this Have to Do With the Extractive Industries?



Murdoch
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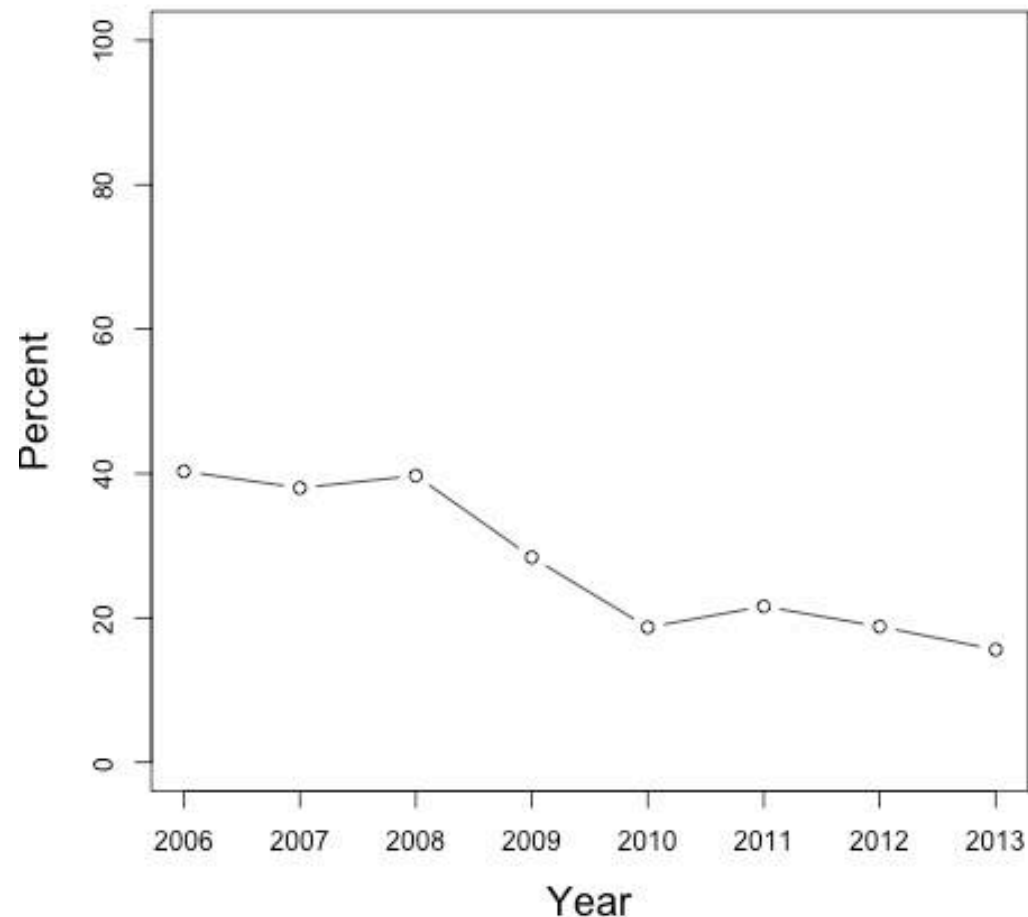


Table: Natural resource rents as a percentage of GDP (World Bank 2015).



 quantum global



What Does this Have to Do With the Extractive Industries?



- Mining activity frequently occurs in regions where nearby communities have insufficient access to clean water and improved sanitation.
- Mining is a water-intensive endeavour, particularly for lower grade ores, so it has the potential to affect water availability and quality for local communities if not managed appropriately ([Szyplinska 2013](#), [Global Water Intelligence 2011a](#)).
- Mining and associated economic activity can lead to rapid population growth ([ABS 2007](#), [Petkova et al. 2009](#), [Carrington and Pereira 2011](#)).
- Mining projects increasingly must invest in water infrastructure for their needs.
 - It is estimated that global spending on water infrastructure by mining companies over the period 2011-2014 will have doubled from \$7.7 billion USD to \$13.6 billion USD ([Global Water Intelligence 2011b](#)).





The Small Towns Water, Sanitation and Hygiene Programme in Nampula



NAMWASH

- Formed through a joint partnership of:
 - Australian Government
 - UNICEF
 - Government of Mozambique
- Implemented by:
 - UNICEF
 - Administration of Water Supply and Sanitation Infrastructure (AIAS)
 - Provincial Directorate of Public Works and Housing (DPOPH) of Nampula
- Ran from January 2012 to June 2014 and included varied WASH interventions benefitting five towns (peri-urban) along the Nacala Corridor that are anticipated to experience significant growth over the next 25 years.





Sanitation and Hygiene Promotion in Ribáuè



Sanitation and hygiene interventions included a community-led total sanitation (CLTS) and participatory hygiene and sanitation transformation (PHAST) approach, leading to:

- 1,170 improved latrines (with appropriate superstructure and handwashing station) built by households,
- 25 disability-specific latrines, and
- gender- and disability-specific latrines for four schools, three public markets, and the Ribáuè Rural Hospital and Namiconha Health Centre





Piped Water in Ribáué



Rehabilitation and expansion of piped water gravity-fed system consisting of:

- rehabilitated dam to supply water to the town,
- rehabilitated 100 m³ water tower in the town centre,
- 5 km of large diameter pipe for main pipeline,
- 11 km of small to medium diameter PVC pipe for distribution network, and
- rapid filtration water treatment plant, along with chlorine dosing equipment.

Delivery to households in the form of:

- 170 yard taps and
- 10 water kiosks
- direct connections to roughly 45 businesses and public service/council facilities.



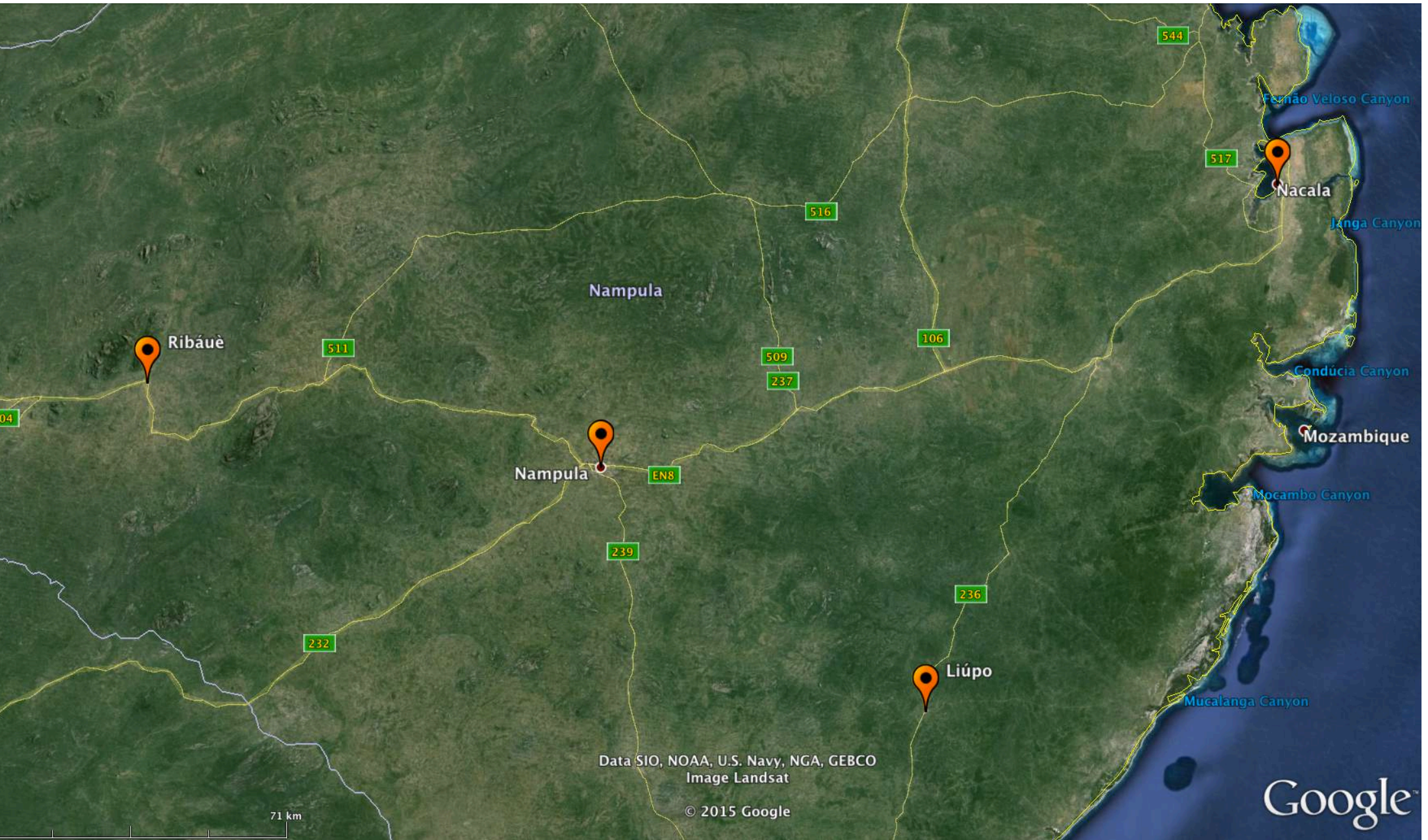


“Using Natural Resource Wealth to Improve Access to Water and Sanitation”



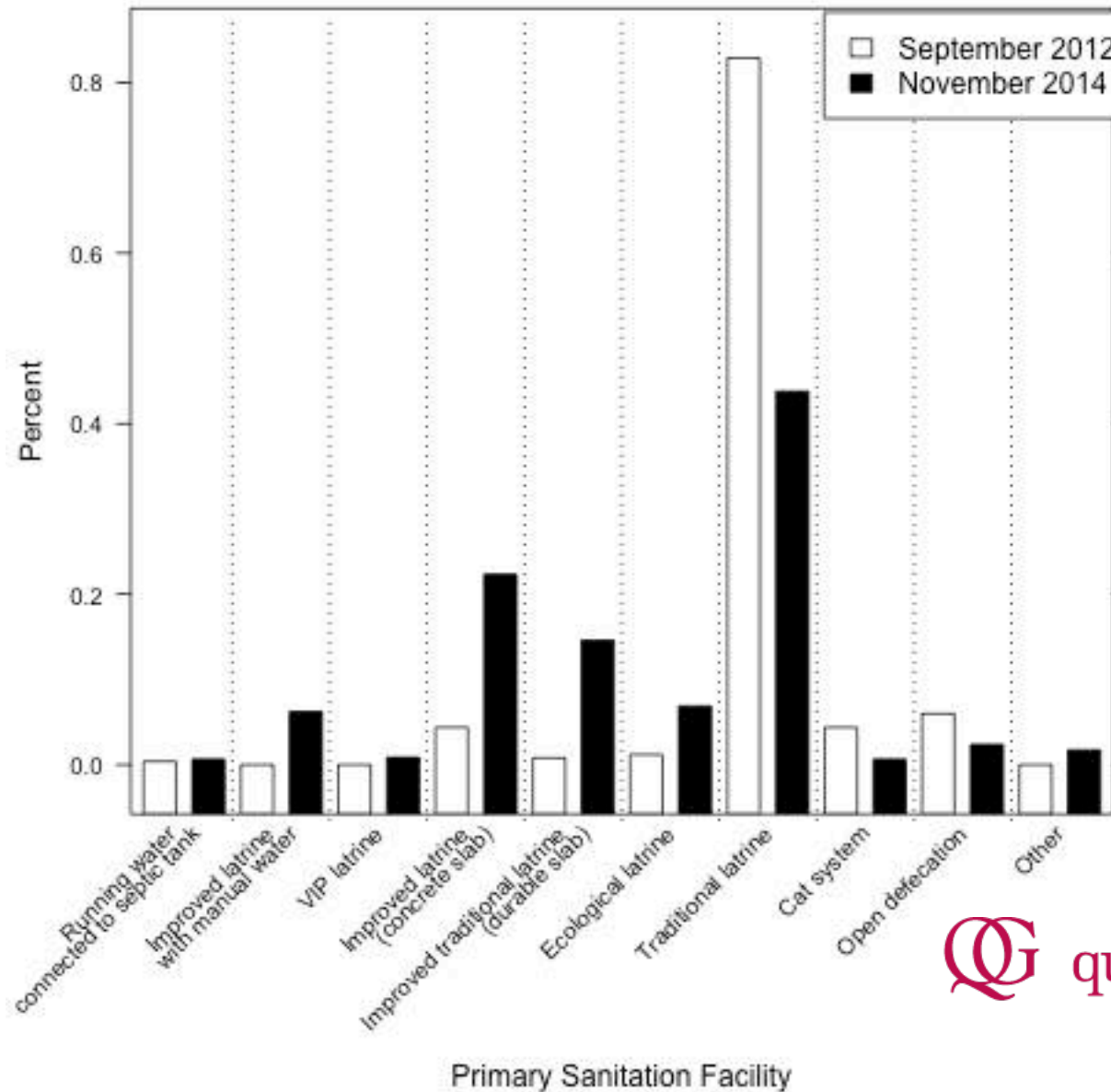
- The project is funded by the Australian Government Department of Foreign Affairs and Trade (DFAT) through its Australian Development Research Awards Scheme (ADRAS) programme.
- Collaborators:
 - Murdoch University (Australia)
 - University of Eduardo Mondlane (Mozambique)
 - Quantum Global Research Lab (Switzerland)
 - African Technology Policy Studies Network (Kenya)
- Support for fieldwork provided by:
 - Administration of Water Supply and Sanitation Infrastructure (AIAS)
 - Provincial Directorate of Public Works and Housing (DPOPH) of Nampula





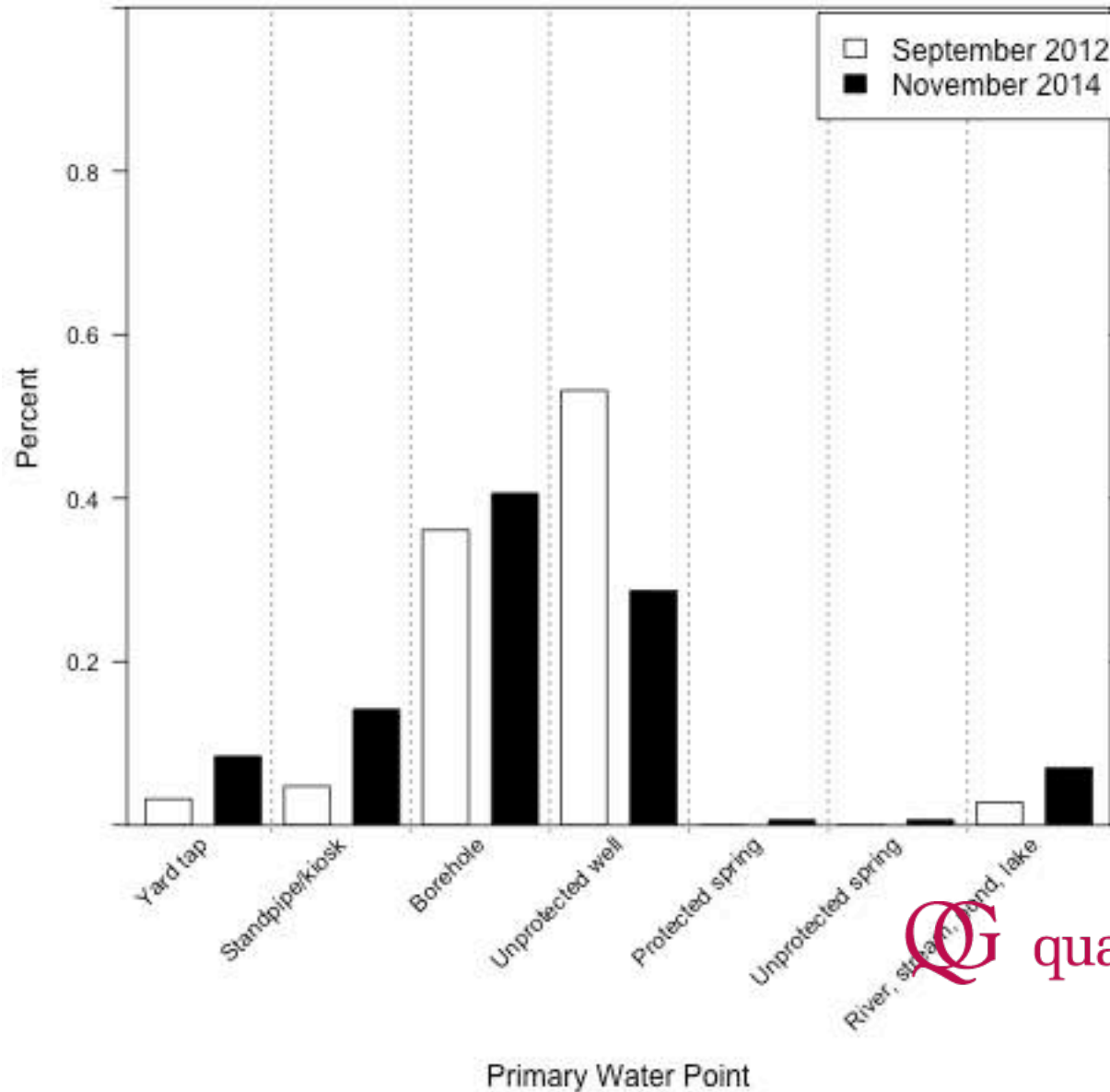


Primary Sanitation Facility Usage for Ribáué





Primary Water Point Usage for Ribáué





Impacts to the Community of Piped Water to the Home



- 66.86% of households in Ribáuè stated willingness to pay (WTP) for water piped to the yard with mean maximum WTP of 109.71 (105.39, 114.03) MZN per month. (Total WTP for the town is estimated at 4.66 million MZN annually.)
 - According to current tariffs, this would support a consumption of 109.05 liters of water per day (\approx 1 jerrycan per capita), slightly higher than reported average consumption of 107 liters per day.
- [Pickering and Davis \(2012\)](#) found that a 15 minute reduction in travel time is associated with a 41% average relative reduction in incidence of diarrhoea and an 11% relative reduction in mortality for children under the age of five.
- [Cairncross and Valdmanis \(2006\)](#) argue that provision of a public water point has little if any impact on health, but simply moving water to the yard (regardless of water quality) has significant health benefits, including a significant reduction in incidence of diarrhoea.





Impacts to the Community of Piped Water to the Home



- [Hutton and Haller \(2007\)](#) estimated that, as of 2004, incidence of diarrhoea was responsible for children missing 272 million days of school annually.
- For girls alone, [Hanushek and Woessmann \(1999\)](#) estimate that each year of additional schooling leads to an increase of 0.58 percentage points in GDP.
- [Dollar and Gatti \(1999\)](#) estimate that a 1% increase in secondary schooling is associated with a per capita increase of 0.3% in income.
 - Based on reported income data for Ribáuè, a 1% increase in secondary schooling from current levels would correspond to a per capita increase in income of 0.34%.





Impacts to the Community of Piped Water to the Home



- Far more substantial gains are realised strictly from “convenience time,” the time saved from not having to travel to collect water (Hutton et al. 2007).
- For the town of Ribáuè, households that collect water report travelling times of 27 minutes per day on average.
- Adult women are disproportionately affected (more than 75% in each location).

Gender Wage Gap	Unadjusted	Occupation-Adjusted
No wage gap	2,248,683 MZN (\$52,912)	327,416 MZN (\$7,704)
OECD average (15.5%)	1,936,810 MZN (\$45,573)	256,770 MZN (\$6,042)
OECD maximum (36.6%)	1,500,990 MZN (\$35,318)	169,777 MZN (\$3,995)





Summary



- Not only is investment in water supply and sanitation a great need because of health implications, but it can also have important economic impacts.
- Mining activity commonly occurs near and impacts communities that have some of the greatest need for water supply and sanitation improvements.
- The significant revenue brought by mining royalties and taxes provides a great opportunity to benefit communities.
- Direct involvement of extractive industry entities in WASH partnerships with governments and other agencies has the potential to further improve WASH cost effectiveness and sustainability.





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Thank You

Murdoch University Africa Research Group webpage:

<http://www.murdoch.edu.au/Africa-Research-Group/>

“Using Natural Resource Wealth to
Improve Access to Water and Sanitation” webpage:

<http://www.murdoch.edu.au/Africa-Research-Group/Active-Research-Grant/WASH-in-Mozambique/>

