


**How water supply and sanitation
relates to
improved health in Mozambique**

An aerial photograph of a city, likely Maputo, Mozambique, showing a wide river flowing through the urban landscape. The river is flanked by dense green trees and vegetation. In the background, several high-rise apartment buildings and other urban structures are visible under a clear blue sky. The text is overlaid on the lower half of the image.

**LOOKING FOR EVIDENCE
RELATED TO
MAPUTO SANITATION (MapSan STUDY)
AND
BEIRA CITY WATER SUPPLY**

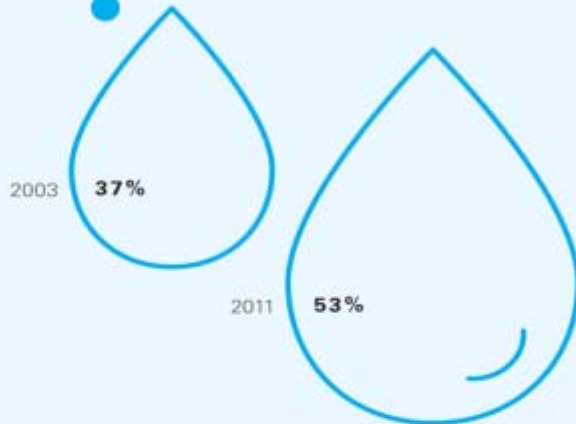
Manuel Alvarinho, January 2017, TUDelft

WATER AND SANITATION:

Significant progress has been made in access to improved sources of water and in sanitation, but from a very low starting point.



The number of people who drink water from improved sources has increased.



Less than 1 in 4 Mozambicans has access to improved sanitation infrastructure.



2 of every 5 Mozambicans practise open defecation



<http://www.unicef.org.mz/en/our-work/what-we-do/water-sanitation-hygiene/>

Mission Impossible?

“... For now, accepting the often fatal methodological flaws in quantifying health effects of water and sanitation may be an intellectual challenge, but perhaps a necessary step... The lack of high-quality trials on urban sanitation or rural water access should not stop us from opening our eyes – the oldest form of impact assessment”

Wolf-Peter Schmidt

Editorial , “The elusive effect of water and sanitation on the global burden of disease LSHTM, London, Tropical Medicine and International Health, volume 19 no 5 pp 522–527 may 2014

Global Lessons

“Water supply is thus a health-related intervention that comes without cost to the budgets of the health sector. Although it undoubtedly offers health benefits, it has a sufficient economic and political rationale in other social benefits associated with **time saving.**

...

Providing a public water point appears to have little effect on health,... By contrast, **moving the same tap from the street corner to the yard produces a substantial reduction in diarrheal morbidity.”**

Cairncross S, Valdmanis V. 2006. Water supply, sanitation and hygiene promotion. In: Jamison DT, Breman JG, Measham AR et al. (eds.) Disease Control Priorities in Developing Countries (2nd edition). Washington DC: The World Bank, Chapter 41, pp. 771-792.

Measuring DALY = Disability Adjusted Life Years

The sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability.



Case of MapSan Study – ongoing

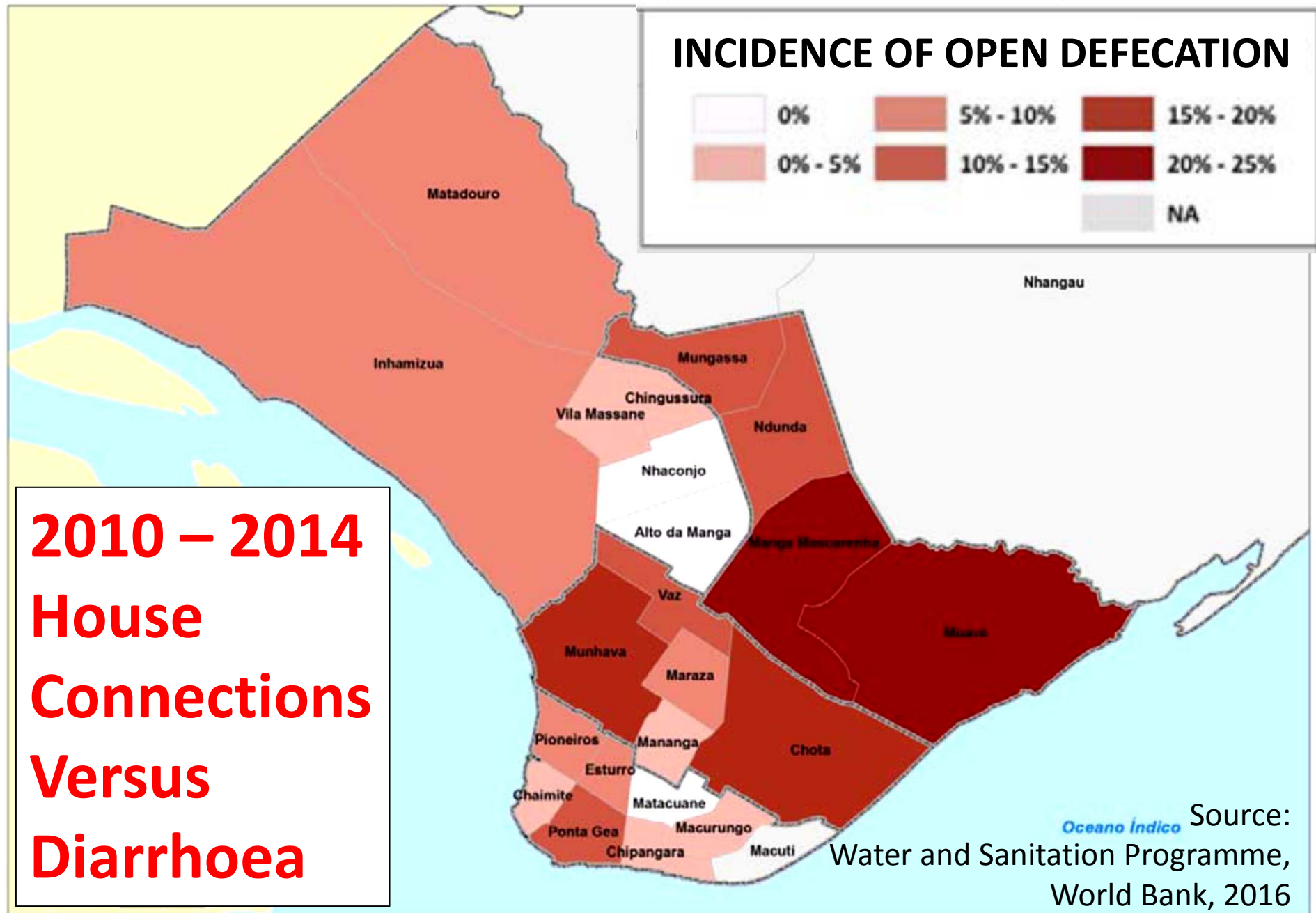
The combination of a high faecal-related disease burden and inadequate infrastructure suggests that investment in expanding sanitation access in densely populated urban slums can yield important public health gains. **No rigorous, controlled intervention studies have evaluated the health effects of decentralised (non-sewerage) sanitation in an informal urban setting, despite the role that such technologies will likely play in scaling up access.**

Urban sanitation represents an important gap in the evidence base for sanitation health impacts generally, with few trials of sewerage, and no previous trials of urban, decentralised (onsite, non-reticulated) sanitation, despite the fact that decentralised solutions may play a critical role in the expansion of sanitation in informal settlements and rapidly urbanising areas

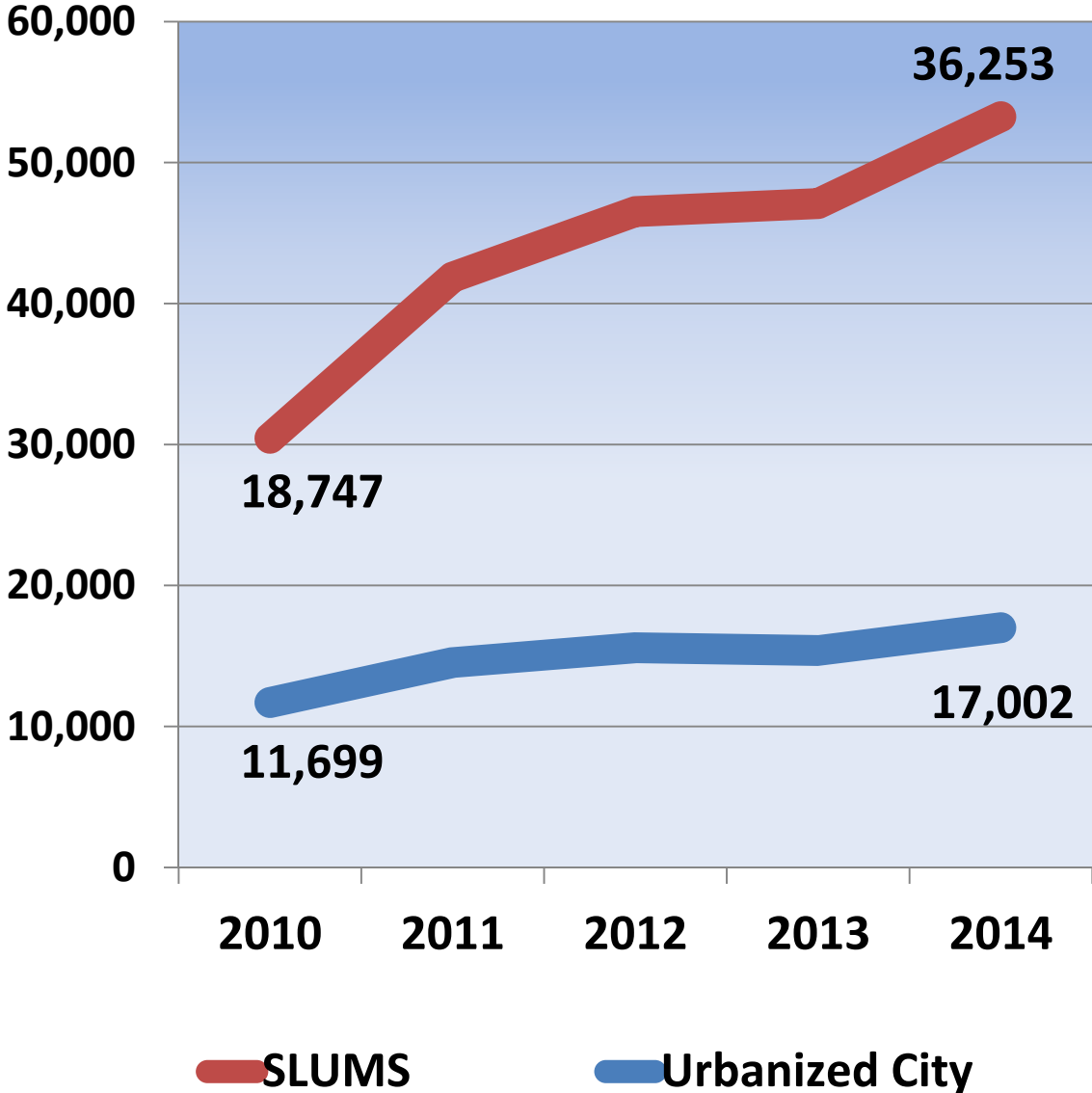
Brown J, Cumming O, Bartram J, et al.

A controlled, before-and-after trial of an urban sanitation intervention to reduce enteric infections in children: research protocol for the Maputo Sanitation (MapSan) study, Mozambique. *BMJ Open* 2015; 5:e008215.doi:10.1136/bmjopen-2015-008215

BEIRA CITY – Second city of Mozambique



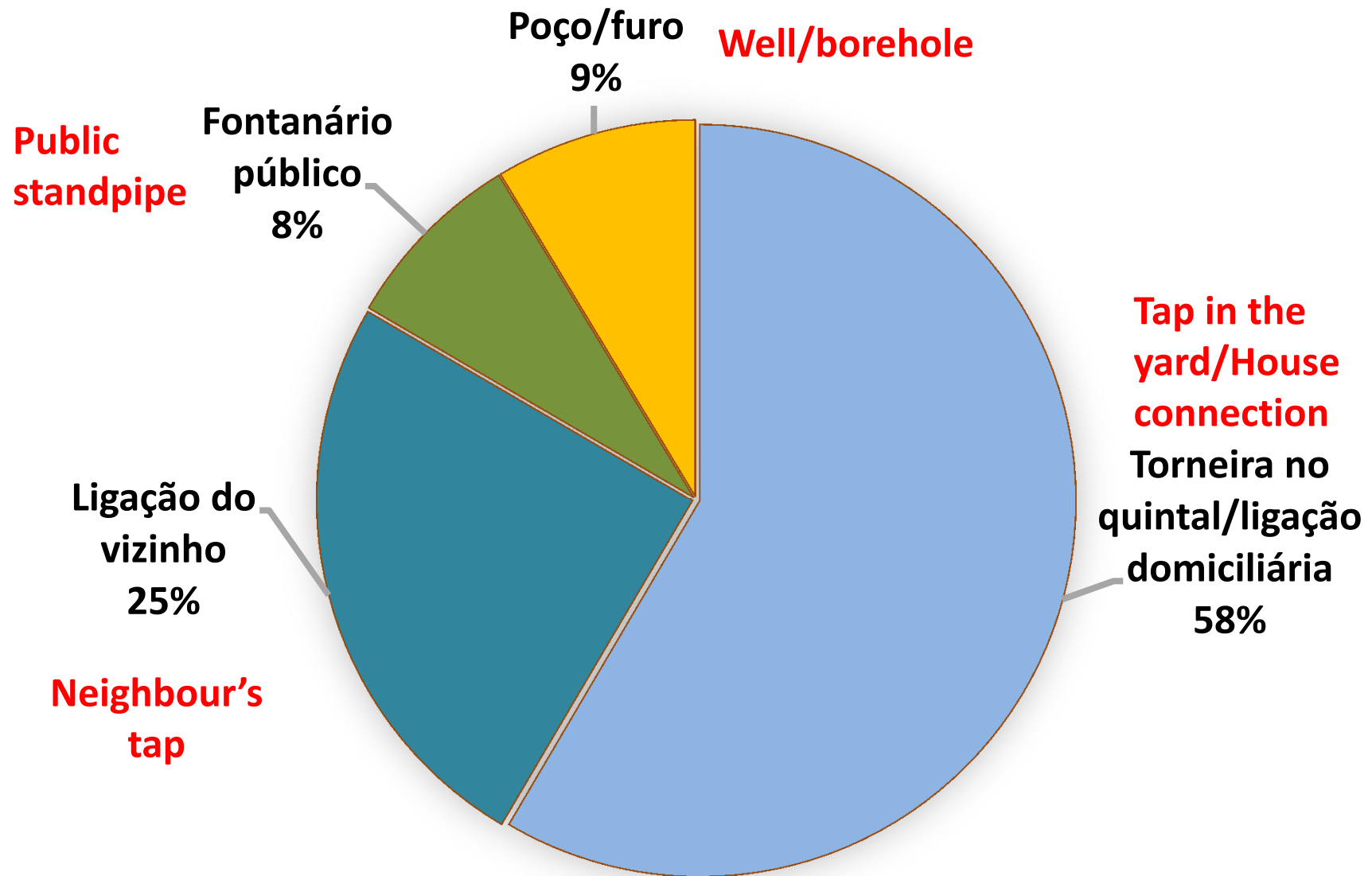
BEIRA HOUSE CONNECTIONS 2010 - 2014



- **2010**
Connection cost lowered to 45%;
- **In 5 years the house connections in slum areas doubled**

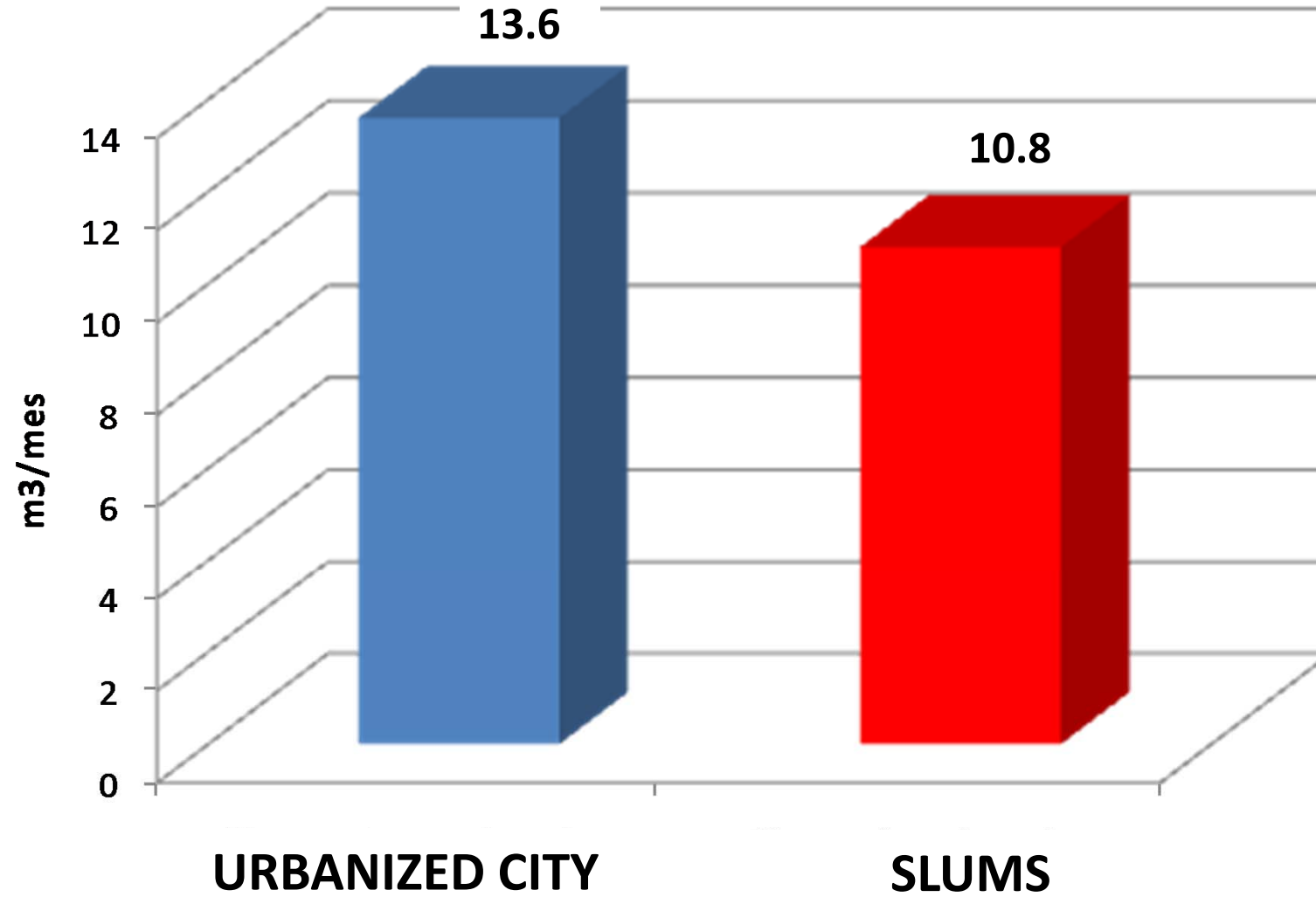
Source: CRA, 2016

BEIRA WATER COVERAGE, 2014



Source: Water and sanitation Programme, World Bank, 2016

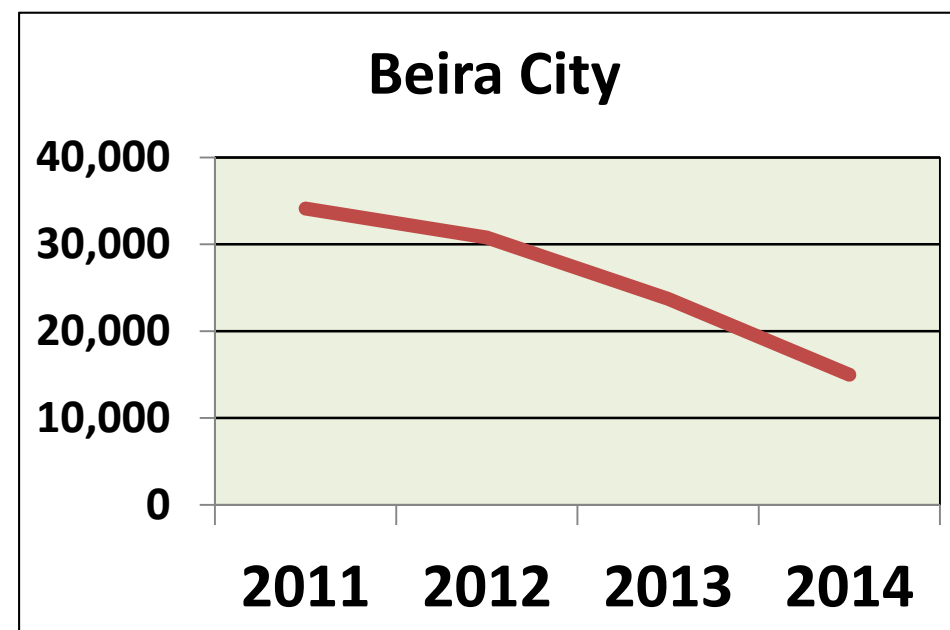
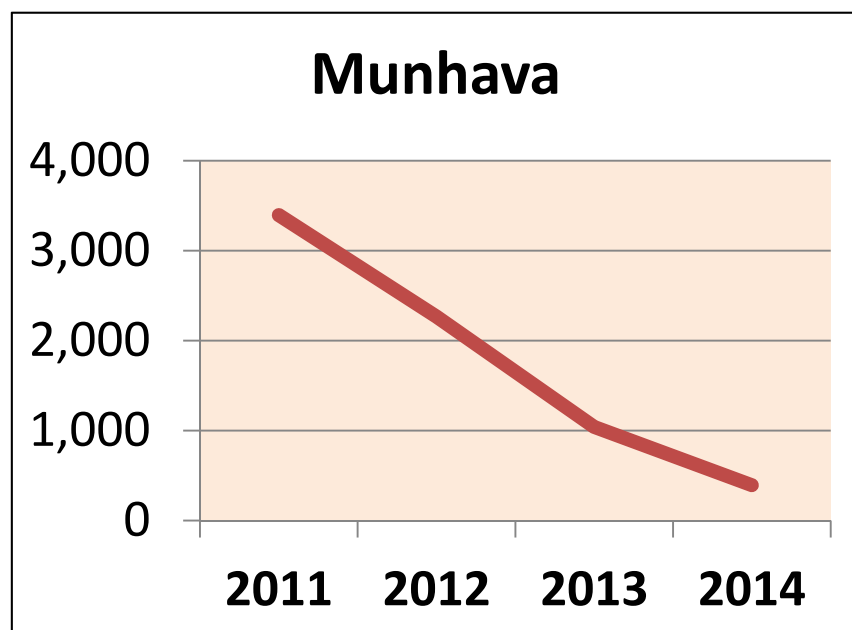
BEIRA HOUSEHOLD AVERAGE MONTHLY CONSUMPTION 2015 (m³/month)



Source: CRA, 2016

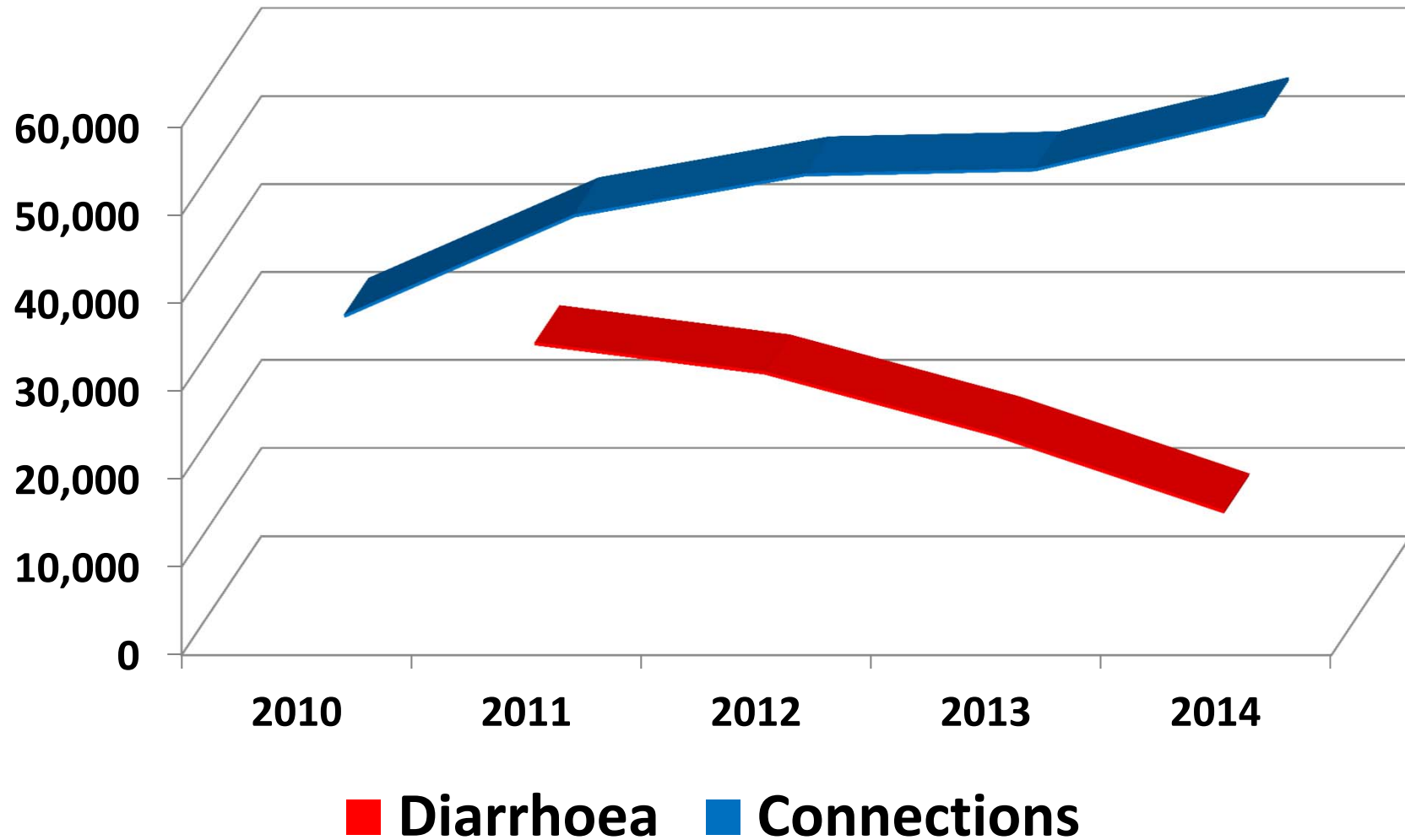
BEIRA – CASES OF DIARRHOEA, 2011 - 2014

Cases of Diarrhoea	2011		2012		2013		2014	
	0-4 years	Total	0-4 years	Total	0-4 years	Total	0-4 years	Total
Munhava	3,396	6,576	2,267	4,161	1,041	1,821	394	696
Beira City	34,109	69,697	30,783	67,702	23,723	50,530	14,986	30,481



Source: MISAU, 2016

BEIRA – POSSIBLE RELATION?



**NO OTHER MAJOR CITY IMPROVEMENT
IS KNOWN TO HAVE TAKEN PLACE IN THE PERIOD**

CONCLUSIONS

- **There are global scientific evidence of the high value of the improvements in safe water, sanitation and hygiene on health and living standards;**
- **Looking for evidence is a complex task, namely at country level, but should always be in our agenda;**

As we say in Mozambique: “A Luta Continua!”

THANK YOU!