



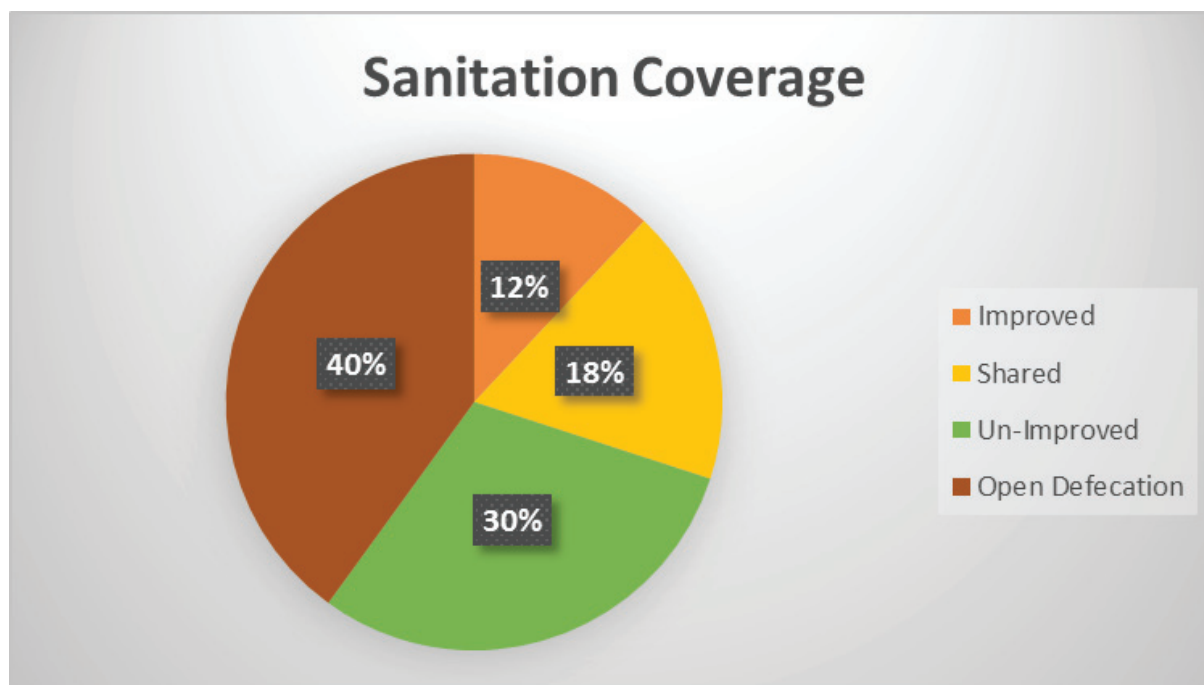
# Investing in Water, Sanitation and Hygiene in Madagascar

## The Business Case



## Introduction

Madagascar has some of the worst child development and survival rates in the world. Risk factors include; extreme poverty, (>80% of the population surviving off less than \$1.25 per day), more than half of households have experienced a catastrophic event affecting their household economy and nearly half the children under 5 are stunted (have permanently impaired mental and physical development). The under-five mortality rate stands at 62/1,000, of which 48/1,000 die under the age of one. Based on global estimates at least 25% of this under-five mortality is due to a water-related disease (WHO/UNICEF, 2009).



Madagascar has the 4<sup>th</sup> worst water, sanitation and hygiene statistics in the world. The huge proportion of the rural population not using an improved toilet (88%, JMP, 2015) can be considered a National emergency and the prevalence of open defecation in both rural (more than 50%) and urban areas is a major contributing factor to the high incidence of diarrhea.

Only 52 % of the population have access to an improved water supply compared to an average of 68% for the rest of sub-saharan Africa. Progress towards meeting the MDGs in Madagascar stalled after the political crisis started in 2009 and the lack of investment by either government or external donors has made it difficult for the Ministry of Water, Sanitation and Hygiene to even maintain the existing coverage let alone build new infrastructure and increase coverage.

## Cost of poor sanitation, hygiene and water supply

Many of the costs associated with poor health can be attributable to poor access to water and sanitation and hygiene. Several global projects have attempted to quantify the costs in terms of economic losses at the household level. The scale of the economic consequences of poor water, sanitation and hygiene is hence measured via four discrete pathways.

1. Time taken to access water and sanitation
2. Lost productivity due to illness
3. The cost of poor health
4. Death due to diarrhea



### Pathway 1 – Time taken to access water and sanitation

The members of households with no latrine and no piped water supply spend large amounts of time each day fetching water or looking for somewhere safe and private to defecate. This burden falls disproportionately on women who have responsibility for fetching water and assisting children, sick and elderly to find somewhere to defecate. Estimates vary in different parts of Madagascar but in more than 56% of households women spend more than 30 minutes per day fetching water (MDG Survey, 2013). It is estimated that each person practicing open defecation spends up to 2.5 days per year finding somewhere private to defecate (WSP, 2012). The economic cost of this loss of time can be valued using opportunity costs at 30% of hourly GDP (WHO, 2012). Using this approach the World Bank estimates that **US\$26 million is lost each year in time to find somewhere to defecate. Annual losses to access water could be as high as US\$255 million per year** (extrapolation from WHO, 2012).

### Pathway 2 – Lost Productivity Due to lack of WASH

Repeated incidence of diarrhea and other WASH related disease results in lost productivity for adult men and women. This includes time absent from work or school due to diarrheal disease, seeking treatment from a health clinic or hospital, and time spent caring for under-5's suffering from diarrhea or other WASH related diseases. It also includes time absent due to the lack of Menstrual Hygiene friendly sanitation facilities. The economic cost of this loss of productivity can be calculated based on an estimated value of a day's productivity. The World Bank estimates that Madagascar loses US\$ 0.8 million each year due to loss of productivity whilst sick or accessing healthcare.

### Pathway 3 – The Cost of Poor Health

Households incur significant costs in getting treatment for WASH related disease. This includes diarrheal disease but also malnutrition and related illnesses. Health seeking behaviour costs can include consultation, medication, transport and in some cases hospitalization. Estimates of the economic cost of this WASH related health care suggest that up to US\$ 9 million is lost each year in Madagascar (WSP, 2012).

### Pathway 4 – Premature Death Due to Diarrhea and Under nutrition

It is estimated that 10,400 Malagasy, including 6,900 children under the age of five die each year as a result of diarrheal disease. Based on global estimates of the percentage of diarrheal disease attributable to poor access to water, sanitation and hygiene (Prüss, 2002) up to 88% of these deaths are caused by poor WASH. Additional premature deaths are caused by malnutrition and related illnesses a proportion of which can be attributed to poor WASH. The cost of these premature deaths can be calculated based on the opportunity cost of the years of life lost. According to WSP estimates the cost of death due to WASH related diarrhea is USD\$ 77 million per year.

Other significant costs attributable to WASH include the losses related to undernutrition. The recent National Nutrition Damage Assessment Report (DAR) indicates high rates of acute and chronic malnutrition and further analysis estimates that >\$740 million annually lost to the national economy as a result of current prevalence of malnutrition, of which \$400 million is due to stunting. According to current thinking more than 50% (Spears, 2003) of stunting is directly caused by poor sanitation, hygiene and water-borne disease. Hence a conservative estimate would increase the cost of poor water, sanitation and hygiene by an additional \$200million per year.

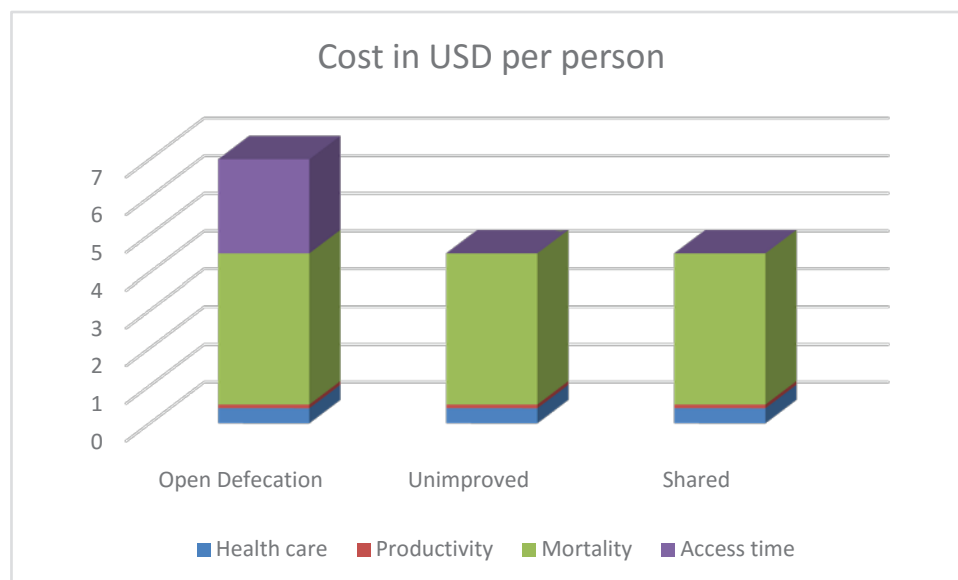


Figure 1 – Cost per capita of different types of sanitation (WSP, 2012)

## Benefits of good sanitation, hygiene and water supply

Reversing the arguments above, the benefits of WASH interventions include;

1. Time savings associated with better access to water and sanitation facilities,
2. The gain in productive time due to less time spent ill,
3. Health sector and patients costs saved due to less treatment of diarrhoeal diseases, and
4. The value of prevented deaths.

If we assume that universal access to improved water, sanitation and hygiene can be achieved and the expected benefits in terms of health and time savings are realized then the potential economic benefit would be the costs saved per year. **The estimated benefit of universal access to WASH is therefore US\$ 367 million per year, or US\$ 567 million per year if the benefits of reduced stunting are included.**

In addition to the above there are a number of other potential benefits which are difficult to quantify. These include:

1. Reduced household expenditure on funerals. These costs can be extensive in Madagascar as elaborate funerals are required under the prevailing social norms
2. Reduced pollution of water due to elimination of open defecation and consequent reduction in costs of treatment both at point of distribution and point of use.
3. Potential increase in tourism resulting from a clean environment and improved water supply to tourist locations. Tourism is an important source of revenue for Madagascar and the high levels of open defecation, especially on beaches and in urban areas discourages tourists from visiting these areas.
4. With increased use of appropriately designed latrines benefits can be achieved from 'waste to value' initiatives to re-use human waste for fertiliser and other products.
5. Improved health, wellbeing and child care resulting from reduction in women's burden collecting water.
6. Improved food production resulting from multiple use water systems providing water to agriculture and livestock production.



## Cost of meeting needs

The huge gaps between the current coverage with improved water (52%) and sanitation (12%) and universal access by 2030 which is the goal of the Government of Madagascar can only be closed with considerable investment in water and sanitation services. Current investment in the sector of around 1 USD per person per year is completely insufficient in order to make appropriate progress in the sector, particularly considering the low sustainability levels and the need for proper capital investment for operation and maintenance. The estimation of costs has to take into account the fact that the real costs of the water and sanitation interventions include the full investment and annual running costs.

*“Targeting additional finances on the unserved populations risks the loss of services to the existing served populations”, WHO 2012*

The significant costs involved in keeping rural water services working have been underestimated in previous analysis (WHO, 2012). Recent studies (Carter, 2016) provide first estimates of the proportions of total investment which must be incurred post-construction, in order to achieve sustainability for rural water supplies (approximately 76% in the case of piped systems and 50% in the case of wells or boreholes with hand pumps).

Estimates of the investment required to meet universal access to water and sanitation vary between US\$1.1 Billion (WHO, 2013) and US\$2 Billion (WSP, CSO, 2011). However these are conservative estimates which don't adequately allow for the high recurrent costs for sustainability of water supply. Recent estimates (Carter & Ryan 2016) of the real cost of achieving universal, sustainable access to water in rural areas alone by 2030 are as high as US\$135M per year<sup>1</sup>. The Government of Madagascar is aiming to achieve key interim results in WASH by 2019. These include increasing improved sanitation coverage from 12% to 17% and increasing improved water coverage from 52% to 68% (66% rural, 79% urban) as well as critical developments in urban waste management and integrated water resource management. The estimated investment cost to achieve these results on time is between \$475 million (MINEAH, 2015) and US\$ 847 million (MINEAH/WSSCC, 2015) over the next 4 years. The estimated increase in per capita investment needed is shown in Figure 3

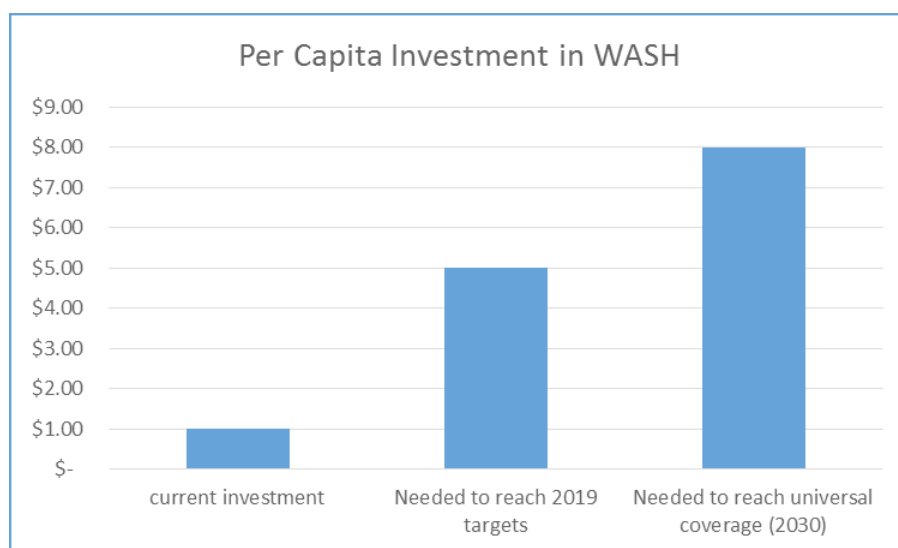


Figure 3 – Estimated increase in total per capita investment in WASH (consultant's estimates)

<sup>1</sup> This figure includes operating costs.

## Why invest?

The investment cost required to provide all the people of Madagascar with access to sustainable water and sanitation is around \$US 1.5 billion but the cost of not providing this access is even higher. Poor access to water and sanitation costs Madagascar up to US\$567 million per year or US\$25 per person per year (2015). This translates into an estimate of the economic benefits of reaching water and sanitation targets of 1.67 for sanitation and 3.2 for water (WHO, 2013). This means for every US\$ invested in water supply interventions the return could be US\$ 3.2.

The Government of Madagascar has developed plans to accelerate progress toward the sustainable development goal of universal access. To achieve their planned Key Results by 2019, an investment of US\$ 475 million is needed. This requires a combined effort by all partners and MINEAH has established a Sector Wide Approach (SWAp) to ensure harmonisation and alignment of assistance, and improved system management, quality and coverage.

The children of Madagascar need an investment of US\$ 8<sup>2</sup> each per year over the next 15 years. Failing to make this investment will cost them their dignity, their health and possibly their life.



<sup>2</sup> This figure includes related investment in urban waste management and integrated water resource management. Required annual per capita investment for water supply only is estimated at around US\$5.



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