

FUNDING INTERVENTION PROJECTS IN THE WATER AND SANITATION AID SECTOR: SUCCESS BY DESIGN

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DECLARATION OF OWN WORK

I declare that this thesis

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"If there is magic on this planet, it is contained in water"

- Loren Eiseley

ABSTRACT

This thesis aims to evaluate the role of overseas development assistance in the delivery of water and sanitation related MDGS from a systems perspective, in order to deliver a more coherent framework that seeks to reduce developing countries' water and sanitation needs. To achieve this, an assessment of the delivery of water and sanitation related MDGs is conducted and the main causes of concern are identified. From these, funding was isolated for further exploration, as it underpins and influences the other issues. The role and extent to which funding drives the delay in the completion of the water and sanitation MDGs is investigated on a regional level from a systems perspective, looking at the funding mechanisms as a whole. A set of hypotheses accounting for the hindrance of the MDG is determined. To test said hypothesis, the part and degree to which funding mechanisms drive the delay in completing the water and sanitation MDG on a national scale is explored using the countries in Sub-Saharan Africa as a case study. The evaluation pinpoints a series of findings recognized as root causes for the lag in the achievement of the water and sanitation MDG. Once the root causes and main areas of concern are identified and the current system is understood, a solution that answers the issues is proposed and a coherent framework that aims to reduce developing countries' water and sanitation needs is developed. Based on better funding practices, a Needs Based Approach is recognized as a resolution that addresses all the problems.

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GLOSSARY

AfDB	African Development Bank
AfDF	African Development Fund
AFESD	Arab Fund
AsDB	Asian Development Bank
BADEA	Arab Bank for Economic Development in Africa
CLI	Community Led Initiative
CPI	Corruption Perception Index
CRS	Creditor Reporting System
DAC	Development Assistance Committee
GDP	Gross Domestic Product
GEF	Global Environment Facility
GNI	Gross National Income
HIPC	Heavily Indebted Poor Countries
IAEA	Inter Agency and Expert Group
IDA	International Development Association
IDB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
IsDB	Islamic Development Bank
LDC	Least Developed Countries
LIC	Low Income Countries
LMIC	Low Middle Income Countries
MDG	Millennium Development Goals
NBA	Needs Based Assessment/Approach
NDF	Nordic Development Fund
NGO	Non-Governmental Organisation
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
OFID	OPEC Fund for international Development
OPEC	Organisation of the Petroleum Exporting Countries
PAR	Participatory Action Research
PRI	Political Risk Index
SDG	Sustainable Development Goals

UMIC	Upper Middle Income Countries
UN	United Nations
UNDP	United Nations Development Program
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund
USD	United States Dollar

Chapter 1: Introduction

In an attempt to address the developmental challenges facing developing nations, the United Nations created the MDGs as an agenda outlining the main global issues recognised by the international community. These goals represent eight areas believed to be a universal right (United Nations, 2012).

Access to safe drinking water and adequate sanitation was brought to the world's attention in 2000 as part of the Millennium Development Goals (MDG) target 7.C. Target 7.C of MDG 7 is to halve by 2015 (from 1990 levels) the proportion of the population without sustainable access to safe drinking water and basic sanitation (Dar and Khan, 2011). The aim of this was to encourage more action by the international community to tackle the issues identified in the MDGs and turn perceived insurmountable problems into achievable targets.

The MDG were enthusiastically embraced and adopted by all member states and non-governmental organisations (NGOs). However, the simplicity of the goals encouraged vertical programming (projects with specific and defined objectives, relating to a single condition and a short to medium term) and required getting fixed proportions of the population to reach particular targets. This resulted in the channelling of action towards individuals closest to the threshold, and therefore contributed to greater inequality (The Lancet, 2013). While trying to achieve target 7.C, most countries divided the goal into two, tackling water and sanitation separately. Whilst many countries succeeded in achieving the water target within ten years, sanitation lagged behind. This discrepancy was visible early on, even when calculating the 1990 baseline. Many nations reported high access rates to safe drinking water and very low access rates to sanitation. This trend continues.

In spite of the continued efforts and contributions by the international community, the MDG targets are not on track, with a large proportion of the global population without access to safe drinking water and adequate sanitation. This cannot be solely attributed to a lack of funds. Humanitarian aid funding has tripled in a decade and is estimated to exceed 18 billion USD per year, yet it is still far from adequate to meet the demand (Development Initiatives, 2006, Smillie and Minear, 2003). While funding in the aid sector is increasing, for example the funding of international humanitarian assistance for disaster relief alone has increased from 12.9 billion USD in 2006, to an estimated 16.7 billion USD in 2010 (Gerdin et al., 2014), the situation does not seem to be improving at the same rate. Demand for aid continues to grow at a greater pace than funds. With a rise in competing stresses, it has never been more important to minimise misuse and improve effective resource allocation. This is particularly relevant within the water and sanitation sector because there are limited resources and so it is extremely important that all funds are effectively and efficiently used.

The investment required to meet the MDGs have increased from an estimated 18 billion USD per year to 32 billion USD per year, over the five-year period from 2011 to 2015 (Hutton, 2012). While there have been many different estimates, the global deficit of aid funding cannot be reliably estimated due to the lack of accurate and recent data on governmental and agency spending on water and sanitation in the developing world (Hutton and Bartram, 2008). Not only is more funding required but

better spending is necessary. An increase in investment is not justifiable until financial misuse that occurs is eliminated. This discrepancy is a result of funds spent in the wrong places, or on expensive and unsustainable technologies (WaterAid, 2012). For better and sustainable financing, there is great need for transparency, better monitoring, and closer alignment between donors and recipients (Bain et al., 2013). A lack of transparency and understanding about budgets, spending, and results creates opportunities for corruption (WaterAid, 2012). This highlights the need for additional support and greater cooperation in developing financial mechanisms to increase the availability of capital for water and sanitation development (Hecht, 2004, Hutton and Varughese, 2016). While there have been significant efforts aimed at improving and revolutionising the financing system at the implementation level, the allocation of funds seems overlooked as a probable underlying cause. Despite considerable increases in aid funding to the water and sanitation sector, little attention has been given to the effectiveness of existing funds in the sector, resulting in scant literature on the subject (Gopalan and Rajan, 2016). In order to perform better and increase access rates to safe drinking and adequate sanitation, it is important to understand the current system. An extremely important issue in funding the water and sanitation sector is understanding how nations utilize the limited ODA designated to the water and sanitation sector to achieve the best possible performance in delivering services (Salami et al., 2014). Funding is isolated as a main cause for concern for further exploration, as it underpins and influences the other issues. The role and extent to which funding drives the delay in the completion of the water and sanitation MDGs is investigated on a regional level from a systems perspective, looking at the funding mechanisms as a whole.

The effectiveness of aid is an ongoing debate that has brought about many studies examining the impact of aid on various developmental indicators. In a departure from aid-growth literature, these papers suggest that targeted interventions produce the desired impacts (Gopalan and Rajan, 2016). Mishra and Newhouse (2009) found that child mortality in recipient countries is lowered by directed aid, while Pickbourn and Ndikumana (2013) attempted to assess the impact of aid volume to sectorial allocations on human development outcomes and gender equity, and its dependency on initial levels of human development and per capita income (Pickbourn and Ndikumana, 2013). Another example is the work done by Michaelowa and Weber (2006) and Dreher, Nunnenkamp, and Thiele (2008) on the contribution of aid to increased primary school enrolment (Dreher et al., 2008, Michaelowa and Weber, 2006). Despite the recognised importance of aid funds to the water and sanitation sector, empirical studies on the impact of aid effectiveness in the sector is lacking, particularly on a large panel of countries (Gopalan and Rajan, 2016, Botting et al., 2010).

The link between misuse of funds and access rates suggest that a change in funding activities has the potential to influence the rate of progress. Therefore this thesis aims to evaluate the role of overseas development assistance (ODA) in the delivery of water and sanitation related MDGs from a systems perspective, and to offer a more coherent framework to reduce developing countries' water and sanitation needs.

The part played by the aid sector in the provision of safe drinking water and adequate sanitation is redefined using a systems approach in this thesis. This novel reinterpretation of an ongoing issue

highlights the potential to improve the effectiveness and efficiency of intervention projects in the water and sanitation sector. A comparison of data of access rates to safe drinking water and adequate sanitation, and aid funding directed to the water and sanitation sector was completed. Through the analysis, the gaps and points of failure in the funding mechanisms were identified. These hypotheses were tested using the countries in Sub-Saharan Africa as a case study. With nearly 80% of people without access to improved sanitation and safe water sources concentrated in three regions: Sub-Saharan Africa, Southern Asia, and Eastern Asia (Hutton et al., 2007), most efforts to increase access to social services in Africa focusing on mobilising financial resources, and not on the effectiveness of the existing allocations in achieving development goals (Ndikumana and Pickbourn, 2017), and a wide range of scenarios represented in Sub-Saharan Africa, this thesis focus on the aforementioned region. It offers the opportunity to explore several different circumstances associated to access rates, and therefore is a good extrapolation of the global situation. A comprehensive analysis of the funding practices in the region demonstrates the misallocation of resources in the water and sanitation sector and offers the opportunity to quantify the progress made in achieving MDG 7.

The evaluation pinpoints a series of findings recognized as root causes for the lag in the achievement of the water and sanitation MDG. Once the root causes and main areas of concern are identified and the current system is understood, a solution that answers the issues is proposed and a coherent framework that aims to reduce developing countries' water and sanitation needs is developed. Based on better funding practices, a Needs Based Approach is recognized as a resolution that addresses all the problems.

This research is unique in its compilation and comparison of access rates and funding data in order to establish the relationship between access rates and funds and understand the delays in achieving MDG 7. The findings of this study demonstrate the benefit of adopting a systems based approach to funding the water and sanitation sector, based on the recognised points of failure of the funding mechanisms.

The proposal of a Needs Based Assessment is a tailored solution to meet and fill the gaps identified by the analysis of the financial data and access rates, while increasing the efficiency and effectiveness of intervention projects.

Chapter 2: Background

The current aid financing system consists of bilateral, multilateral agreements, and grants negotiated by donor nations and recipients. A prime example of such is the Organisation for Economic Cooperation and Development (OECD). The mission of the OECD is to promote policies that improve economic and social wellbeing, and acts as a large forum bringing together governments and development agencies to collaborate in solving common problems and share experiences (OECD, 2014b). It is subdivided into committees, each focused on an issue covered by OECD member states. Much like the United Nations (UN), the work of the committees is to facilitate agreements. As described in its mandate, the Development Assistance Committee (DAC) is the principal forum for bilateral agreements related to development cooperation (all aid funding and agreements fall within the DAC), particularly for water and sanitation. The overall objective of the DAC network on environmental and development cooperation is the promotion of sound, sustainable environmental practices, using the expertise and knowledge of its member states (OECD, 2015). It is important to mention that unlike monetary institutions, such as the World Bank or the International Monetary Fund (IMF), the OECD is not a funding body. It does not allocate financial resources for loans, subsidies or grants. As such, all activities orchestrated by OECD member states are not bound by international terms and conditions agreed upon by all OECD member states (OECD, 2014a). Therefore, all agreements are subject to terms and conditions dictated by the funding agency or member state.

The motivation to impart ODA is to provide assistance and support to populations that are in need. Therefore it is understood that all ODA and relief efforts are bestowed based on impartial, fair, and unbiased principles. It is also assumed to be proportionate to the recognised necessity, and independent of donor stipulations (Smillie and Minear, 2003). However, in reality, ODA is driven by donor domestic foreign policy and politics, media coverage, and personal and institutional leadership. Olsen et al. (2003), Smillie and Minear (2003), Loewenberg (2005) reveal that geopolitical interests of donor nations and external factors heavily influence aid.

Late funding or unrequited pledges affect the work on the ground, often causing the abrupt termination of projects due to lack of funds. Donor earmarking, tying assistance to donor's nationals, NGOs, and contractors also limit the provision of relief. High profile regions often receive earmarked aid funds for the same activity several times over and are unable to utilise the excess funds to meet other crucial needs (Smillie and Minear, 2003). When given the freedom to allocate aid funding, too many pressures unrelated to the ODA sector interfere with the process. The international community, and specifically political bodies, are not sound financial decision makers working in the best interests of the most vulnerable.

The OECD has always played a part in international development, not only in facilitating funding, but also influencing key priorities. The international development targets identified in the DAC report heavily influenced the determination of the language used in the Millennium Declaration, the

precursor of the MDGs (OECD DAC, 1996). With the addition of text relating to environmental sustainability, the outlined targets were transformed into the MDGs (Waage et al., 2010).

2.1 Millennium Development Goals

In 2000, the United Nations drafted the Millennium Development Goals (MDGs) (Table 1) in an effort to stimulate action to meet the needs of the world's poorest. These goals represent eight areas the international community believed to be universal rights (UN, 2012, Waage et al., 2010) and cover issues such as health, trade, the environment and development. One of the greatest assets of the MDGs was their simplicity and clarity (Podger and Trewin, 2014) which encouraged enthusiastic adoption and acceptance of the goals by governments and civil societies (The Lancet, 2013, Waage et al., 2010). The organisation of the MDGs as a set of eight definite goals, with 18 explicit targets, and 48 measurable indicators, outlined clear and categorical aims to be achieved by countries (Waage et al., 2010). With clearly stated objectives outlined, along with pre-determined indicators to monitor progress, the MDGs seemed like a fool proof plan to address the issues affecting the most vulnerable.

Table 1: Millennium Development Goals

The Millennium Development Goals	
Goal 1	Eradicate extreme poverty and hunger
Goal 2	Achieve universal primary education
Goal 3	Promote gender equality and empower women
Goal 4	Reduce child mortality
Goal 5	Improve maternal health
Goal 6	Combat HIV/AIDS, malaria and other diseases
Goal 7	Ensure environmental sustainability
Goal 8	Global partnership for development

This thesis focuses on target 7.C of MDG 7 as it has far-reaching effects on global health and can be considered to be a prerequisite for the success of the other MDGs (Fukuda-Parr, 2010, Saith, 2006, Mara et al., 2010, Poku and Whitman, 2011, Vandemoortele, 2011b, Stein and Horn, 2012, Hecht, 2004, Hunter et al., 2010, Hutton et al., 2007, Waage et al., 2010). Water is necessary for survival and life, and as such is recognised as both a human and basic right. Ensuring and providing access to safe drinking water and adequate sanitation is implicitly protecting vulnerable populations from poverty and disease, granting the opportunity at a livelihood, education, and increasing development. Due to its acknowledged status, there have been many efforts and investment in the water and sanitation sector. The inclusion of access to water and sanitation facilities in the MDGs has created measureable targets and increased monitoring by international bodies and governments. This has made available expansive and relatively complete datasets of access rates over the 15 year period,

as well as financial data tracking funding in the sector. Despite increased investment and endeavours, progress in the completion of target 7.C has been lacklustre and disproportionate.

MDG 7 seeks to Ensure Environmental Sustainability and is subdivided into four targets (United Nations, 2015):

- 7.A Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources,
- 7.B Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss,
- 7.C Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation,
- 7. D Achieve, by 2020, a significant improvement in the lives of at least 100 million slum dwellers.

Figure 1 illustrates the areas affected by access to safe drinking water and adequate sanitation. As shown by Hecht (2004), Hunter et al. (2010), Hutton et al. (2007), and Fukuda-Parr (2010), access to safe drinking water and adequate sanitation has a ripple effect on areas such as health and education and has been linked to decreasing the burden of disease, reduction in malnutrition, increased development and trade, better livelihood and stronger workforce, the protection of girls and improved maternal health, and assured education (Mara et al., 2010, Johnston et al., 2011, Moe and Rheingans, 2006, Poku and Whitman, 2011, Vandemoortele, 2011b, Stein and Horn, 2012, Hecht, 2004, Hunter et al., 2010, Fewtrell et al., 2005, Shanks and Schull, 2000, Sorenson et al., 2011, Waage et al., 2010).

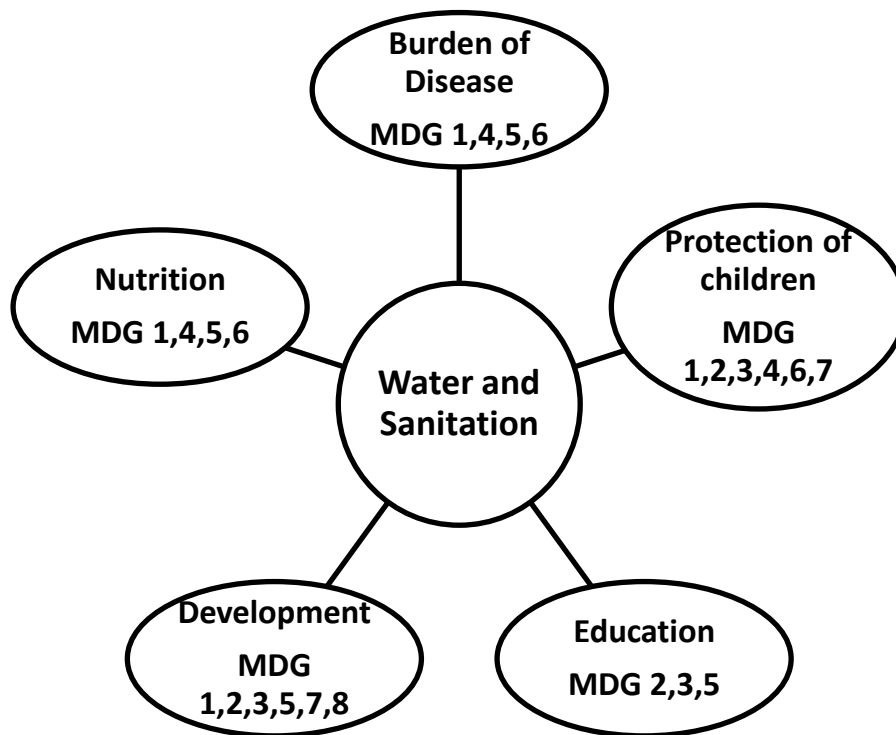


Figure 1: Areas affected by access to safe drinking water and adequate sanitation

Target 7.C, to halve by 2015 (from 1990 levels) the proportion of the population without access to safe drinking water and basic sanitation (Dar and Khan, 2011), has attracted criticism due to its wording. Its simplicity is viewed as a double-edged sword. By limiting the number of goals and targets, many identified issues were omitted from the agenda. This narrow focus encouraged stand-alone and vertical programming, limiting interventions to specific areas to the detriment of the overall needs (The Lancet, 2013, Waage et al., 2010).

The appropriateness of some indicators used to evaluate the progress of target 7.C has also been called into question. Many authors, including Bain et al. (2012), Dar and Khan (2011) consider the inclusion of the term ‘safe’ in the water indicator of 7.C and ‘adequate’ for the sanitation indicator of target 7.C has caused the overestimation of both the baseline and the proportion of people having achieved access (Bain et al., 2012, Dar and Khan, 2011, Zawahri et al., 2011, Stein and Horn, 2012). This is particularly problematic, as it is unclear what would be determined as ‘safe’ or ‘adequate’. With the definition of the core terms stated, it is increasingly more difficult to determine the actual proportion of the population with access to ‘safe’ drinking water and ‘adequate’ sanitation, eschewing both the original baseline and stats on progress towards meeting target 7.C. With overestimations, many areas actually lagging behind may be reporting completed targets, and therefore shifting the focus away from water and sanitation projects.

Furthermore, some authors (Bain et al., 2012, Dar and Khan, 2011, Zawahri et al., 2011, McGregor and Sumner, 2010) have identified the terminology of the MDG target as a weakness due to its focus

on thresholds and its target centred nature. The objective of many MDGs consists of reaching a certain state by decreasing or increasing a proportion of the population clear of a determined threshold (The Lancet, 2013, Waage et al., 2010). In an effort to meet targets and achieve goals, some action has been diverted to those areas already closest to the threshold, rather than those with the most merit (Waage et al., 2010).

A target-focused approach is particularly detrimental when increasing accessibility to water and sanitation (MDG 7c) as it encourages treatment of the 'symptoms' rather than remedying the 'disease'. As such, it has contributed to greater inequality in areas such as geographically, subsidising programs that favour the well-off ignoring the poor (Mara et al., 2010) and, hard to reach populations (ethnically or culturally) (Waage et al., 2010) creating short term solutions with no follow up (Rietveld et al., 2009).

2.2 Sustainable Development Goals

From 2000 to 2015, the MDGs drove progress in several important areas including increasing access to water and sanitation facilities, reducing child mortality, reducing income poverty and improving maternal health. The MDGs also advanced the fight against HIV/AIDS and treatable disease such as tuberculosis and malaria and inspired global movements towards free primary education. All great advancements in tackling the 'indignity of poverty' (United Nations Development Programme, 2017a) and improving the quality of life of a large proportion of the population in the developing world. However, a missing key component in the MDGs was sustainability in the implementation of the goals. Through the establishment of measurable and universally adopted objectives, the MDGs launched a global effort to tackle development priorities, and providing a base for the Sustainable Development Goals (SDGs) to build on. Some of the key successes of the MDGs are (United Nations Development Programme, 2017a):

- Since 1990, child mortality has been reduced by more than half
- Since 1990, over 1 billion people have raised out of extreme poverty
- Since 1990, the total number of out of school children has decreased by more than half
- Since 2000, the total number of HIV/AIDS infections has dropped by almost 40%

The SDGs ensue the MDGs in striving to tackle pressing challenges facing the world (Chapman, 2016, Glaser, 2012, Costanza et al., 2016) and came into effect on January 1st 2016 as part of the 2030 Agenda for Sustainable Development (United Nations Development Programme, 2017b, United Nations, 2017b). The SDGs were developed following the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012 (United Nations Development Programme, 2017a, Ruckert et al., 2017, Gain et al., 2016) and were designed to be a set of universal goals to meet urgent political, economic, and environmental global issues (Glaser, 2012, Tebbutt et al., 2016, Costanza et al., 2016).

Over the next 15 years, the SDGs aim to build on the successes and achievements of the MDGs, and put an end to all types of poverty. They will continue the work to end hunger, improve health services, increase child schooling beyond primary education, and reach full gender equality, as well as newly prioritised issues (United Nations, 2017b, Allen et al., 2016, Costanza et al., 2016). They also call for a shift towards sustainable practices, and involve striving to create a safer, more sustainable and prosperous international community (United Nations Development Programme, 2017b, Glaser, 2012, Tebbutt et al., 2016, Costanza et al., 2016). An essential aspect of sustainable practices is the minimisation of waste and use of resources, as seen frequently in the aid sector. The spirit of the SDGs is to provide more and better services to the global population, and improve on the work being done.

Unlike the MDGs, the SDGs are broader in scope and aim to tackle the root causes of poverty, while covering the three dimensions of sustainable development (Allen et al., 2016). Sustainable development is defined as development and consumption that meets the needs of the present generation without compromising the abilities of future generations to fulfil their needs (Dernbach and Cheever, 2015). The UN identifies three core, interconnected elements crucial to achieving sustainable development: social inclusion, economic growth and environmental protection (United Nations, 2017a, Costanza et al., 2016). The SDGs expand on the work done for the MDGs, with the ambition to cover inequalities, cities and human settlements, economic growth, industrialisation, climate change, ecosystems, energy, sustainable consumption and production, justice and peace (United Nations, 2017a, Allen et al., 2016). The SDGs, like the MDGs, are universal; however they apply to all countries, rather than focusing solely on the developing world (Glaser, 2012, Allen et al., 2016, Costanza et al., 2016).

A core trait of the SDGs which improves on the MDGs, is their focus on implementation, technology and capacity building (United Nations, 2017a). The SDGs are based on the spirit of partnership and pragmatism to improve life, in a sustainable fashion. The SDGs provide clear targets and guidelines to be adopted by all countries according to their urgencies and environmental concerns at large (United Nations Development Programme, 2017b, Pogge, 2015). Because they pursue an inclusive agenda, the SDGs are considered as essential to confront the sources of poverty, and unite the global community (Allen et al., 2016).

What separates the SDGs from previous initiatives, is its capacity to encompass universal issues affecting the globe, reaffirming international commitment to putting an end to poverty (United Nations Development Programme, 2017a). As well as including the areas determined in the MDGs, the SDGs cover new fields comprising climate change, sustainable consumption, and economic inequality, among other concerns. Glaser (2012), Allen et al. (2016) consider the SDGs as unique in their understanding of the current state of affairs and their abilities to motivate countries to protect the planet, while promoting prosperity (United Nations, 2017b, Glaser, 2012, Allen et al., 2016).

The SDGs agenda outlines 17 interconnected goals (table 2), highlighting that they are interrelated and that there are ancillary effects of achieving one goal on the remaining goals; the key to

succeeding in one aspect requires work in another (United Nations Development Programme, 2017a, Ruckert et al., 2017). The SDGs appreciate that ending poverty includes tackling social needs (health, education, social opportunities), environmental protection and climate change, as well as creating strategies to shape economic growth (United Nations Development Programme, 2017b). The 17 SDGs and 169 targets identified in the agenda are monitored through the application of global indicators (Ruckert et al., 2017), developed by the Inter Agency and Expert Group on SDG indicators (IAEA-SDGs) approved by the UN Statistical Commission and adopted by the Economic and Social Council and the General Assembly (United Nations, 2017a).

As with the MDGs, The SDGs are not legally binding and depend heavily on the cooperation and commitment of member states. This places the responsibility of monitoring, implementation and follow-up on individual countries, requiring timely, accessible and quality data collection (Allen et al., 2016). This proved to be a challenge when assessing the implementation of the MDGS, and led to overestimations of progress. It also left room for misallocation of resources and ultimately failure to provide promised services. Any reported improvements on a global or regional scale will be based in national-level analyses (United Nations, 2017b, United Nations, 2017a, Allen et al., 2016). Governments are also expected to determine and develop national indicators to monitor the progress of goal and target achievement. On the global scale, approximately 300 indicators have been identified, equating to 2 indicators per target. A SDG progress report will be prepared by the Secretary-General on an annual basis, along with an annual meeting of the High-level Political Forum on sustainable development to monitor and review progress as outlined in the Addis Ababa Action Agenda (the third international conference on financing for development) (United Nations, 2017a).

Table 2: Sustainable Development Goals

Sustainable Development Goals	
Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote well-being for all at all ages
Goal 4	Ensure inclusive and quality education for all and promote lifelong learning
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	Ensure access to water and sanitation for all
Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8	Promote inclusive and sustainable economic growth, employment and decent work for all
Goal 9	Build resilient infrastructure, promote sustainable industrialisation and foster innovation
Goal 10	Reduce inequality within and among countries
Goal 11	Make cities inclusive, safe, resilient and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts
Goal 14	Conserve and sustainably use the oceans, seas and marine resources
Goal 15	Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss
Goal 16	Promote just, peaceful and inclusive societies
Goal 17	Revitalise the global partnership for sustainable development

The criticisms levied against the MDGs are still very relevant to the SDGs. A main reproach repeatedly mentioned is the choice of words and vagueness of terms in the targets and indicators. In efforts to be inclusive, the SDGs are very broad and ambiguous in their terminology, offering no guidance and open to interpretation (**Dernbach and Cheever, 2015, Pogge, 2015**). This is in line with the expectation of the SDGs that countries and governments will establish and form national indicators to examine improvement. Countries are also responsible for scrutinising and following-up

on their implementation, entailing accessible and quality data collection (Allen et al., 2016). Not only does this open the SDGs to failure, it increases the likelihood of overestimation of progress, and misallocation of resources. It also allows for sustainability to be easily manipulated and framed into falsely legitimising poor behaviour (Dernbach and Cheever, 2015). Another critique is, besides the unspoken understanding that nations are responsible, there is no clear breakdown of roles and accountabilities to realise the SDGs or a clear sense of countries' function within a sustainable division of responsibilities (Pogge, 2015). All the above lead to the same types of failures experienced with the MDGs and calls for a change in approach to meeting the needs of the poor and vulnerable.

2.3 Current State of Affairs

The MDG 7 target has yet to be met in its entirety, with the water target achieved globally. There have been significant achievements in the access to safe drinking water – 2.3 billion people gained access to improved water sources from 1990 to 2012 – and improvements in access rates of sanitation – increased by almost 2 billion people from 1990 to 2012. However an estimated 2.5 billion people were still without improved sanitation in 2012 (UNICEF and WHO, 2014). According to the World Health Organisation (WHO) and the United Nations Children's Fund (UNICEF)'s Joint Monitoring Programme for Water Supply and Sanitation, the target of expanding access to adequate sanitation to 75% of the world population may not be reached until 2026, missing the 2015 deadline by over 10 years (UNICEF and WHO, 2012). In addition, although the water target has been achieved, it is estimated that 884 million people still rely on unimproved drinking water sources, and only 60% of Sub-Saharan Africa's population have access to improved water sources (Dar and Khan, 2011). Thus, despite the progress made, large disparities in access to water and sanitation persist, both geographically and also between rural and urban populations. Globally, 80% of the urban population use improved sanitation facilities and 96% use an improved water supply source, compared to 47% and 81% respectively of global rural populations (UNICEF and WHO, 2014). While access to improved water sources in the developing world stands at 86%, it is only 63% in areas designated as 'least developed'. Similarly, sanitation coverage in developing regions stands at 56% compared to 95% in developed regions, with sub-Saharan Africa at only 30% (UNICEF and WHO, 2012). Nearly 80% of people without access to improved sanitation and safe water sources are concentrated within three regions: Sub-Saharan Africa, Southern Asia, and Eastern Asia (Hutton et al., 2007). With the target year, 2015, now passed, the international community needs to rethink their strategies.

2.4 Initiatives to Increase Access to Water and Sanitation Facilities

Since the introduction of the decade for action 'Water for Life', there have been many initiatives aimed at increasing access to safe drinking water and adequate sanitation over the years. Two such initiatives with growing popularity are Community Led Initiatives, championed by academics, and reinvent the toilet challenge, launched by the Bill and Melinda Gates foundation.

Reinventing the toilet challenge is a prime example of how private sector foundations are trying to tackle access rates in the water and sanitation sector in new and inventive ways. While community

Led Initiatives is a concept developed to better understand cultural biases that affect access rates. It has been backed by many international NGOs, such as UNICEF, WaterAid, and the Water and Sanitation Program of the World Bank. Also, it is an interesting concept that could be integrated into a needs based assessment. Neither necessarily involves complex and complicated systems, but rather focuses on finding adaptable, easy to implement solutions.

2.4.1 Community Led Initiatives

Community Led Initiatives (CLI) entail the involvement of the community in the consultation period and the decision making process. It is based on a participatory approach and aims to increase the success of projects through engagement and consensus of all stakeholders. The main idea behind the concept of Community Led Initiatives is to invite impacted communities to evaluate and determine their needs, collaborate to find a solution and participate in its adoption (Papafilippou et al., 2011, Ahari et al., 2012, Creamer, 2015). This process is greatly aided by following Participatory Action Research (PAR) principles. PAR is a cyclical process that centres on evaluating, solving, and re-evaluating problems (figure 2). As stated, PAR is a cyclical process that requires constant revision and definition of the problem with newly generated knowledge from the actions taken.

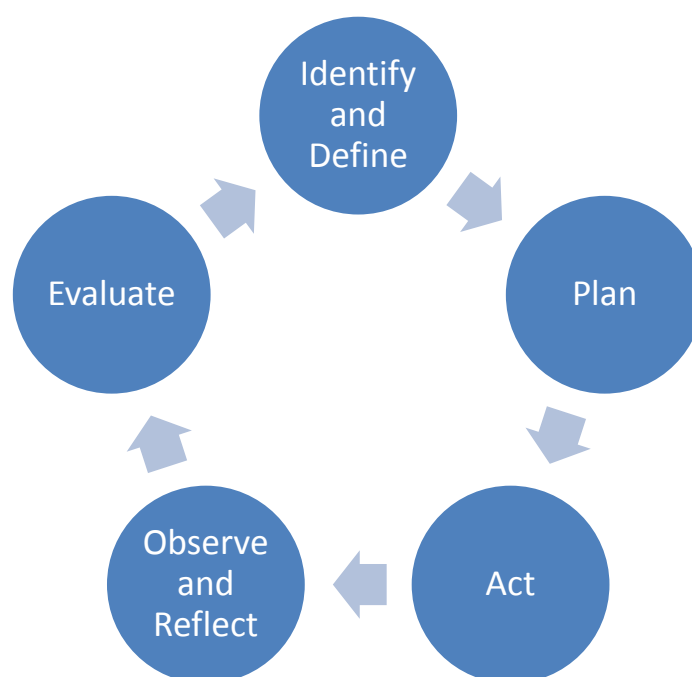


Figure 2: Participatory Action Research process often used in Community Led Initiatives

As identified by Ahari et al. (2012), Papafilippou et al. (2011), Creamer (2015), and Awio et al. (2007), benefits of community participation in decision making processes include;

- An increase in democracy: the community feels included and heard throughout the process. They are also more likely to listen to a community peer versus an outsider or politician (Creamer, 2015, Reeves et al., 2011).

- The mobilisation of resources and energy: when included in the process, the community are more likely to participate and contribute both resources and energy to the successful completion of projects.
- The development of more holistic and integrated approaches leading to more successful problem solving.
- Better and effective decision-making: with the input of the community included, community members are more likely to utilise the services offered.
- The assurance of ownership and sustainability of programs: by allowing the community to participate in the decision making process, they assume ownership of the project and thereby assure the continuity and sustainability of programs.
- The empowerment of communities: community participation in decision making improves the success of interventions as a result of them being embraced and accepted by the communities concerned.

Community Led Initiatives are a joint effort between communities and the specialists enlisted. Both parties work together as equals to identify and determine the needs of the community, brainstorm solutions, and collaborate to achieve them. Neither party is considered the expert, the specialist guide the process and offer technical expertise, while the community is the driving force and final decision maker (Papafilippou et al., 2011, Ahari et al., 2012, Creamer, 2015, Eschenfelder, 2010).

CLIs are commonly promoted as an effective way of inciting individuals and communities to adopt proposed interventions and more sustainable solutions (Creamer, 2015). This approach is used to engage the public as a vehicle to deliver desired behaviour, and motive for altruistic behaviour (Pretty and Ward, 2001). Pretty and Ward (2001), suggest that with high social capital, created through public engagement, individuals are more open to invest in collective activities and more confident that others will do the same. This fosters community capacity building and a positive feedback loop, empowering communities to lead future projects (Assadourian, 2008, Walker et al., 2010). Community-led initiatives also cultivate innovations that are customised to the values and interests of communities and be alternatives to mainstream thinking (Creamer, 2015, Seyfang and Smith, 2007). It has often been used as an alternative to mainstream aid projects, in effort to increase efficiency and effectiveness, such as the Community Led Total Sanitation initiative.

2.4.2 Reinvent the Toilet Challenge

The Bill and Melinda Gates foundation's Water, Sanitation & Hygiene team initiated a challenge to reinvent the toilet, in 2011, to bring sustainable sanitation to populations that lack access to safe, affordable sanitation (Bill & Melinda Gates Foundation, 2017). The challenge issued to universities, was 'to design toilets that can capture and process human waste without piped water, sewer or electrical connections, and transform human waste into useful resources, such as energy and water, at an affordable price' (Bill & Melinda Gates Foundation, 2013a). Since launching the initiative, 16 researchers, using innovative approaches for the safe and sustainable disposal and management of human waste, from around the globe were awarded grants to further their research and build

prototypes (Bill & Melinda Gates Foundation, 2017). All projects are based on fundamental engineering processes, and range from manual vacuum pumps and membranes to remove and vaporise water from human waste (Cranfield University), to the development of a system using microwave technology to convert human waste into electricity (Delft University of Technology), or a self-contained, solar-power wastewater treatment system (California Institute of Technology) (Bill & Melinda Gates Foundation, 2013b). The criteria listed in the challenge brief states that the toilet will (Bill & Melinda Gates Foundation, 2017):

- Eliminate harmful bacteria from human waste and recover resources (clean water, energy, nutrients).
- Operate without access to a sewer, water or electricity.
- Cost less than 0.5 USD per day per user.
- Encourage sustainable and profitable sanitation services to operate in urban and poor settings.
- Represent an innovative and aspirational product that will be in demand globally.

The initiative has been expanded to include country-specific challenges, with both Reinvent the Toilet Challenge: China and Reinvent the Toilet Challenge: India launched in 2013. Reinvent the Toilet Challenge: India is part of a wider partnership with India's Biotechnology Industry Research Assistance Council (BIRAC) to collaborate on (Bill & Melinda Gates Foundation, 2017):

- Reducing maternal and child morbidity and mortality
- Technical and scientific solutions to infectious diseases
- Encouraging and strengthen India's scientific capacity
- Technical and scientific advancements related to agriculture
- Scientific innovations in food and nutrition.

The foundation has also held fairs showcasing all the innovations and prototypes submitted to the Challenge, bringing together participants and representatives from target communities. It also heavily invests in advocacy and policy work to encourage behaviour change and investment suitable for the most vulnerable, focusing their efforts in South Asia and Sub-Saharan Africa, where the need is the greatest (Bill & Melinda Gates Foundation, 2012).

2.5 Region of focus: Sub-Saharan Africa

This thesis will focus on Sub-Saharan Africa. Nearly 80% of the population lacking access to safe drinking water and adequate sanitation are concentrated within three regions: Southern Asia, Eastern Asia, and Sub-Saharan Africa (Hutton et al., 2007). Due to a large and dense population, years of colonialism and neglect, a history of war, the exploitation of human and natural resources, and an increased risk to global health (as demonstrated with the recent Ebola outbreak), Sub-Saharan Africa is of particular significance. The area is viewed as one of the poorest regions globally and this is reflected in its access to water and sanitation. The latest figures available in World DataBank, the

World Bank Database, reveal 67.6% of the population have access to an improved water source, while only 29.7% of the population have access to improved sanitation facilities (World DataBank, found at: <http://databank.worldbank.org/data/reports.aspx?source=millennium-development-goals>). While the water target has been achieved on a global level, the regional targets for Sub-Saharan Africa have yet to be met. 67.6% of the population have access to safe drinking water missing the target of 77.35%. Similarly, only 29.7% of the population have access to adequate sanitation, with the target of 62.7%. This is confirmed by reports that the majority of countries lagging behind on meeting the targets are located in Sub-Saharan Africa (UNICEF and WHO, 2012, Waage et al., 2010). Another concerning figure relates to open defecation. In 2010, 25% of Sub-Saharan Africa practiced open defecation, while only 28% of the population had access to adequate sanitation (World DataBank,(UNICEF and WHO, 2012)). Comparably, 3% of the global population use untreated surface water as a primary source of water, 94% of those are concentrated in Sub-Saharan Africa (UNICEF and WHO, 2012). For these reasons, the countries in Sub-Saharan Africa offer good case studies for consideration of inadequacies in funding and access rates, as the region encompasses a wide range of development scenarios and levels of target completion ranging from 47.9 % of the population with access to an improved water source in Equatorial Guinea to 99.9% of the population with access to an improved water source in Mauritius, or 6.7% of the population with access to improved sanitation facilities in South Sudan to 98.4% of the population with access to improved sanitation facilities in the Seychelles in 2015 (Word DataBank).

Despite the criticism, the MDGs provided the means to measure and quantify increases in rates of access to safe drinking water and adequate sanitation. Based on these data, in particular the evolution of access rates considered in combination with funding to the sector, a clear picture of the effects investment has had on expanding access to safe drinking water and adequate sanitation is made. Previous studies have analysed and scrutinised access rates or the available funding data in order to identify specific areas of failure to meet targets. In contrast, this research employs a novel approach to evaluating the lack of success of current state, by examining the evolution of access to safe drinking water and adequate sanitation. Unlike previous analyses, this research adopts a systems approach to the water and sanitation sector, reviewing its success and failures as a whole. In doing so, this research aims to determine an approach that offers solutions to the identified failures of the current process and closes the gaps in access to safe drinking water and adequate sanitation.

Chapter 3: Aim and Objectives

3.1 Aim

The aim of this thesis is to evaluate the role of Overseas Development Assistance in the delivery of water and sanitation related MDGs from a systems perspective, in order to deliver a more coherent framework that aims to reduce developing countries' water and sanitation needs.

3.2 Objectives

The main objectives of this thesis are as follows:

- Review the delivery of the water and sanitation MDG and identify reasons for delays in the completion from a systems perspective.
- Investigate the role of funding and extent to which funding mechanisms impact the delivery of the water and sanitation MDG.
- Investigate the role of funding mechanisms in the completion of the water and sanitation MDG at the national level, using countries in Sub-Saharan Africa as a case study.
- Identify opportunities for improvement based on the common barriers identified above in achieving the water and sanitation MDG.
- Develop a coherent framework for better funding practices that aims to deliver MDG 7 by reducing the sanitation and water needs of developing countries.

3.3 Significance of Research

This work is unique in its investigation and assessment of the drivers causing the delay in the completion of the water and sanitation MDG. It assesses the current delivery of the MDG and determines the extent of the problem, as well as the main causes for concern. Funding was isolated as a main source of delay in the completion of the water and sanitation MDG, as it underpins other areas.

This thesis focuses on funds given for projects to increase access rates to safe drinking water and adequate sanitation, particularly in the developing world. To better understand the current system, financial data and access rates relating to the water and sanitation MDG were collected and analysed.

As a prime example of the current aid financing system, financial data from the OECD were used to analyse donor behaviour and reveal any potential links between funding and access rates. Access rates to safe drinking water and adequate sanitation were retrieved from the World Bank Database: World DataBank. A global overview of funds donated in the water and sanitation sector was completed, followed by a more detailed analysis of the sub-sector spending for Sub-Saharan Africa. Sub-Saharan Africa was chosen as the subject of a more in depth evaluation because it encompasses a wide range of scenarios. South Africa and Botswana have high access rates to safe

drinking water and adequate sanitation, while access rates in Madagascar are low and extremely low in Somalia. Sub-Saharan Africa offers the opportunity to explore several different circumstances explain access rates, and therefore is a good extrapolation of the global situation.

It is widely accepted that, with mixed results across regions, progress towards meeting the targets of the MDG framework has been slow and disproportionate. Although this has been attributed to many factors, the misallocation of funds aimed towards investment in the water and sanitation sector is often overlooked as a contributing factor. As a result there have been calls for better investment in the sector to improve access rates (Hecht, 2004), and to increase resources and service uptake at the population level (Hutton et al., 2007). While there have been significant efforts aimed at improving and revolutionising the system at the implementation level, the allocation of funds seems disregarded as a probable underlying cause.

Therefore, this thesis aims to evaluate the role of ODA in the delivery of water and sanitation related MDGs from a systems perspective, and to offer a more coherent framework to reduce developing countries' water and sanitation needs. This is accomplished through the assessment of the delivery of the MDG and the identification of gaps and points of failure in the funding mechanism and proposing a systems based approach to tackling the acknowledged issues.

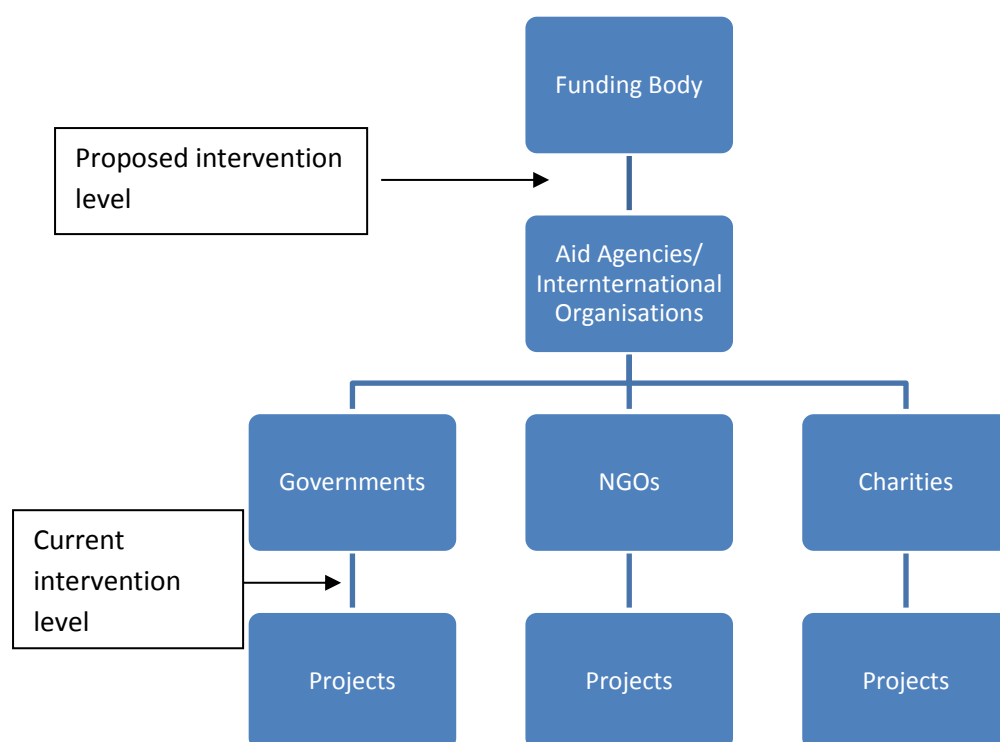


Figure 3: Financial flow chart in the aid sector

This research is unique in its compilation and comparison of access rates and funding data in order to establish the relationship between access rates and funds and understand the delays in achieving MDG 7. The findings of this study demonstrate the benefit of adopting a systems based approach to

funding the water and sanitation sector, based on the recognised points of failure of the funding mechanisms.

The proposal of a Needs Based Assessment is a tailored solution to meet and fill the gaps identified by the analysis of the financial data and access rates, while increasing the efficiency and effectiveness of intervention projects.

3.4 Conceptual Methodology and Thesis Structure

3.4.1 Conceptual Methodology

This thesis aims to evaluate the role of ODA in the delivery of water and sanitation related MDGS from a systems perspective, in order to deliver a more coherent framework that seeks to reduce developing countries' water and sanitation needs. To achieve this, an assessment of the delivery of water and sanitation related MDGs is conducted and the main causes of concern are identified. From these, funding was isolated for further exploration, as it underpins and influences the other issues. The role and extent to which funding drives the delay in the completion of the water and sanitation MDGs is investigated on a regional level from a systems perspective, looking at the funding mechanisms as a whole. A set of hypotheses accounting for the hindrance of the MDG is determined. To test said hypothesis, the part and degree to which funding mechanisms drive the delay in completing the water and sanitation MDG on a national scale is explored using the countries in Sub-Saharan Africa as a case study. The evaluation pinpoints a series of findings recognized as root



Figure 4: Conceptual Methodology of the thesis

causes for the lag in the achievement of the water and sanitation MDG. Once the root causes and main areas of concern are identified and the current system is understood, a solution that answers the issues is proposed and a coherent framework that aims to reduce developing countries' water and sanitation needs is developed. Based on better funding practices, a Needs Based Approach is recognized as a resolution that addresses all the problems.

3.4.2 Thesis Structure

Chapter 2 of the thesis reviews the relevant background literature regarding the current aid sector, including the Millennium Development Goals, the Sustainable Development Goals, and initiatives to increase access to water and sanitation facilities and Sub-Saharan Africa as a region of focus.

Chapter 3 introduces the thesis and provides an overview of the aim and significance of research. The objectives are presented, along with an outline of the thesis structure and a conceptual methodology.

Chapter 4 of the thesis assesses the delivery of the water and sanitation MDG to better understand the extent of the issue and identify reasons for delays in the completion of the goal. These include the link between water and sanitation, the effect of water on poverty, the interconnectedness of the MDGs, misallocation of funds, and the criticism and reproaches of the goals themselves. The misallocation of funds is selected for further exploration, as it underpins the other causes.

Chapter 5 of the thesis investigates the role and extent to which the funding mechanisms drive the delays in the completion of the water and sanitation MDG, through an in-depth analysis of financial and access rate data. The data reveal a set of hypotheses for the hindrance, and a link between funding and access rates. Further analysis was completed to investigate potential correlations between funding and gross domestic product, funding and population, funding and percentage of GDP, and funding and gross national income. No significant links were found.

Chapter 6 of the thesis explores the part and degree to which funding drives delays in the completion of the water and sanitation MDG on a national scale, using the countries in Sub-Saharan Africa as a case study. The evaluation pinpoints a series of findings recognized as root causes for the lag in the achievement of the water and sanitation MDG.

Chapter 7 of the thesis introduces the concept of a Needs Based Assessment and its potential as a solution that addresses all the identified issues. The methodology is defined and explained. The benefits and drawbacks of the approach are identified and discussed, as well as the current applications in the field. An analysis of the potential of the application of a needs based assessment in the water and sanitation aid sector is also presented.

Chapter 8 of the thesis discusses the hypotheses identified as causes for concern in the delivery of the water and sanitation MDG, with a particular focus on the effect funding has on the completion of the goal. The documentation and exploration of the root causes in the funding are considered to

better understand the current system from a systems perspective, and propose a solution that answers all the recognised issues. The potential of adopting a NBA is considered in tackling the delay in the completion of the water and sanitation MDG.

Chapter 9 of the thesis contains the overall conclusions of the thesis and recommendations for further research.

3.5 Publications

- Al Awar, A., Voulvoulis, N., Progress in the delivery of the water and sanitation Millennium Development Goals. (In preparation)
- Al Awar, A., Voulvoulis, N., The role of funding mechanisms in the delivery of MDG 7 (In preparation)
- Al Awar, A., Voulvoulis, N., The role of funding mechanisms in the delivery of MDG 7: The case of Sub-Saharan Africa. (In preparation)
- Al Awar, A., Voulvoulis, N., Development of a Needs Based Assessment (NBA) framework for the water and sanitation aid sector. (In preparation)

Chapter 4: Progress in the delivery of the MDG 7

4.1 Introduction

The United Nations Millennium Declaration, adopted by world leaders at the Millennium Summit in September 2000, committed member states to a global partnership to decrease extreme poverty, and determine a set of 8 time-bound targets known as the MDGs (UNDP, 2017). The MDGs are the measured targets for tackling the multiple dimensions of extreme poverty, representing the areas recognised by the international community as basic human rights, the right to shelter, security, education and health (Millennium Project, 2006). They cover issues ranging from maternal health, trade, and environmental sustainability.

MDG 7 represents environmental issues identified by the global community and focuses on Ensuring Environmental Sustainability. The goal is divided into 4 targets (United Nations, 2015):

- 7.A Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources,
- 7.B Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss,
- 7.C Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation,
- 7. D Achieve, by 2020, a significant improvement in the lives of at least 100 million slum dwellers.

Each target seeks to address an aspect of the physical environment impacting human development and quality of life, with target 7.C concentrating on access to safe drinking water and basic sanitation. Target 7.C of MDG 7, to halve by 2015 (from 1990 levels) the proportion of the population without access to safe drinking water and basic sanitation (Dar and Khan, 2011), is considered, in this thesis, as an indicator of the improvement achieved in increasing access to safe drinking water and adequate sanitation through ODA. It is assessed using measurable indicators developed by the IAEG on MDG Indicators.

The addition of access to safe drinking water and adequate sanitation in the MDGs has produced measurable targets and increased monitoring by international bodies. This has made available expansive and relatively complete datasets of access rates over the 15 year period, as well as tracked financial data relating to funding in the water and sanitation aid sector.

Progress made in attaining target 7.C of MDG 7 is measured using 2 indicators developed by the IAEG on the MDGs: (7.8) the proportion of population using an improved drinking water source, and (7.9) the proportion of population using an improved sanitation facility (IAEG, 2008). These are illustrated as the percentage of the population with access to either improved water source or improved sanitation facility and can be found through the World Bank database. The World Bank and

other international development agencies track and maintain a record of the progress made towards achieving target 7.C and reported changes related to the development indicators (World Bank, 2016). These are referred to as access rates to safe drinking water and adequate sanitation. The metadata used to calculate and determine the access rates are heavily dependent on data collected and reported by individual countries. All reported improvement on the global or regional scale is based on national-level analyses and reporting.

The OECD is one of the few institutions that track the transfer of funds with some accuracy (Trémolet and Rama, 2012). These financial data are available through the Creditor Reporting System (CRS) of the OECD. The CRS provides basic data outlining the destination of funds, the desired purpose, and the policies intended to implement. The financial data on individual projects and programmes are collected, with some descriptive information made available. For activities that benefit more than one country in the same region, the annotation of regional is used. Data are divided into categories or sectors that define the main social or economic infrastructure categories individual activities intend to advance (OECD, 2016).

In an attempt to achieve target 7.C, the international community has developed aid mechanisms to fund interventions aimed at increasing the proportion of the global population with access to safe drinking water and adequate sanitation. This consists of funding bodies or nations agreeing to finance projects in the water and sanitation sector through accords. The negotiations of bilateral, multilateral agreements and grants are done between donor nations or agencies, and recipients with the support of international organisations, such as the OECD. These organisations act as facilitating bodies and forums to bring together governments and development agencies to cooperate. As such, all agreements orchestrated through these assisting bodies are not bound by international terms and conditions, but rather subject to those dictated by funding agencies and nations.

The development of projects targeted at accomplishing target 7.C is largely a collaboration between concerned countries and the source of the finances. The type and nature of interventions are generally dictated by funding agencies, with little input of recipients.

4.2 Current state of affairs

The MDG 7 target has yet to be met in its entirety, with the water target achieved globally. There have been significant achievements in the access to safe drinking water – 2.3 billion people gained access to improved water sources from 1990 to 2012 – and improvements in access rates of sanitation – increased by almost 2 billion people from 1990 to 2012. However an estimated 2.5 billion people were still without improved sanitation in 2012 (UNICEF and WHO, 2014). According to the World Health Organisation (WHO) and the United Nations Children’s Fund (UNICEF)’s Joint Monitoring Programme for Water Supply and Sanitation, the target of expanding access to adequate sanitation to 75% of the world population may not be reached until 2026, missing the 2015 deadline by over 10 years (UNICEF and WHO, 2012). In addition, although the water target has been achieved, it is estimated that 884 million people still rely on unimproved drinking water sources, and only 60% of Sub-Saharan

Africa's population have access to improved water sources (Dar and Khan, 2011). Thus, despite the progress made, large disparities in access to water and sanitation persist, both geographically and also between rural and urban populations. Globally, 80% of the urban population use improved sanitation facilities and 96% use an improved water supply source, compared to 47% and 81% respectively of global rural populations (UNICEF and WHO, 2014). While access to improved water sources in the developing world stands at 86%, it is only 63% in areas designated as 'least developed'. Similarly, sanitation coverage in developing regions stands at 56% compared to 95% in developed regions, with sub-Saharan Africa at only 30% (UNICEF and WHO, 2012). Nearly 80% of people without access to improved sanitation and safe water sources are concentrated within three regions: Sub-Saharan Africa, Southern Asia, and Eastern Asia (Hutton et al., 2007). With the target year, 2015, now passed, the international community needs to rethink their strategies.

4.3 Results: main causes of concern

4.3.1 Interconnectedness of goals

Achieving goal 7 of the MDGs and increasing access to safe water and adequate sanitation are crucial prerequisites for the success of other MDGs (Fukuda-Parr, 2010, Saith, 2006, Mara et al., 2010, Poku and Whitman, 2011, Vandemoortele, 2011b, Stein and Horn, 2012, Hecht, 2004, Hunter et al., 2010, Hutton et al., 2007, Waage et al., 2010). It underpins several other MDG targets, including MDG 1 (eradicate extreme poverty and hunger), MDG 2 (achieve universal primary education), MDG 3 (promote gender equality and empower women), and particularly MDG 4 (reduce child mortality) (Hunter et al., 2010, Hutton and Bartram, 2008). As mentioned previously, the high mortality rate of children under the age of five is partially due to diarrhoeal diseases, which are caused by unsafe water, sanitation and hygiene. 18% of deaths in children globally, under the age of 5, are due to diarrheal diseases. This accounts for around 1.4 million deaths per year (Bryce et al., 2005, Stein et al., 2007). No single MDG stands alone, rather all the targets are interdependent as demonstrated above (Fukuda-Parr, 2010, Saith, 2006). Ensuring access to safe drinking water and adequate sanitation is indirectly protecting vulnerable populations from poverty and disease, granting the opportunity at a livelihood, education and increasing development. Hecht (2004), Hutton et al. (2007), Fukuda-Parr (2010), and Hunter et al. (2010), all agree that access to safe drinking water and adequate sanitation has a ripple effect on areas such as health and education and has been linked to a stronger workforce, increased development and trade, assured education, decreasing the burden of disease, reducing malnutrition, the protection of girls and improved maternal health (Mara et al., 2010, Johnston et al., 2011, Moe and Rheingans, 2006, Poku and Whitman, 2011, Vandemoortele, 2011b, Stein and Horn, 2012, Hecht, 2004, Hunter et al., 2010, Fewtrell et al., 2005, Shanks and Schull, 2000, Sorenson et al., 2011, Waage et al., 2010, Gopalan and Rajan, 2016).

4.3.2 Water in poverty

The Millennium Development Goals have challenged the general perception of poverty as a lack of income and view it as a multidimensional phenomenon (Vandemoortele, 2011a, Poku and Whitman,

2011). Poverty is no longer defined and limited to income poverty: lack of income to meet basic needs or falls below a minimum acceptable level (Kelley, 2001), the international threshold of extreme poverty is set at living below the poverty line of \$1 a day (UNESCO, 2016). Instead, it has been divided into two definitions, absolute poverty: severe deprivation of basic human needs (health, shelter, safe drinking water, sanitation, education, food and information), dependent on access to services and income (Gordon, 2005). And overall poverty: (UN, 1995)

- Occurring all countries
 - Developing countries: mass poverty
 - Developed countries: pockets of poverty among wealth
 - Loss of livelihoods as a result of economic recession
 - Sudden poverty as a result of disaster or conflict
 - The poverty of low-wage workers
 - The utter destitution of people who fall outside family support systems, social institutions and safety nets.
- Lack of income and productive resources to ensure sustainable livelihoods
- Hunger and malnutrition
- Ill health
- Limited or lack of access to education and other basic services
- Increased morbidity and mortality from illness
- Homelessness and inadequate housing
- Unsafe environments and social discrimination and exclusion.
- Characterised by a lack of participation in social, civil and cultural life, and decision making

Water plays a key role in both definitions of poverty. Access to safe drinking water and adequate sanitation are criteria in determining absolute poverty, and it affects other conditions in the definition. Lack of access to safe drinking water and adequate sanitation has negative effects on health, can impact education, particularly for girls, and limits food in some cases (Ndikumana and Pickbourn, 2017, Stein et al., 2007, Bryce et al., 2005, Botting et al., 2010). In case of overall poverty, water is part of every component in the definition. Lack of access to safe drinking water and adequate sanitation results in poor health due to waterborne diseases, malnutrition and hunger, lack of education, missing school because of poor health or if menstruating for girls, unsafe environments, collecting water from great distances increases the danger for child (often young girls are tasked and subjected to rape), lack of income from being unwell, and exclusion (Ndikumana and Pickbourn, 2017, Stein et al., 2007, Bryce et al., 2005, Botting et al., 2010).

Many international donor countries and governments have failed to take into account the political, social and cultural dimensions of poverty (MDG 1) (Stein and Horn, 2012). Despite decades of developmental aid, infrastructure solutions have not had a significant impact on water and sanitation problems (Jones and Silva, 2009). As a result, the provision of water in impoverished regions is recognised to require more than funds for the construction of water and wastewater treatment

facilities. Water is not an isolated resource, but more of an integral part of a whole, bigger picture. Water-related diseases are the most common form of illness affecting the poor in the developing world, with an estimated annual mortality rate of 2.2 million in 2000. The majority of recorded deaths from water and hygiene related illnesses are children under the age of five (Hecht, 2004). The populations most in need live in remote and rural areas which often lack necessary infrastructure. A 187 million people, 3% of the global population, use untreated surface water as their primary source of water. Most of this population – 94%- are rural inhabitants concentrated in sub-Saharan Africa (UNICEF and WHO, 2012). Due to long distances, the quantities of water feasibly transported to a community can be greatly limited and water quality disregarded. With few sources readily available, water quality is rarely considered or tested. Such activity contributes to the spread of waterborne diseases such as cholera and typhoid, as well as illnesses causing diarrhoea (Hunter et al., 2010). Unsafe sanitation, water, and hygiene cause almost 90% of the diarrhoeal burden of disease (Fewtrell et al., 2005). The majority of countries behind on meeting the drinking water and sanitation target are in sub-Saharan Africa, with only 19 out of 50 countries in the region on track to achieving the drinking water target by 2015. 1 billion people – 15% of the world's population – resort to open defecation. In 2010, 25% of sub-Saharan Africa practiced open defecation (UNICEF and WHO, 2012). With the shift in the perception of poverty, a change in attitude is necessary to tackle it.

4.3.3 Link between water and sanitation

While it would make sense that water and sanitation are interlinked as indicated in the MDG target, 'halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation' (United Nations, 2012a), in reality, sanitation is rarely prioritized. Water supply accounts for the majority of resources invested, while sanitation is under-resourced (Isunju et al., 2011). Salami et al. (2014) found that performance in water supply did not necessarily correlate with performance in sanitation (Salami et al., 2014). However water and sanitation remain irrevocably intertwined, because poor sanitation leads to water contamination (Moe and Rheingans, 2006, Johnston et al., 2011). The MDG indicators define improved drinking water sources as those that, by nature of their construction, are protected from outside contamination, particularly faecal matter (UNICEF and WHO, 2016), and improved sanitation facilities are those that hygienically separate human excreta from human, animal and insect contact (UNICEF and WHO, 2016). Both definitions are based on eliminating the contact of humans with faecal matter, and adverse health impacts, such as diarrhoea. This is important because improper disposal of faecal matter can result in the contamination of water resources (Johnston et al., 2011). Achieving either access to water or basic sanitation alone reduces the risks of related disease, but does not eradicate it. The protection of human health requires both access to safe drinking water and basic sanitation. Yet, worryingly, the provision of sanitation has barely kept pace with population growth, while water supply and other social services have outpaced increasing populations (Mara et al., 2010). A study, using the data from fifty nine countries, found that 5 out of 6 users of improved sanitation also used improved water sources, but the reverse was less likely (Hutton, 2012). The lack of progress in sanitation can be attributed to its low priority among stakeholders, insufficient or inappropriate funding, and the

implementation of unsustainable and inadequate technologies, among other things (Isunju et al., 2011). Good hygiene, safe water and adequate sanitation are fundamental to good health and to economic and social development (Mara et al., 2010). This underlines the fact that the target cannot be achieved till both halves have been successfully completed.

4.3.4 Criticism and reproach of the MDG

The clearly stated objectives outlined in target 7.C of MDG 7, and the defined indicators used to monitor progress, seemed like a straight forward plan to increase access to safe drinking water and adequate sanitation. However, the MDGs have received a large amount of criticism. The main reproach of the reported improvements is the appropriateness of some indicators (Bain et al., 2012). A key concern is the inclusion of the word 'safe' in the water indicator, as it is undoubtedly difficult to summarise a complex target such as access to water or safety of water source in a single quantifiable indicator (Dar and Khan, 2011). The indicator assesses access to a specific type of source, but does not evaluate or determine the quality of the water source. This is likely to overestimate both the baseline proportion of people with access to safe drinking and achieved progress, because, particularly in developing countries, an improved source does not necessarily provide safe water (Bain et al., 2012). The use of the term 'improved' in the sanitation indicator has caused controversy. Some 'improved' sanitation facilities can contribute to groundwater and surface water contamination. These suggest an overestimation of the coverage rates (Zawahri et al., 2011), along with a further reduction in progress estimations. A frequent response to these criticisms is to point out the necessity for an internationally agreed measure used to give comparable data, making the use of the selected criteria inevitable (Bain et al., 2012). Another reproach is that the implementation of the MDG is considered to be technocratic and top-down, without taking sufficient account of the needs and actions of the target populations (McGregor and Sumner, 2010), as well as being incorporated into a donor-centric view of development that encourages one-size fits all solutions and best practices replication (Vandemoortele, 2011b). Its narrow focus and the target centric nature of the indicators has also encouraged vertical programming, limiting interventions to specific areas, particularly those close to the threshold, to the detriment of overall needs (The Lancet, 2013, Waage et al., 2010). Despite the overestimation of coverage rates, the MDG targets are unlikely to be met by the 2015 deadline (Stein and Horn, 2012).

It has been estimated that a minimum of 7.5 litres of water per person per day is necessary for the most basic requirements for water in the home (drinking, food preparation, and personal hygiene). To ensure all personal hygiene, food hygiene, domestic cleaning, and laundry needs, a minimum of 50 litres per person per day is needed (Hunter et al., 2010). When water is not available at the household, distance to the nearest water source and the time taken for collection determine whether enough water can be obtained for domestic purposes (Dar and Khan, 2011). In the majority of unserved populations in the developing world, particularly in the least developed nations, the responsibility of providing water falls on women and children (Sorenson et al., 2011); this exposes them to the risk of rape and attack (Shanks and Schull, 2000).

Table 3: Classification of drinking-water source types, Joint Monitoring Programme for Water Supply and Sanitation

Source class	Type of source
Unimproved drinking-water source	Unprotected dug well, unprotected spring, cart with small tank or drum, surface water (e.g. river, dam, lake, pond, stream, canal or irrigation channel)
Improved drinking-water source (piped to dwelling, plot or yard)	Piped water connection located inside the user's dwelling, plot or yard
Improved drinking-water source (other sources)	Public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs and rainwater collection

While most studies into water and sanitation focus on the health benefits of safe water and adequate sanitation, households rarely use toilets for health related reasons. The desire for privacy and convenience, to avoid embarrassment, discomfort, and the dangers of the bush, the desire to be modern, and wanting social acceptance and status, are among the main motivations for sanitation adoption (Jenkins and Scott, 2007). The provision of household sanitation is an added protection for women and girls by reducing the risk of rape and attack, likely to occur when visiting public latrines or the bush. Furthermore, school sanitation facilities would make it less likely for girls to miss school during menstruation (Mahon and Fernandes, 2010). As mentioned previously, access to improved sanitation facilities and safe water sources does not guaranty safe water. Piped water made available to household can be contaminated in the distribution network and therefore become unsafe before reaching the household (Zawahri et al., 2011).

Table 4: Classification of sanitation facilities, Joint Monitoring Programme for Water Supply and Sanitation

Sanitation class	Type of sanitation
Unimproved sanitation facility	Pit latrine without slab, use of a bucket, hanging toilet, open defecation and flushing (excreta exit to street, yard or open sewage)
Improved sanitation facility	Piped sewers, septic tank, flush latrine, pit latrine with slab, ventilated latrine, and composting toilet.

The current system is failing to deliver the promised results. This can be attributed to the lack of understanding of the complexity of the water sector (Trémolet and Rama, 2012). Unfortunately, many interventions in developing nations do not have an extensive lifespan. In a study of fifteen villages in South Africa with access to improved water sources, it was revealed that eight did not have water on the day. Three villages had dried up wells or could not meet the demand, two had broken water pumps and spare parts were unobtainable, another two could not afford to buy the diesel for the pump, and another was out of action because the pump operator was ill (Rietveld et al., 2009). Another example of failed intervention schemes is a study of arsenic mitigation technologies in

Bangladesh that found that only 64% of the original interventions were still operational (Kabir and Howard, 2007). National governments, in cooperation with aid agencies, have for years subsidized and provided sanitation facilities to improve access. This approach has not had a significant effect for two main reasons. The first is that the subsidies have benefited the few well-off people who understand the system, rather than reaching the people in real need. The second is due to the lack of social and cultural awareness. The built toilets remain unused because they are culturally or technically inappropriate or because their benefits have not been taught to households (Mara et al., 2010). Inadequate and unsuccessful interventions are not limited to least developed nations and simple projects. Nineteen wastewater treatment plants in Jordan rely on technologies unable to treat the highly concentrated wastewater, although the low per capita water consumption and the arid climate cause a high concentration of organic matter in the wastewater influent (Al-Kharabsheh, 1999).

An additional cause for the system failure is the level of government effectiveness. Governments in low-income countries tend to lack capacity or show institutional weakness, making governmental effectiveness often poor. These weaknesses cover lack of individual professionalism and skills, understaffing, poor motivation, inappropriate resources, poor organizational management, inadequate policies for local government (Hunter et al., 2010). To combat government ineffectiveness and increase rational decision making, a sound economic evaluation of all viable options available needs to be carried out, as resources are scarce (Haller et al., 2007).

4.3.5 Misallocation of funds

Financing the water and sanitation sector is an important factor in achieving universal coverage. However, despite the continued efforts and contributions by the international community, the MDG targets are not on track and there remains a large portion of the global population without access to safe drinking water and adequate sanitation. Success in achieving the goal requires more than the provision of funds. The investment required to meet the MDG have increased to \$32 billion per year over the five-year period 2011-2015, from the previous estimate of \$18 billion per year over the ten-year period 2006-2015 (Hutton, 2012). The report *Financing Water for All*, also known as the Camdessus report, estimated that in 2003 spending on new water infrastructure in developing countries was around 80 billion US dollars a year. In the recommendations, it called for an increase in funding to roughly 180 billion US dollars over the following 20 to 25 years (Winpenny and Michel, 2003). This increase is mostly due to the slow progress, particularly in sanitation. While there are many different estimates, the current global deficit cannot be accurately estimated due to the lack of up to date data on governmental and agency spending on water supply and sanitation in developing countries (Hutton and Bartram, 2008). Contrary to popular belief, more funding is not solely required, but rather better spending is necessary. The creation of social and environmental conditions by national and local governments to increase the efficiency of assistance would help in achieving better use of donated funds (Hecht, 2004). An increase in investment in the sector cannot be justified until the financial misuse that occurs is eliminated. This discrepancy is a result of funds being spent in the

wrong places, on unnecessarily expensive or unsustainable technologies, or being lost in complex and lengthy bureaucratic procedures (WaterAid, 2012). While more funds are needed to continue efforts and increase access to both water and sanitation, to achieve the stated goal, a sound economic evaluation of all viable and available options is crucial to a rational decision making process, as resources are limited (Haller et al., 2007). Economic evidence, through the completion of cost-benefit analysis, is necessary to justify increased investment and expenditure, as well as to support decisions to select efficient technology options (Hutton, 2012). An explicit comparison of the costs and benefits of a wide range of alternative service delivery approaches and technologies adds strength and legitimacy to demands for increased disbursement and the choice of intervention. Without an investigation into the patterns of spending in the sector and the success of previous projects, an increase in funding is redundant. With ever increasing estimates to meet funding requirements, from 80 billion USD to 180 billion USD (Winpenny and Michel, 2003), and lack of data on government spending (Hutton and Bartram, 2008), it is progressively more difficult to justify augmented funding for the water and sanitation sector. This is echoed in an introduction by WaterAid to their publications on financing the sector; an increase in investment cannot be justified until financial waste is eliminated (WaterAid, 2012). The preferred method to eliminate waste is the development of an internationally agreed standard methodology for tracking financial flows (Trémolet and Rama, 2012).

Another obstacle is countries' inability to appropriately assess progress and improve performance due to inadequate and limited availability of financial data. This is caused by a lack of an internationally standardised methodology for tracking financial flows to water, sanitation and hygiene at a national level (Trémolet and Rama, 2012). Previous attempts to undertake global reporting and monitoring have not provided sufficient evidence for policy-making at the national level. There are some funding bodies and donors, such as the Organisation for Economic Co-operation and Development (OECD), who track their transfers with some accuracy; however, data on domestic government spending and private spending can be incomplete and unreliable (Trémolet and Rama, 2012). The lack of transparency and understanding about budgets, spending, and results creates opportunities for corruption (WaterAid, 2012). This highlights the need for additional support and greater cooperation between governments and non-governmental organizations in developing financial mechanisms to make local and investment capital readily available for water infrastructure development (Hecht, 2004). Also, any future financing studies should take into consideration not only the initial implementation cost, but also operational and maintenance costs, along with eventual replacement of existing facilities (Hutton and Bartram, 2008).

As previously stated, the OECD facilitates bilateral, multilateral and grant agreements. As such, all financial transactions enabled by the OECD are documented and are easily traced. All parties outline terms and conditions of aid accords, along with the recipient countries and the specific activities to be funded. While the transactions in the water and sanitation aid sector from the OECD are tracked with some accuracy, most of the data associated with funding into the sector are incomplete (Trémolet and Rama, 2012). This causes great difficulty in accurately assessing the efficiency and effectiveness of

the aid sector, as well as the progress achieved. The lack of transparency of spending, budgets, and results also creates opportunities for corruption and more waste (WaterAid, 2012).

4.4 Conclusion

Many authors have offered suggestions as to why the current methods used in the water and sanitation aid sector have failed to deliver promised results, identifying isolated components as responsible. While this has highlighted many issues, evaluating the aid sector as a whole from a systems perspective offers a better understanding of the failings. Through the investigation of the delivery of the water and sanitation MDG, a number of causes for concern were identified. The key findings were:

- The disregard for the link between the 8 MDGs and the effect of their completion on the others. The water and sanitation MDG supports the promotion of health and education (MDG 2,3,5), the protection of children and the most vulnerable (MDG 1,4,6), has been linked to reducing the burden of disease and malnutrition, as well as reinforces an increase in development (MDG 8).
- A lack of understanding in the role played by water in tackling poverty. The MDGs have helped shift the view on poverty and its definition. The inclusion of criteria such as ill health, hunger and malnutrition, unsafe environments and social discrimination in the view of poverty, has highlighted the role water plays in either increasing poverty or eradicating it. Water related diseases are the most prevalent illness affecting the poor and vulnerable in the developing world and the procurement of water to meet basic needs stops the spread of such ailments.
- The separation and distinction between water and sanitation in undertaking the water and sanitation MDG. Many countries have chosen to split the MDG into two targets, focusing on achieving increased access to either improved water sources or improved sanitation facilities. This ignores the inherent link between water and sanitation. Poor sanitation leads to water contamination.
- Although the MDGs have encouraged action to eradicate poverty and achieved improvements, the goals have received some criticism. The appropriateness and wording of indicators are called into question, as well as their narrow focus and target centric nature which has boosted vertical programming aimed at those closest to the thresholds.
- The final and main cause of concern is the misallocation of funds for the completion of the water and sanitation MDG. Funding has increased in the aid sector without real improvement on the ground indicating that success in achieving the goals requires more than just funds. As it underpins the other causes, the misallocation of funding warrants more scrutiny to determine its role and extent in driving the delay in achieving the water and sanitation MDG.

Chapter 5: The role of funding mechanisms in the delivery of MDG 7

5.1 Introduction

This chapter investigates the role and extent to which the funding mechanisms drive the delay in the completion of the water and sanitation MDG on a regional level. Financial data sourced from the OECD, made available through the Creditor Reporting System (CRS), were used to examine any potential links between funds committed to the sector and changes in access rates to safe drinking water and adequate sanitation. Access rates to safe drinking water and adequate sanitation were retrieved from the World Bank Database: World DataBank. A clear link or correlation is observed between funding allocation and access rates to safe drinking water and adequate sanitation. Furthermore, the data suggest that sub-sector associations and explanations for obtained access rates exist. Possible correlations between funding and Gross Domestic Product (GDP), and funding and population were also briefly considered. No obvious correlations were identified. Sub-Saharan Africa is selected as it encompasses a wide range of situations, both in terms of funding and access rates, with countries having achieved half of MDG 7 and others still lagging behind. This is a good extrapolation for the global scenario.

5.2 Methodology

5.2.1 Financial Data

The financial data were sourced from the OECD as they are one of the few institutions that track their transfers with some accuracy (Trémolet and Rama, 2012). The data are made available through the Creditor Reporting System (CRS). The intention of the CRS database is to provide readily available basic data that allow the analysis of aid funding. It outlines where aid funds go, what purposes it serves and what policies it seeks to implement for all DAC members. The financial data on individual projects and programmes are collected, with some descriptive information made available. The geographic scope of the data are limited to developing countries and territories eligible to receive official development assistance (ODA). For activities that benefit more than one country in the same region, the annotation of regional is used. Data are divided into categories or sectors that define the main social or economic infrastructure categories individual activities intend to advance. The following categories are included in sector classifications despite not being allocatable by sector: debt relief, emergency assistance, general budget support, humanitarian aid, support to NGOs, food aid, and administrative costs (OECD, 2016).

Table 5: List of countries for which financial data were collected from 2007 to 2011.

List of Countries		
Angola	Gabon	Nigeria
Benin	The Gambia	Rwanda
Botswana	Ghana	Sao Tome and Principe
Burkina Faso	Guinea	Senegal
Burundi	Guinea-Bissau	Seychelles
Cameroon	Kenya	Sierra Leone
Cape Verde	Lesotho	Somalia
Central African Republic	Liberia	South Africa
Chad	Madagascar	South Sudan
Comoros	Malawi	St Helena
Democratic Republic of Congo	Mali	Sudan
Republic of Congo	Mauritania	Swaziland
Cote d'Ivoire	Mauritius	Tanzania
Djibouti	Mayotte	Togo
Equatorial Guinea	Mozambique	Uganda
Eritrea	Namibia	Zambia
Ethiopia	Niger	Zimbabwe

Financial data of funds received for the countries were collected from the Creditor Reporting System (CRS) (OECD, 2016) over the date range 2007 to 2011 for the categories: Basic drinking water supply and basic sanitation, education/training: water supply and sanitation, river development, waste management/disposal, water resources policy/administration management, water resources protection, water supply and sanitation – large systems, for 2010 and 2011: basic drinking water supply, basic sanitation, sanitation – large systems, water supply – large systems.

Table 6: List of categories of financial data 2007 to 2011

List of Categories
Basic drinking water supply and basic sanitation
Education/training: water supply & sanitation
River development
Waste management/disposal
Water resources policy / administration management
Water resources protection
Water supply & sanitation - large systems
Basic drinking water supply (as of 2010)
Basic Sanitation (as of 2010)

Sanitation - large systems (as of 2010)

Water supply - large systems (as of 2010)

The total committed funds to water supply and sanitation was divided into the seven sectors or eleven for 2010 and 2011. This illustrated and indicated the types of projects and different sub-sectorial activities funded between 2005 and 2011. It also allowed for the comparison of the total funds directed to the provision of basic water and sanitation with access rates through the studied time period. This comparison demonstrated and supported by the data, indicated potential explanations as to why countries receiving large amounts of aid, did not necessarily increase access rates to safe drinking water and adequate sanitation.

Total funds committed to the sub-sectors of the water and sanitation sector, by DAC countries from 2005 to 2011 was retrieved from the CRS (OECD, 2016).

Table 7: List of DAC Countries

List of DAC countries

Australia	Greece	Norway
Austria	Ireland	Portugal
Belgium	Italy	Spain
Canada	Japan	Sweden
Denmark	South Korea	Switzerland
Finland	Luxembourg	United Kingdom
France	Netherlands	United States
Germany	New Zealand	

Financial data of total funds committed to the water supply and sanitation sector from 1995 to 2011 from DAC countries, multilaterals, non-DAC countries, the G7 countries, and EU institutions were collected from CRS. The data retrieved were analysed to illustrate the trends in funding the water supply and sanitation sector, as well as its sensitivity to global circumstances.

Table 8: List of multilaterals, Non-DAC countries, and G7 countries contributors from 2007 to 2011

Multilaterals

Adaptation Fund, African Development Bank (AfDB)

African Development Fund (AfDF)

Arab Fund (AFESD)

Asian Development Bank (AsDB) special funds

Arab Bank for Economic Development in Africa (BADEA)

Global Environment Facility (GEF)

International Development Association (IDA)

Inter-American Development Bank (IDB) special funds

International Fund for Agricultural Development (IFAD)

Islamic Development Bank (IsDB)

Nordic Development Fund (NDF)

Organisation of the Petroleum Exporting Countries (OPEC) Fund for international Development (OFID)

United Nations Development Program (UNDP)

United Nations Economic Commission for Europe (UNECE)

United Nations Children's Fund (UNICEF)

Non-DAC Countries

Kuwait

United Arab Emirates

G7 Countries

Canada

France

Germany

Italy

Japan

United Kingdom

United States

A financial profile was developed for each country in Sub-Saharan Africa outlining the total amount of funds received per year, as well as the breakdown into the different identified sub-sectors. This was tabulated for 48 nations over the 5 years.

Table 9 illustrates the amount of data tabulated and analysed. Financial data for the 23 member countries of the DAC, 17 multilateral, 2 Non-DAC member nations, and the 7 G7 member nations were organised by year for the time period between 1995 and 2011. Funds committed to the water and sanitation sector were also divided into 7 sub-sectors for 2007 to 2009 and 11 sub-sectors for 2010 and 2011. Financial data for 48 countries in Sub-Saharan Africa were retrieved and analysed from 2007 to 2011. Funds received were then subdivided into the 7 stated sub-sectors for 2007 to 2009 and 11 sub-sectors for 2010 and 2011. A total of 4675 individual figures of data were considered in the analysis covering the time period from 1995 to 2011.

Table 9: Number Financial Data Points Analysed from 2007 to 2011

No. Financial Data Points		Years					Total
	Years No. of Aid Sectors	2007	2008	2009	2010	2011	2007- 2011
	No. of Countries	7	7	7	11	11	
Sub-Saharan Africa¹	48	336	336	336	528	528	2064
DAC²	23	161	161	161	253	253	989
Multilaterals²	17	119	119	119	187	187	731
Non-DAC²	2	14	14	14	22	22	86
G7²	7	49	49	49	77	77	301
¹ Recipients		679	679	679	1067	1067	4171
² Donor Countries/Organisations							

5.2.2 Access Rates

Access rates to safe drinking water and adequate sanitation for 217 nations were retrieved from the World Bank Database: World DataBank, for the time period 1990 to 2011 (UNICEF and WHO, 2016). DataBank (databank.worldbank.org) is an online analysis and visualisation tool that allows the generation of tables, charts, and maps, as well as the performance of customised queries, and to download data. It provides access to collections of time series data from over 55 databases. The database is consistently updated and maintains a record of calculated and reported changes related to development indicators, including the Millennium Development Goals (World Bank, 2016).

Sub-Saharan Africa was selected as it encompasses a wide range of situations, both in terms of funding and access rates, with countries having achieved half of Goal 7.C and other still lagging behind. It is a good extrapolation for the global scenario. The date range from 2007 to 2011 was used for the analysis. The data were used to plot the change in access rates to both safe drinking water

and adequate sanitation throughout the years and identify possible links between access rates and funding. The information was also utilised to calculate the percentage difference in access rates year from year. This was applied as a representation of the progress brought about by the investment in the sector.

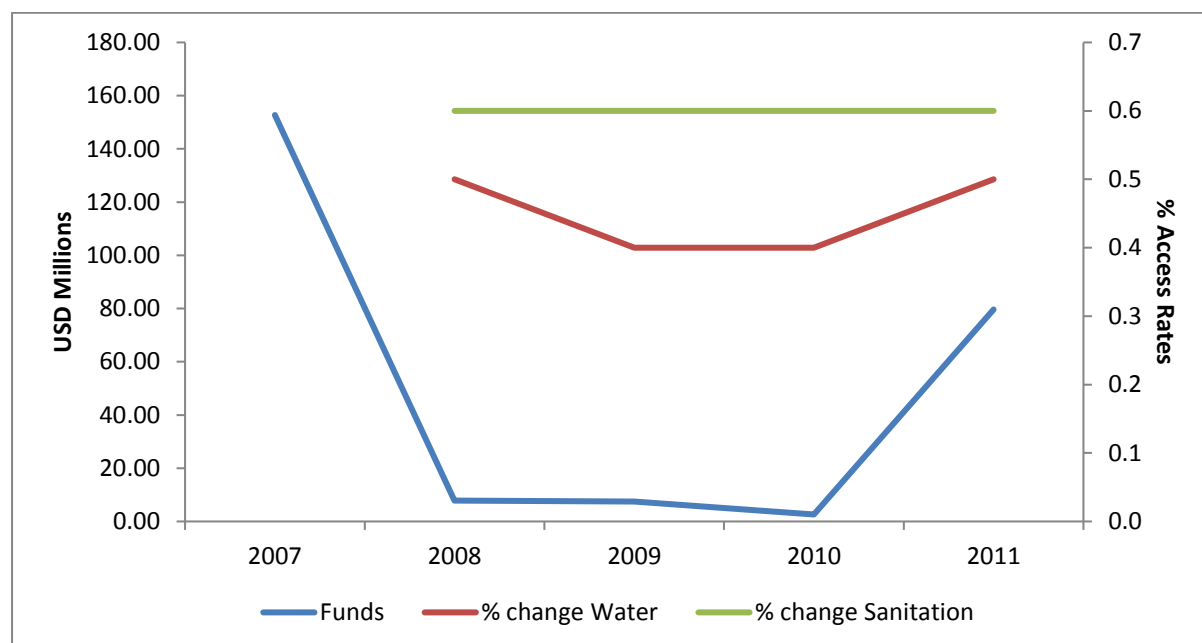


Figure 5: Funds vs. percentage change to access rates South Africa

Data on access rates to safe drinking water and adequate sanitation were retrieved to illustrate the progress made towards achieving the MDG targets throughout the 15-year period, from 1990 the baseline. The effects of mobilised activity and extra investment, encouraged by the creation of the MDGs, on access rates is also evident through the examination of the data.

An analysis was completed to investigate potential correlations between funds & GDP, Funds & population, Funds & percentage of GDP, Funds & GNI, and no link was found. All relevant data, tables and graphs can be found in the appendices.

5.2.3 Calculation of Targets

The calculation of the national MDG 7, target 7.C targets for access to safe drinking water and adequate sanitation was completed using the following formulas:

$$\text{EXPANSION}_i = 0.5 \cdot (100 - p_i)$$

where p_i is the estimated proportion of the population with access to water or sanitation in 2000 and EXPANSION_i is the calculated percentage increase required to halve of the population without access to safe drinking water and adequate sanitation.

$MDGtarget_i = ACCESS2000_i + EXPANSION_i$ where ACCESS2000 is the proportion of the population with access to water or sanitation in 2000.

These were adapted from the formulas found in P.B. Anand's research paper: Millennium Development Goal 7: An Assessment of Progress with Respect to Water and Sanitation: Legacy, Synergy, Complacency or Policy? (Anand, 2006). Despite target 7.C stating the baseline as the 1990 values, for the purpose of this thesis, the values corresponding to access rates in 2000 were used as the baseline, since it is a more complete dataset (table 10).

Table 10: Access rate data available in 1990 and 2000

	1990		2000	
	Access to Safe Drinking Water	Access to Adequate Sanitation	Access to Safe Drinking Water	Access to Adequate Sanitation
Total Number of Countries (Global)	217	217	217	217
Complete Data	171	164	202	201
Total Number of Countries (sub-Saharan Africa)	49	49	49	49
Complete Data	41	38	48	48

5.2.4 Limitations

As with all forms of research, there are limitations to the approach taken in the research and the analysis. These limitations, as they apply to this thesis, are discussed in this section. The financial data used in this thesis represents funds committed to the aid sector, rather than disbursements. Nations capacity to absorb aid effectively is part of the problem and the current funding practices. The use of committed funds instead of disbursement is an indication of the amount of funds available to the sector, not only what is actually used on the ground. These data were employed since they are tracked with some degree of accuracy by the OECD. This can be considered as a shortcoming, as it does not necessarily represent the actual sums that reach the designated recipients.

It is also worth mentioning that there is a lag between the commitment of funds to the sector, investment, and disbursement. This represents the flow of funds from donor to recipients, allocation to specific projects, capital and maintenance works to be commissioned, procured, and completed. The lag translates into delayed changes in access rates to safe drinking water and adequate sanitation.

Access rates to safe drinking water and adequate sanitation for 217 nations were retrieved from the World Bank Database: World DataBank, for the time period 1990 to 2011. These datasets are estimated based on reported national figures, making them a limitation of this methodology. Coverage reported by the World Bank is a weighted average of data compiled by the Joint Monitoring Program

of the WHO and UNICEF. The WHO and UNICEF derive the data per country as a best-fit trend line drawn through country estimates for water and sanitation coverage gathered from nationally representative household surveys (Botting et al., 2010). This method of determining access rates leaves considerable potential for smoothing over of figures and overestimations. Adjusting the data to a best fit trend line could disguise any direct impact of funding fluctuations on the funding progress in increasing coverage.

Also, the study does not directly factor in or consider the political, cultural, and diplomatic impacts that effect the commitment of funds and progress in access rates.

5.3 Results: Potential impacts of funding mechanisms

Funds committed to aid and development has increased in absolute numbers over the years. This is also true for the water and sanitation sector. The total committed funds to the water supply and sanitation sector by the OECD has increased over the 16 year period between 1995 and 2011, with fluctuation, as made evident in table 11. The sharp fluctuations in funds donated can be explained by major international events occurring in the specific year. A dip from 3.4 billion USD in 2001 to 2.2 billion in 2002 can be attributed to the introduction of the euro in the European Union (EU). With many of the OECD countries part of the EU, the shift from local currency to the Euro may have impacted the equivalent sum pledged. Another international event with a rippling effect is the International Decade for Action 'Water for Life'. This started in 2005 with a sharp increase in funds oriented to the water and sanitation sector: 4.4 billion USD in 2004, to 6 billion in 2005, as can be seen in table 11. The effects of the economic recession and financial crisis are still being felt, as evident by the decrease in funds in 2010 and 2011, from the 2009 value of nearly 9 billion USD. However, many donor nations have yet to live up to their pledges as outlined in MDG 8 (global partnership for development, table 1). The United Kingdom, Germany, United States, and Japan have not increased their Official Development Assistance to 0.7% of their Gross Domestic Product (GDP) (Stein and Horn, 2012).

Table 11: Total Committed Funds to the Water Supply and Sanitation Sector from 1995 to 2011 (OECD)

(USD Millions)	DAC Countries	Multilateral	Non-DAC Countries	G7 Countries	EU Institutions	Total
1995	2377.2271	919.3738	N/A	2045.7189	71.6868	3296.6009
1996	3168.1520	884.5550	N/A	2711.7238	60.9010	4052.7070
1997	2957.6028	674.2417	N/A	2651.3113	195.6336	3631.8445
1998	2413.9410	593.6219	N/A	2014.6909	169.7243	3007.5629
1999	1907.0666	474.8340	N/A	1481.8905	142.5439	2381.9006
2000	2999.3949	834.4024	N/A	2636.9203	230.4328	3833.7973
2001	1934.3175	1237.2269	N/A	1553.2577	230.9467	3171.5444
2002	1320.4247	766.5519	N/A	936.7989	105.3557	2086.9766
2003	2355.6747	974.6186	N/A	1851.0004	338.8295	3330.2933
2004	3022.1961	1386.7293	N/A	2400.9820	413.1684	4408.9254

2005	4636.9650	1444.2471	N/A	3873.9351	712.0184	6081.2121
2006	4089.0760	2246.3285	N/A	3029.9638	726.5533	6335.4045
2007	4491.9245	2070.8983	N/A	3595.7265	490.5012	6562.8228
2008	5975.4954	1559.8698	N/A	4248.4397	170.2825	7535.3652
2009	6601.4082	1903.8888	145.6200	5229.2300	528.1087	8650.9170
2010	5194.1218	2482.3009	103.6632	3765.2846	678.1145	7780.0859
2011	5022.3636	3217.4000	65.4905	3716.0896	603.6909	8305.2541

As expected, the leading donors to development aid over the 6-year period are the strongest global economies. Germany, the United States of America, France, and Japan are the major donors between 2005 and 2011 (Figure 5). Japan is the main contributor to the water and sanitation sector, underwriting 1.7 billion USD in 2011. Japan's foreign aid policy is heavily influenced by the reparations payment mentality, as well as pressure from other industrialised nations. Countries considered advanced and industrialised feel the pressure to take on the financial burden of supporting shared security, political, and economic interests, explaining their high contributions through the OECD. While there has been an increase in funding over the years to the sector, it is not proportionately reflected in access rates to both improved water sources and improved sanitation facilities. In 2010, the per cent of the global populations with access to improved water sources reached 88%, almost a 10% increase from the 1995 value of 79%. This was also seen in access to improved sanitation facilities with the per cent of the global population attaining 63% from the 1995 value of 51% (figure 6).

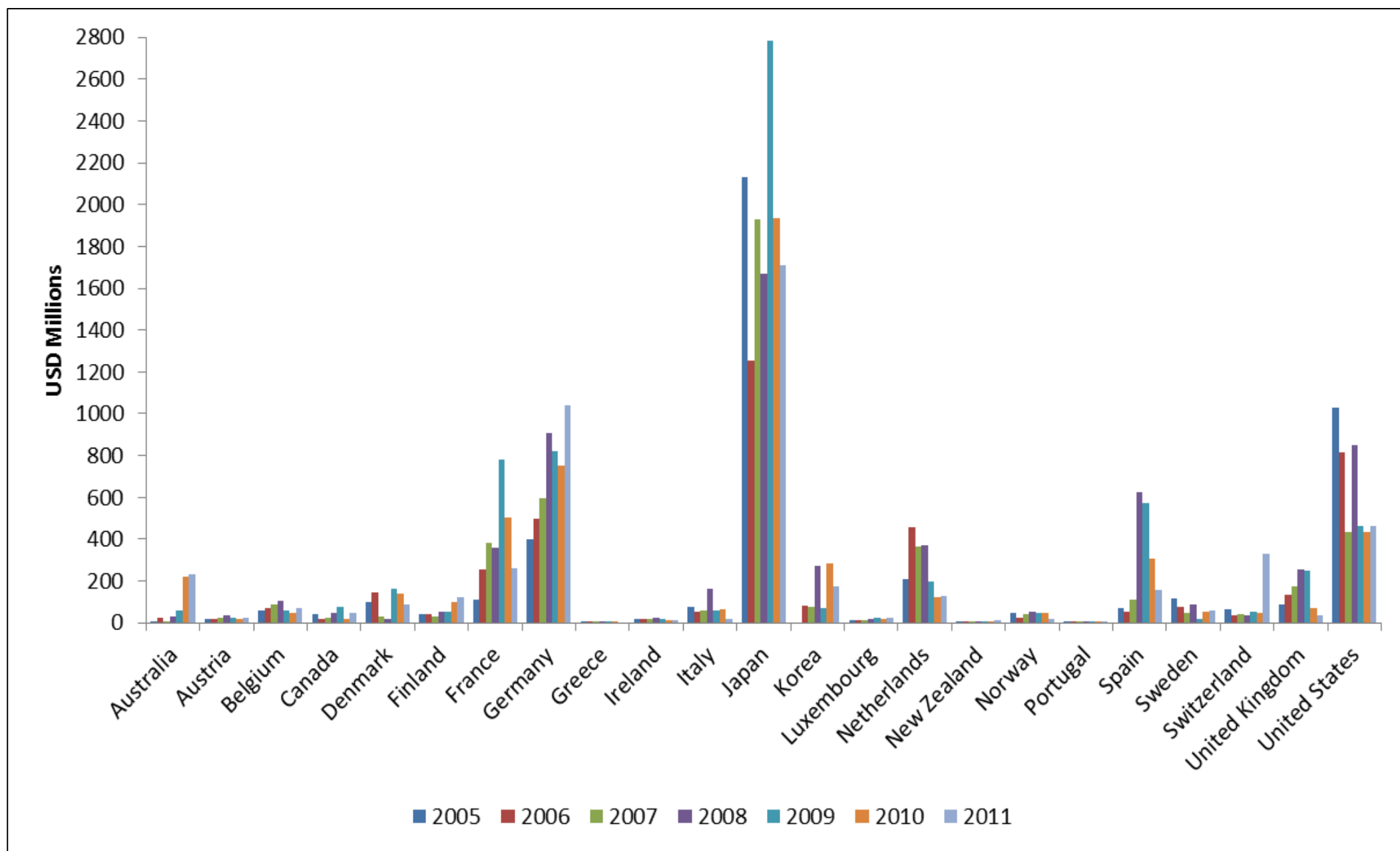


Figure 5: Total funds committed to water supply and sanitation by DAC countries from 2005 to 2011

Despite sharp increases in funds, access rates remain steady, as illustrated in figure 9. This was confirmed through superimposing the per cent global access to both improved water sources and improved sanitation facilities with the total amount of funds contributed of the 15-year period between 1995 and 2010. No clear effect of peaks and troughs on the global per cent access was demonstrated (figure 9). The global per cent access increased by 1% for both improved water sources and improved sanitation facilities, from 1998 to 1999, and from 2001 to 2002, both years marked by a severe drop in funding. They also remain constant in 2000 and 2009, peak funding years.

Figure 9 illustrates the increase in access to improved water sources and improved sanitation facilities on a global scale. However this is not representative of areas most affected. Although the 2010 global figures for access to improved water sources and improved sanitation facilities are 88% and 63% respectively, the figures of the least developed countries are far below, reaching 63% for access to improved water sources and 36% for access to improved sanitation facilities (figure 6). As seen in the figures, the areas most in need have the lowest average access rates. Figure 6 outlines the increase in access in both areas (improved water sources and wastewater facilities) in the least developed countries (LDC) – as determined by the United Nations – from the baseline year 1990, to 2010. Access to improved sanitation facilities remains significantly lower than access to improved water sources. The same trend is evident in figure 8 for the Sub-Saharan Africa data.

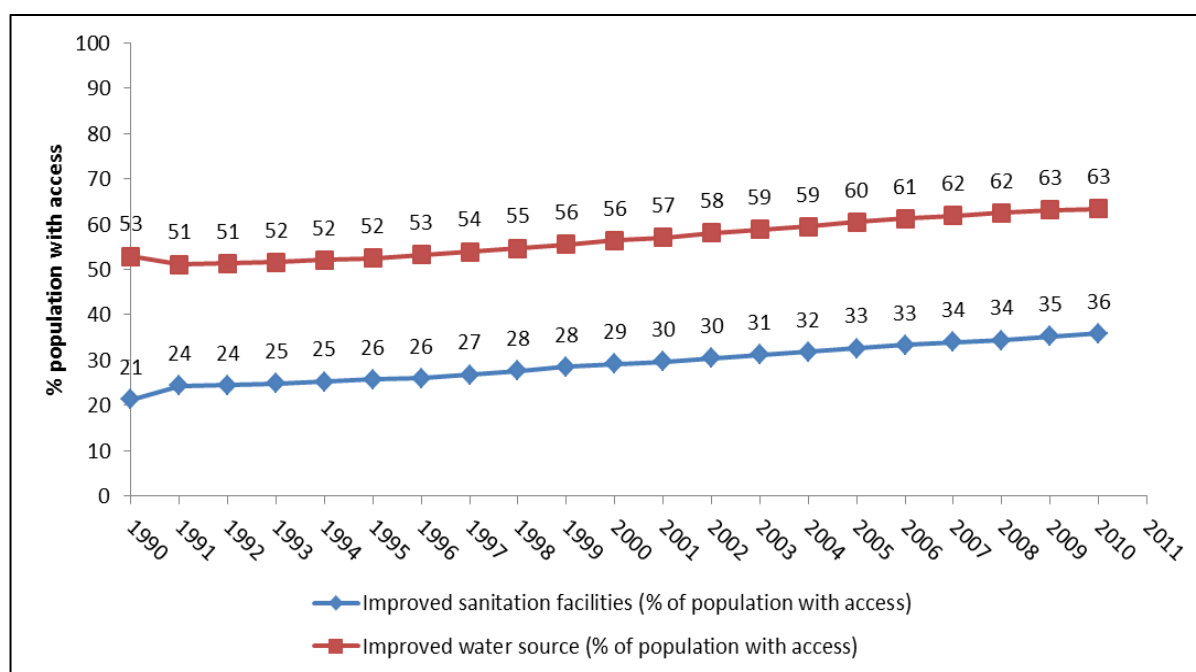


Figure 6: Percentage of population with access to improved water sources and sanitation facilities - Least Developed Countries

Percentage access rates in Sub-Saharan Africa are well below the global figures stated previously, as seen in figure 8. Only 31% of the population in sub-Saharan Africa had access to improved sanitation facilities and 61% to improved water sources in 2010. This is despite a total of 2.7 billion US dollars invested in the sector in that given year. This provides additional evidence of mismanagement of funds either internally at the level of respective local governments or at a larger scale in the OECD.

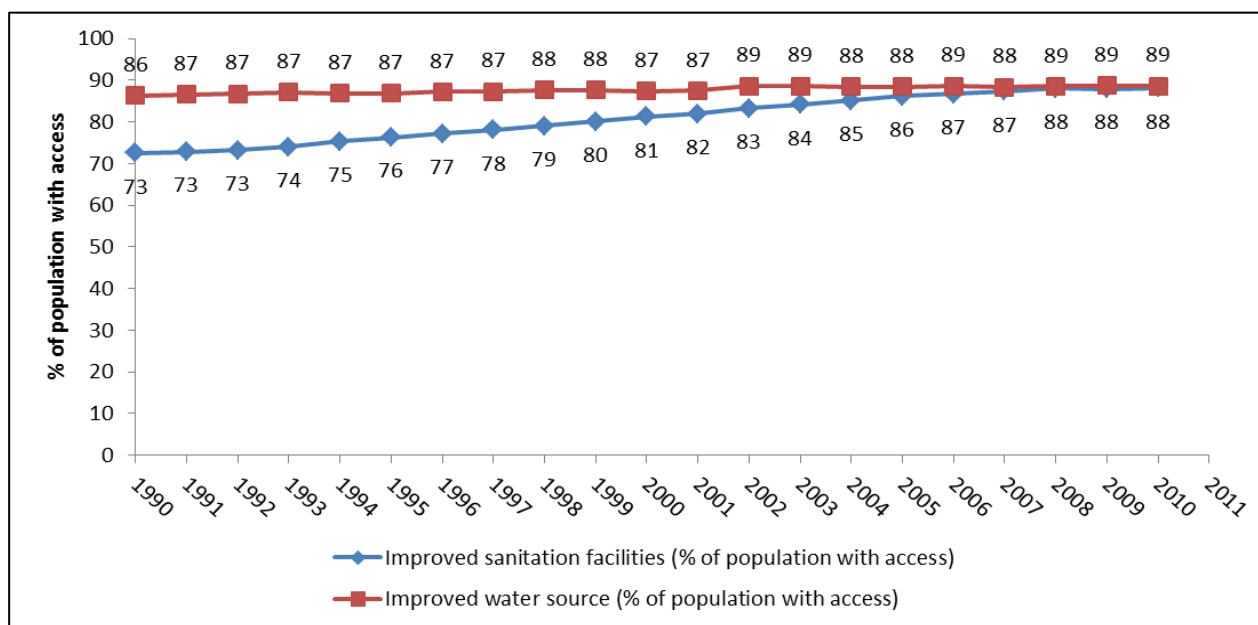


Figure 8: Percentage of population with access to improved sanitation facilities and water sources in the MENA region

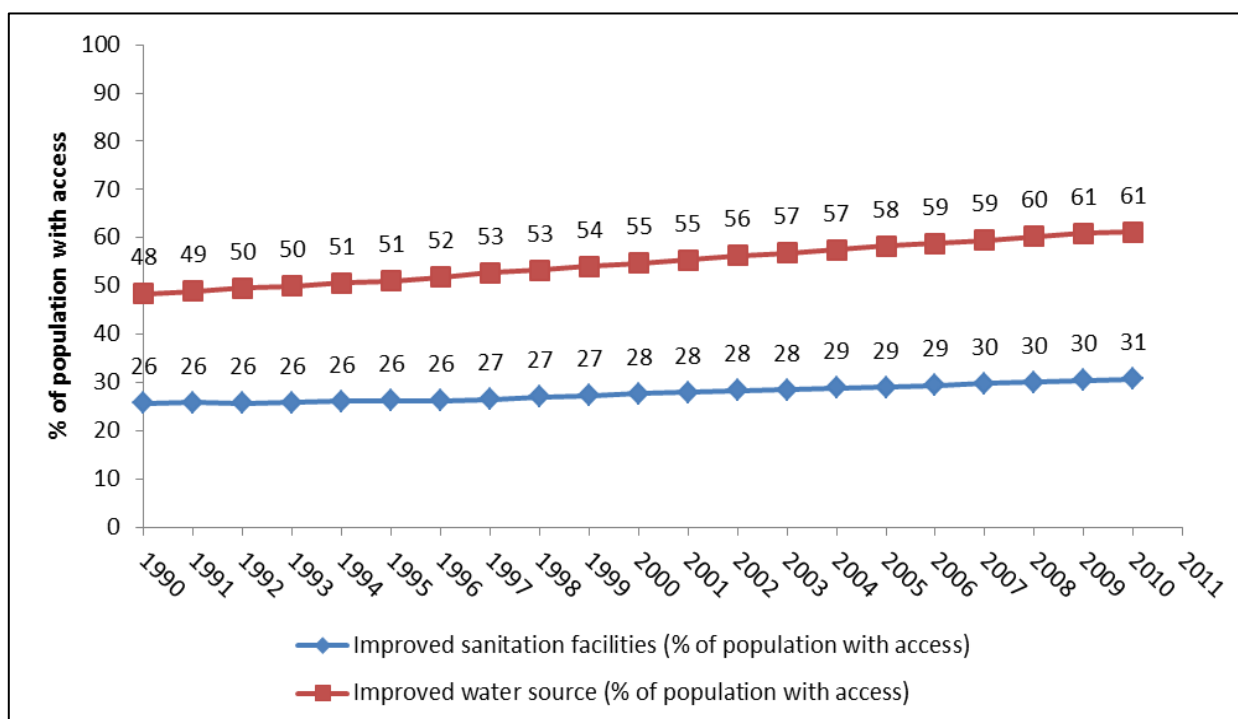


Figure 7: Percentage of population with access to improved water sources and sanitation facilities – Sub-Saharan Africa

Another trend demonstrated in the available data is the difference between access to improved water sources and sanitation facilities. As previously mentioned, global access to improved sanitation facilities remains at 63%, with access to improved water sources at 88%. The lag between the two can be seen in all regions except for Middle East and North Africa (MENA). In the MENA region, access to both improved water sources and sanitation facilities have converged at approximately 88% (figure 7). This trend is not limited to just access rates, but can also be seen in funding practices as well. According to the financial data made available by the OECD, funds committed to basic water supply was almost double the funds committed to basic sanitation in 2010, and the difference increased in 2011 (table 12). This echoes findings in other studies stating the only 30% of funding is designed to sanitation and hygiene efforts (Botting et al., 2010).

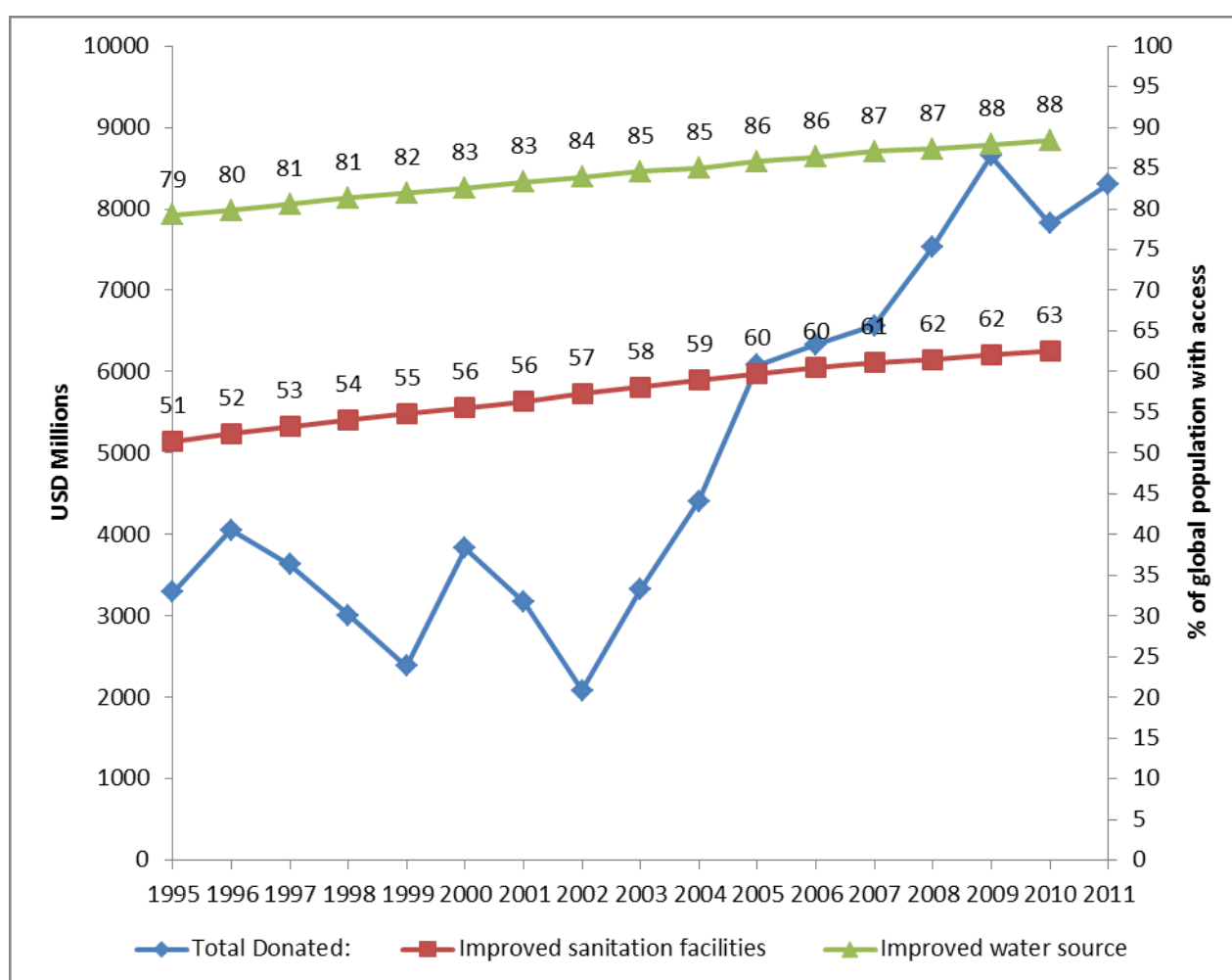


Figure 9: Total funds donated for water supply and sanitation vs. percentage of global population with access to improved water and sanitation facilities

Table 12: Funds committed to Basic Water vs. Basic Sanitation

(USD Millions)	Basic Water	Basic Sanitation	Basic Water & Sanitation
2010	664.4575	409.8734	962.3382
2011	396.1170	160.4587	1074.5954

The difference in funding is not limited to water versus sanitation, but extends to include large systems versus basic needs. While the distinction between funds allocated for water supply and those for sanitation was not made previous to 2010, the data still indicate more funds are earmarked for larger systems than to meet the basic needs of populations. The breakdown of funds between 2007 and 2011 into each activity of the water supply and sanitation sector confirms that funds apportioned to large systems water supply and sanitation are consistently higher than those for basic drinking water supply and basic sanitation, as made evident in Table 13. Basic water and sanitation supply compose a minimal part of the total budget.

Table 13: Funds Donated Per Activity from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	978.6195	1170.9003	3027.2727	962.3382	1074.5954
Educ./training: water supply & sanitation	16.0607	67.0160	16.7004	69.3487	76.8223
River development	282.1777	411.8878	221.4785	234.5391	377.6170
Waste management/disposal	414.9369	155.0405	255.0747	271.2615	390.3189
Water resources policy/admin. management	761.6263	927.1885	795.7014	980.2900	842.7919
Water resources protection	128.6482	247.5828	170.7308	69.9479	193.9187
Water supply & sanit. - large systems	3980.6488	4555.7493	4163.9582	2171.8274	1699.8899
Basic drinking water supply	N/A	N/A	N/A	664.4575	396.1170
Basic sanitation	N/A	N/A	N/A	409.8734	160.4587
Sanitation - large systems	N/A	N/A	N/A	639.2473	1506.5469
Water supply - large systems	N/A	N/A	N/A	1348.3628	1586.1775
TOTAL	6562.7182	7535.3651	8650.9169	7821.8390	8305.2542

While the basics needs of populations are not prioritised for funding, the most vulnerable regions have been the recipients of aid funds. Asia, and more specifically South and Central Asia, received the bulk of funds, followed by Africa. As can be seen in the categorisation in table 14, South and Central Asia received the most funds, 2.2 Billion USD, in 2011, followed by South of Sahara with 2 billion USD. The regions identified by most development agencies as being the most in need.

Table 14: Total Funds Donated per Region from 2007 to 2011

	2007	2008	2009	2010	2011
Europe	207.4203	309.9580	578.0240	239.2502	418.6687
Africa	2759.946	2697.979	2736.778	2871.619	2728.174
	0	0	0	0	0
North of Sahara	387.4018	496.7217	524.9761	656.7147	510.1560
South of Sahara	2364.949	2127.138	2050.080	2170.567	2028.657
	0	0	0	0	0
Africa Regional	7.5950	74.1200	161.7220	44.3380	189.3610
America	518.3006	905.6521	874.6887	1017.709	895.8144
				0	
North and Central America	381.1136	221.8047	386.3011	361.7620	142.4824
South America	136.5984	247.9956	410.7688	593.9250	681.1954
America Regional	0.5885	435.8517	77.6188	61.9920	72.1366
Asia	2873.078	3421.589	4236.204	3267.694	3922.373
	0	0	0	0	0
Far East Asia	885.1155	903.8449	1164.942	904.5621	1082.785
			0		0
South and Central Asia	1536.572	1216.917	1907.418	1438.137	2230.272
	0	0	0	0	0
Middle East	419.1425	1266.375	1142.002	862.0635	572.7550
		0	0		
Asia Regional	32.2477	34.4526	21.8414	62.9323	36.5610
Oceania	42.8302	11.5308	61.8679	125.1578	40.5833
Unspecified Countries					
Developing		161.2475	188.6558	163.3539	300.4054
Total		6562.823	7535.365	8650.917	7821.835
		0	0	0	4

The breakdown of funds according to classification, in table 15, reveals that low middle income countries (LMIC) receive the largest sum, followed by the least developed countries (LDC), with low income countries (LIC) receiving the least over the years. This echoes the idea that basic water and sanitation, which are most in need in the LDC and LIC, are not prioritized.

Table 15: Total Funds Donated Between 2007 and 2011 per Classification

	2007	2008	2009	2010	2011
Least Developed Countries (LDC)	1941.319	2063.76	2284.44	1899.77	2477.35
Low Income Countries (LIC)	307.8182	164.338	240.806	187.115	267.991
Low Middle Income Countries (LMIC)	2536.150	3473.931	3475.697	3601.407	3155.601
Upper Middle Income Countries (UMIC)	1407.448	858.822	2086.45	1495.40	1664.43
More Advanced Developing Countries and Territories	69.3855	22.6129	6.5899	1.8433	
Heavily Indebted Poor Countries (HIPC)	1781.768	1802.22	1929.28	1861.71	1634.83

Table 16: Overlap in Country Classifications between 2007 and 2011

	2007			2008			2009			2010			2011		
	No. of countries	Overlap with LDC		No. of countries	Overlap with LDC		No. of countries	Overlap with LDC		No. of countries	Overlap with LDC		No. of countries	Overlap with LDC	
LDC	49			49			49			49			48		
LIC	49	37		43	35		40	34		35	30		36	31	
LMIC	54	10		55	12		56	14		56	17		54	14	
UMIC	40	0		45	0		47	0		53	1		54	3	
HIPC	39	31		39	31		39	31		39	31		39	31	

For the remainder, the analysis will focus on sub-Saharan Africa, looking further into fund distribution and the achievement of goal 7 of the Millennium Development Goals. To better understand fund allocation, comparisons between funding received, GDP, population, and percentage access to water and sanitation, have been conducted. On the basis of the aforementioned comparisons, there does not seem to be a correlation between the sum of funds received and a nation's GDP, and population. However, a possible link between current per cent access rate to improved water sources and sanitation facilities and funding exists. While South Africa has the highest GDP of the studied countries, it was among the top countries in terms of allotted funds (figure 10). Nigeria was the 7th highest funded nation in the region, yet it has the second highest GDP. This strongly suggests that GDP is not a factor in the decision making process for funding distribution.

Funds Received vs GDP

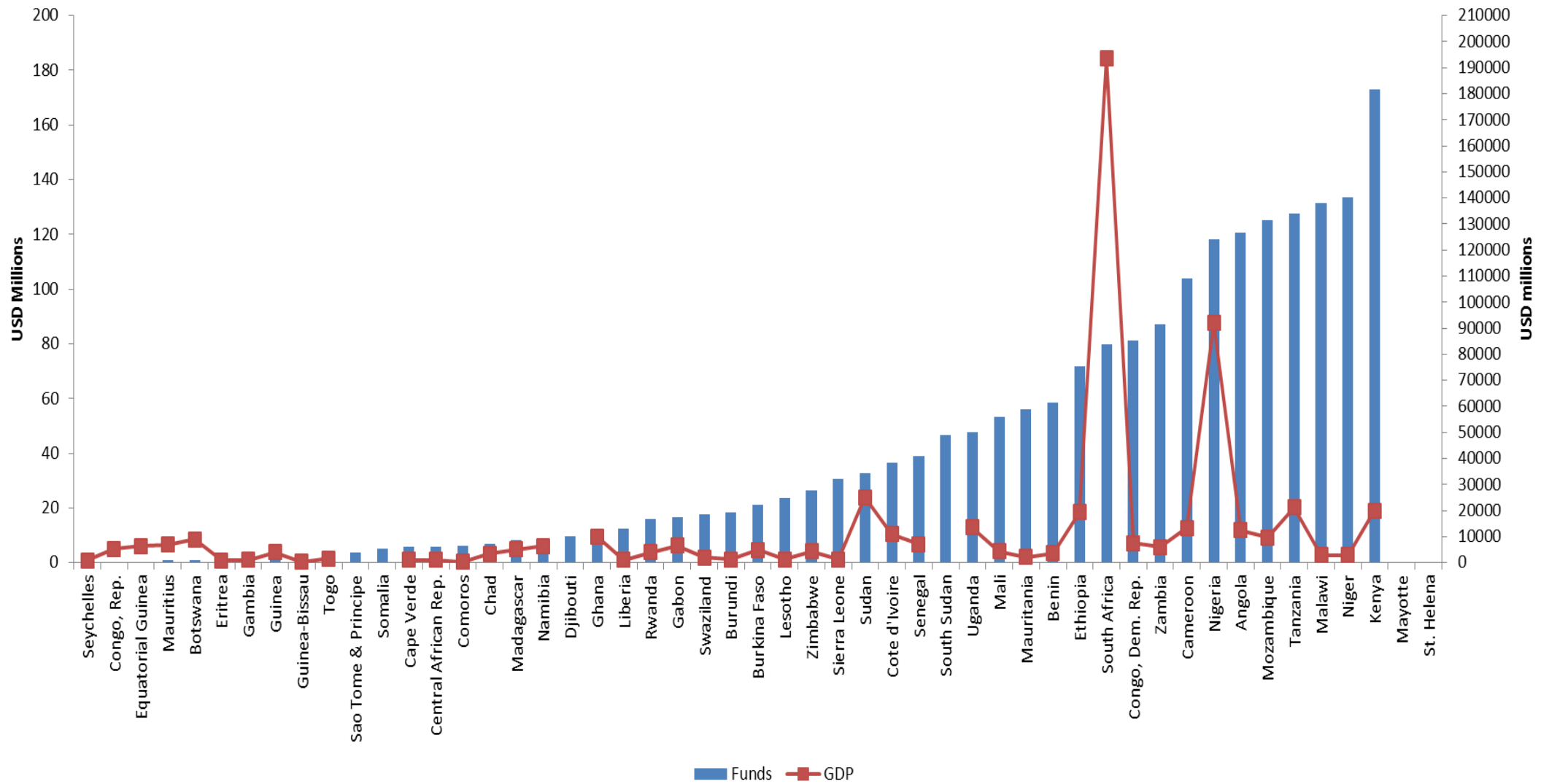


Figure 10: Funds received vs. GDP

Mauritania has one of the lowest populations in the region, nevertheless is the 14th highest funded country (figure 11). Ghana, Madagascar, and Guinea are all countries with larger populations, but still received fewer funds than previously mentioned Mauritania, demonstrating that population is also probably not a factor.

Funds Received vs Population

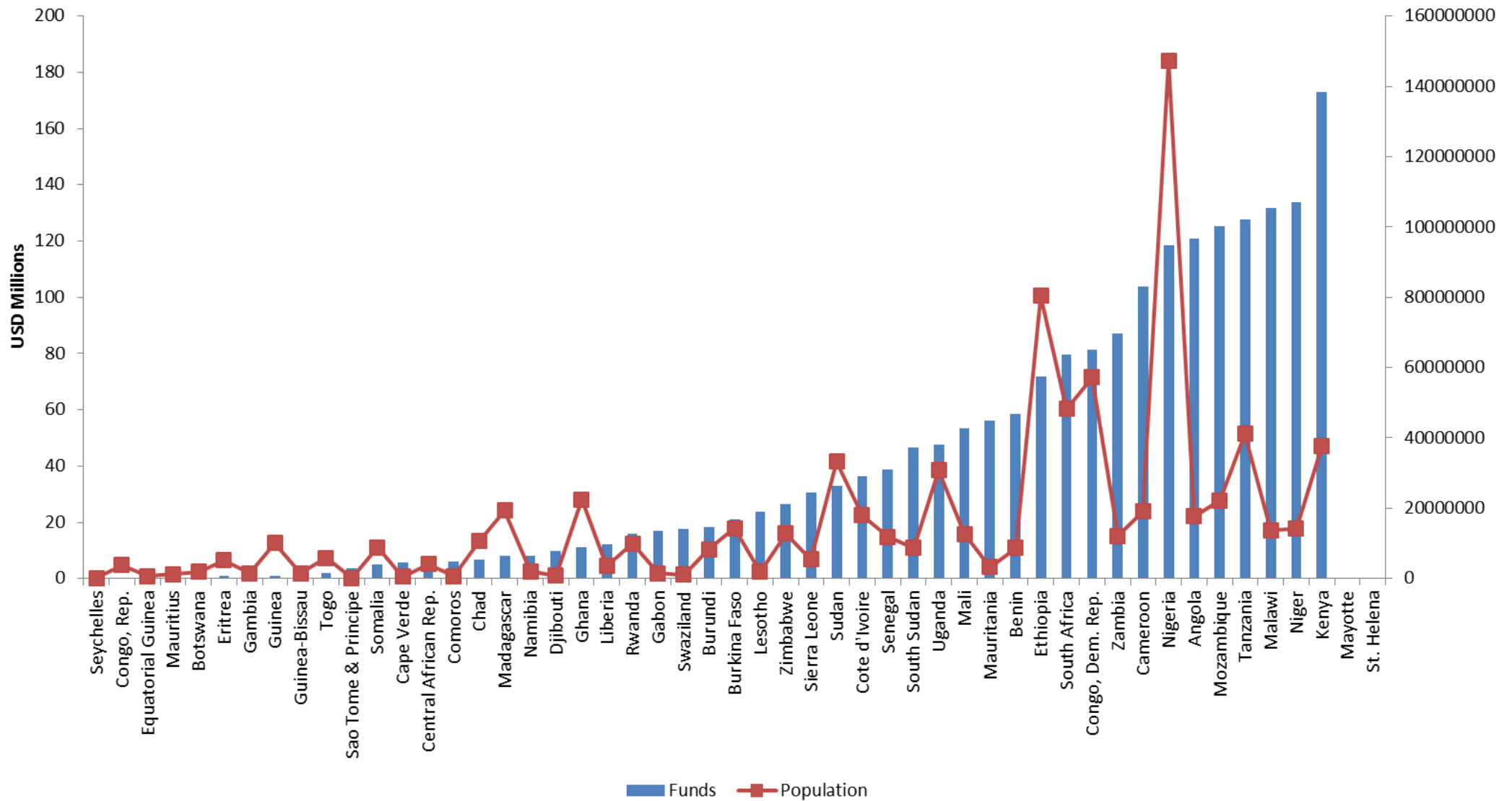


Figure 11: Funds received vs. population

A direct comparison of the per cent access rates to both improved water sources and sanitation facilities and funds received does not reveal a link. As can be seen in figure 12, many nations with low access rates were not well funded, while countries such as Ethiopia with high access rates are recipients of large sums. However, if the targets to meet the MDG are added, a potential link becomes more apparent. With the exception of a few nations, countries that are further from the target received more funds (figures 13 and 14). This assumption echoes findings of previous studies. Bain et al (2003) found that ODA was more concentrated in nations with the lowest access rates. Donor behaviour seems to be adapting their funds to target lower coverage levels (Bain et al., 2013). With the funds given to increase access to both safe drinking water and adequate sanitation, both access rates and targets are considered together. Malawi has achieved the water target, yet it continues to be one of the top funded nations, most likely to achieve the sanitation target. Most nations appear to be closer to achieving the water target, placing more emphasis on sanitation access rates. Considering figure 14, the top funded countries are all far from their target. The current per cent access rates, as well as the targets for all the countries in the region, for both water sources and sanitation facilities can be found in table 17.

Funds Received vs. Percent Access to Improved Water Sources and Sanitation Facilities

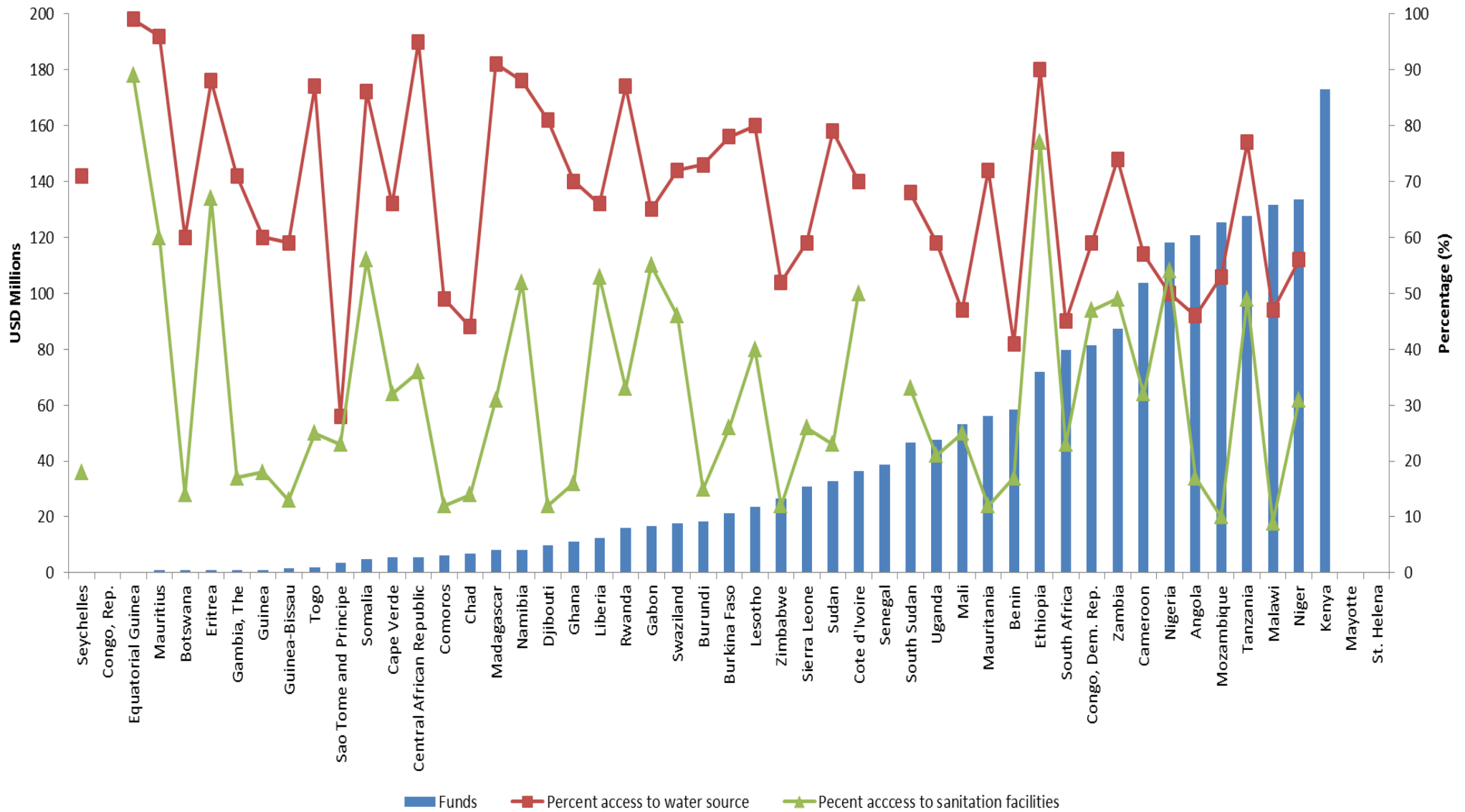


Figure 12: Funds received vs percent access to improved water and sanitation facilities

Funds Received vs Percentage Access to Improved Water Sources vs Target

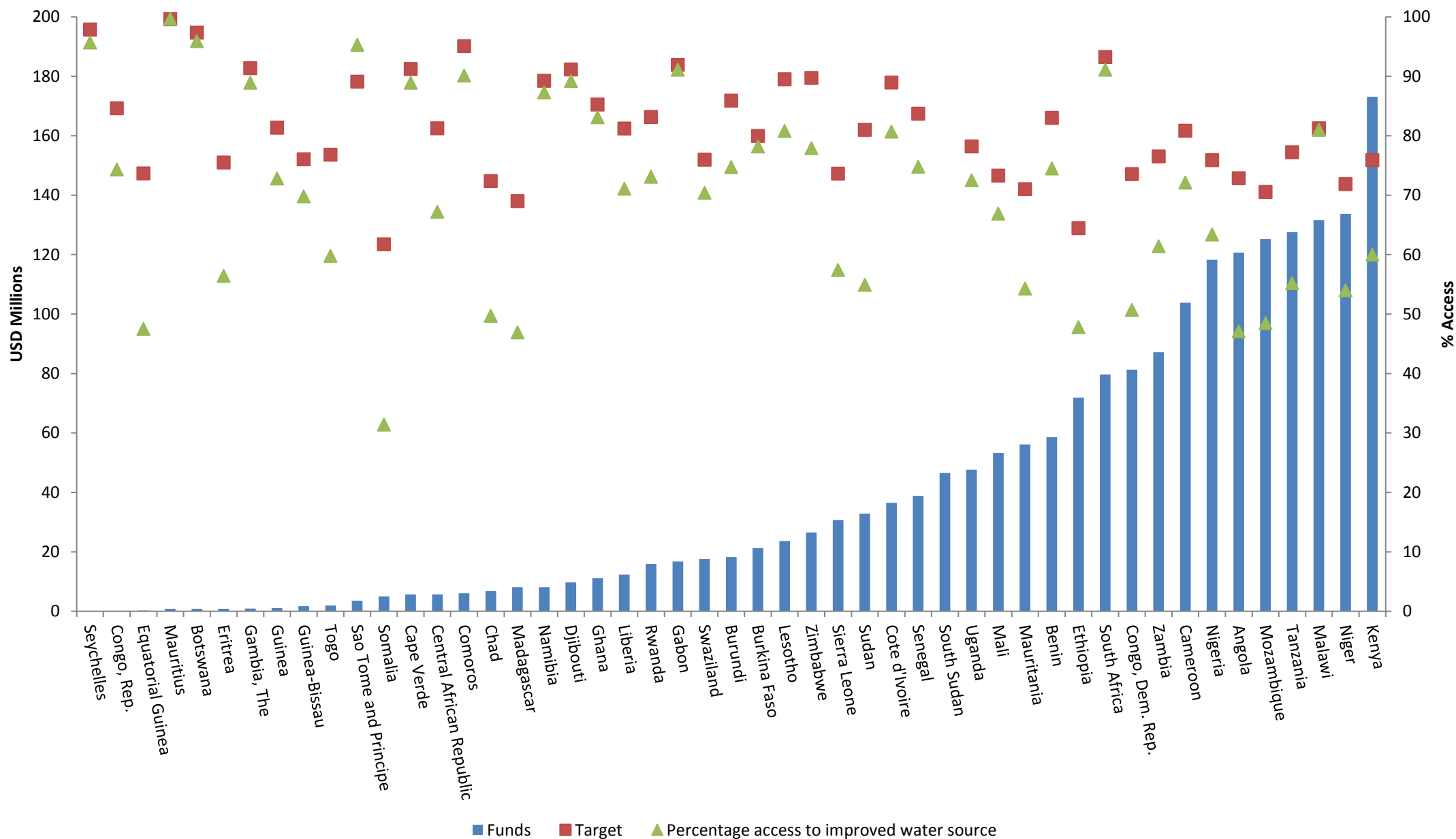


Figure 13: Funds received vs. percentage access to improved water sources vs target (2010)

Funds Received vs Percentage Access to Improved Sanitation Facilities vs Target

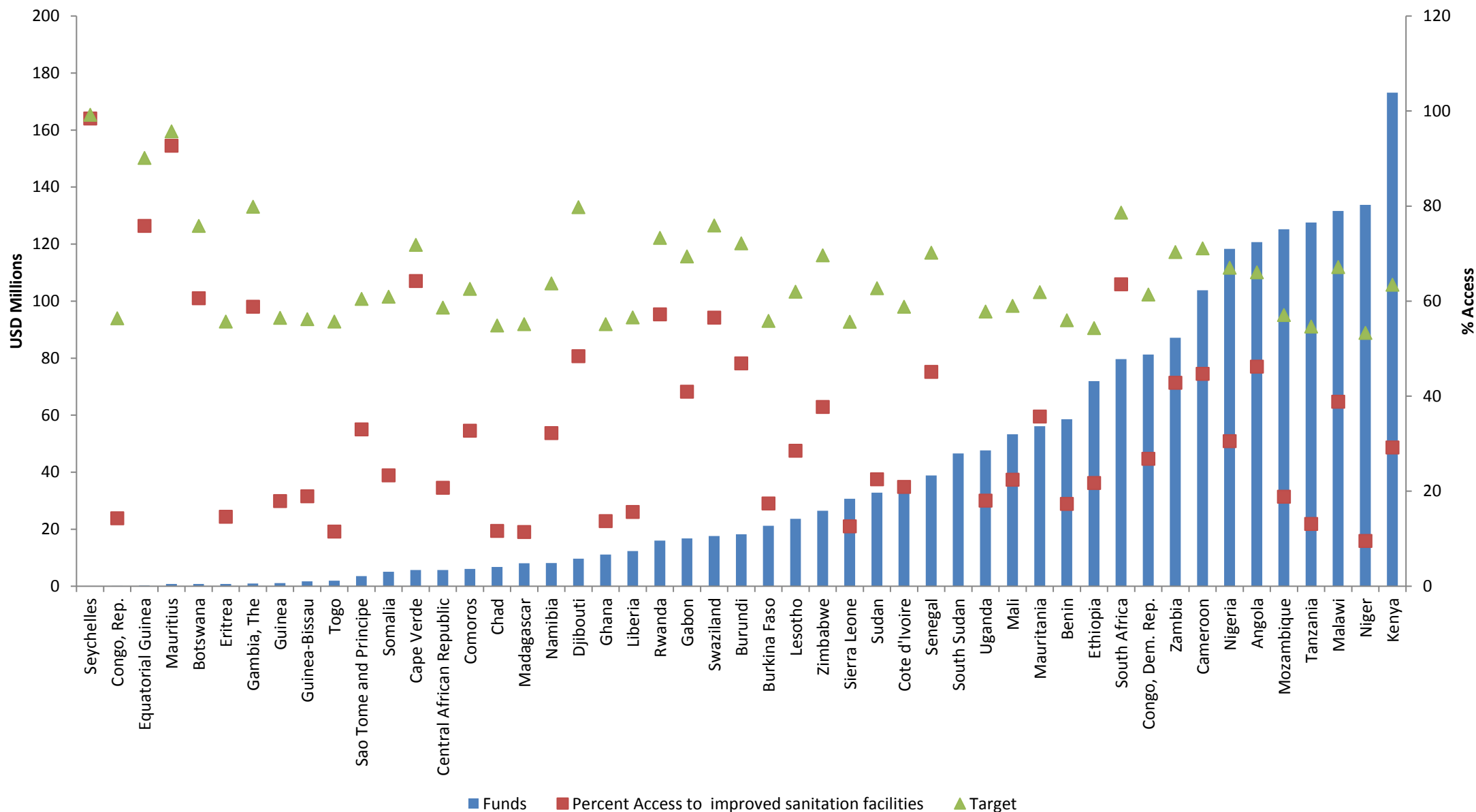


Figure 14: Funds received vs. percentage access to improved sanitation facilities vs. target (2010)

Table 17: Percentage of the population with access to safe drinking water and adequate sanitation vs targets in 2015

Country Name	Improved water source (% of population with access)	Target % of population with access to improved water source	Improved sanitation facilities (% of population with access)	Target % of population with access to improved sanitation facilities
Angola	49	72.85	51.6	66.05
Benin	77.9	83	19.7	55.95
Botswana	96.2	97.35	63.4	75.8
Burkina Faso	82.3	79.95	19.7	55.8
Burundi	75.9	85.9	75	72.15
Cameroon	75.6	80.85	45.8	71.1
Cape Verde	91.7	91.2	72.2	71.8
Central African Republic	68.5	81.25	21.8	58.6
Chad	50.8	72.35	12.1	54.85
Comoros	90.1	95.05	35.8	62.55
Congo, Dem. Rep.	52.4	73.55	28.7	61.35
Congo, Rep.	76.5	84.6	15	56.35
Cote d'Ivoire	81.9	88.95	22.5	58.8
Djibouti	90	91.15	47.4	79.75
Equatorial Guinea	47.9	73.65	47.6	90.1
Eritrea	57.8	75.5	15.7	55.7
Ethiopia	57.3	64.45	28	54.3
Gabon	93.2	91.9	41.9	69.4
Gambia, The	90.2	91.35	58.9	79.85
Ghana	88.7	85.25	14.9	55.15
Guinea	76.8	81.35	20.1	56.45
Guinea-Bissau	79.3	76.05	20.8	56.2
Kenya	63.2	75.9	30.1	63.45
Lesotho	81.8	89.5	30.3	61.95
Liberia	75.6	81.2	16.9	56.55
Madagascar	51.5	69	12	55.15
Malawi	90.2	81.25	41	67.15
Mali	77	73.3	24.7	59
Mauritania	57.9	71	40	61.85
Mauritius	99.9	99.6	93.1	95.7
Mozambique	51.1	70.55	20.5	57.05
Namibia	91	89.25	34.4	63.7
Niger	58.2	71.85	10.9	53.3
Nigeria	68.5	75.9	29	67
Rwanda	76.1	83.15	61.6	73.3
Sao Tome and Principe	97.1	89.1	34.7	60.45

Senegal	78.5	83.7	47.6	70.15
Seychelles	95.7	97.85	98.4	99.2
Sierra Leone	62.6	73.6	13.3	55.65
Somalia	N/A	61.75	N/A	60.9
South Africa	93.2	93.25	66.4	78.6
South Sudan	58.7	N/A	6.7	N/A
Sudan	N/A	81	N/A	62.7
Swaziland	74.1	75.95	57.5	75.9
Tanzania	55.6	77.2	15.6	54.65
Togo	63.1	76.8	11.6	55.7
Uganda	79	78.2	19.1	57.8
Zambia	65.4	76.5	43.9	70.3
Zimbabwe	76.9	89.7	36.8	69.6

The graphs below show the comparison between the target access rate (A) and the actual access rate (B) as a proportion of the target access rate. This reflects the difference between funding received by the country and the progress towards the target access rate in the corresponding year.

$$(\text{Target (A)} - \text{Access (B)})/\text{Target (A)}$$

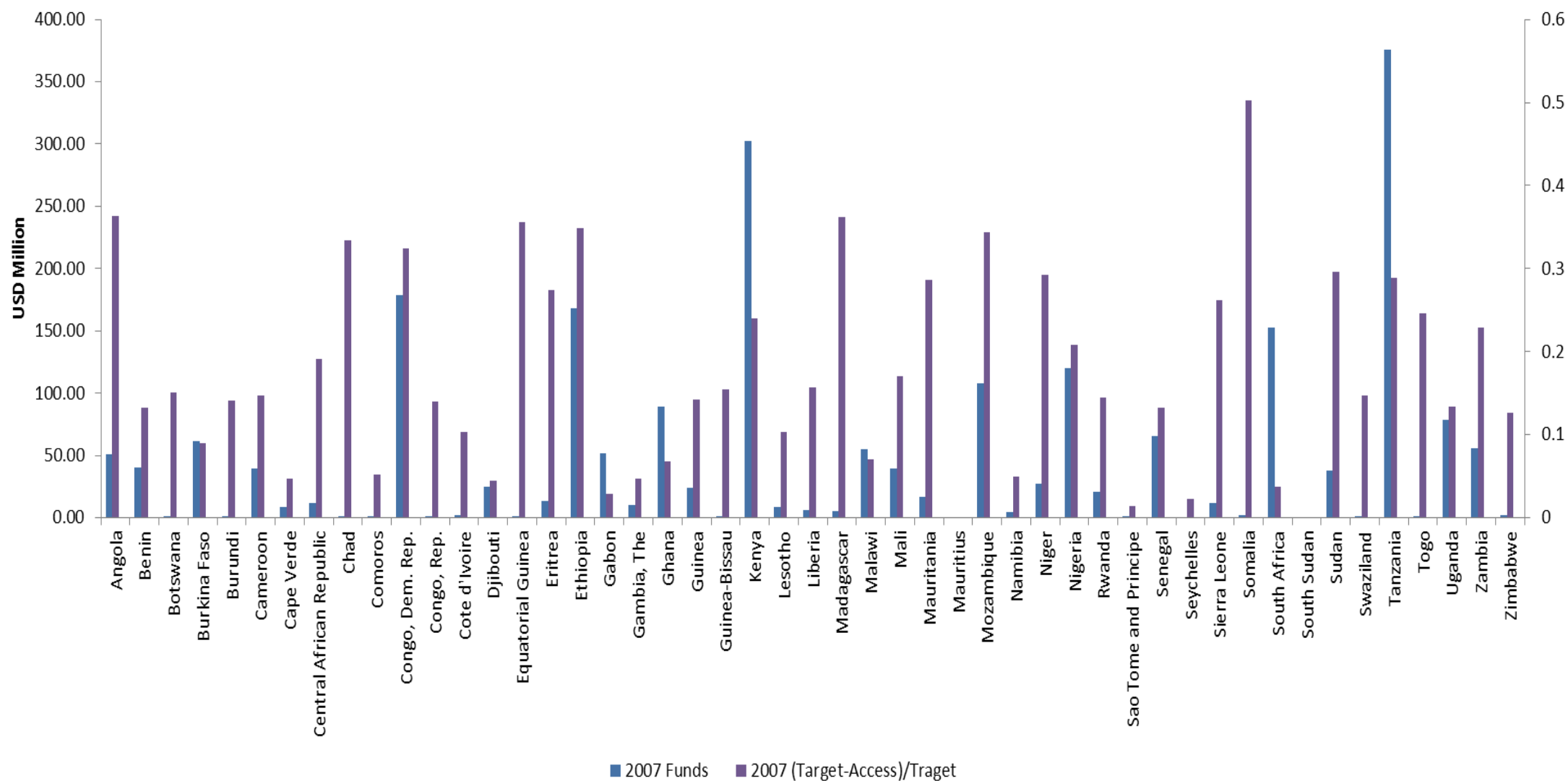


Figure 15: Difference between funding and progress towards target access rate - Water 2007

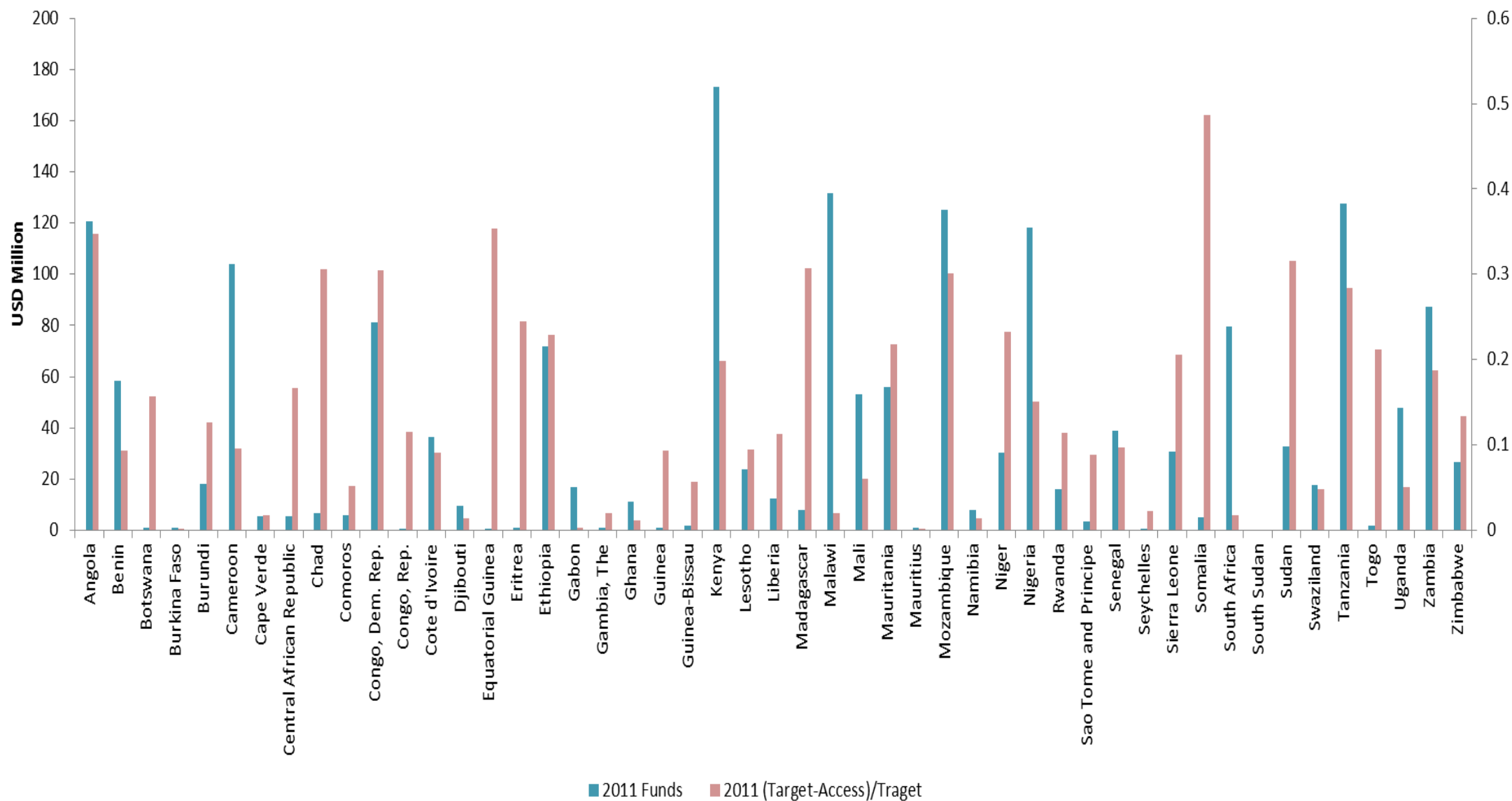


Figure 16: Difference between funding and progress towards target access rate - Water 2011

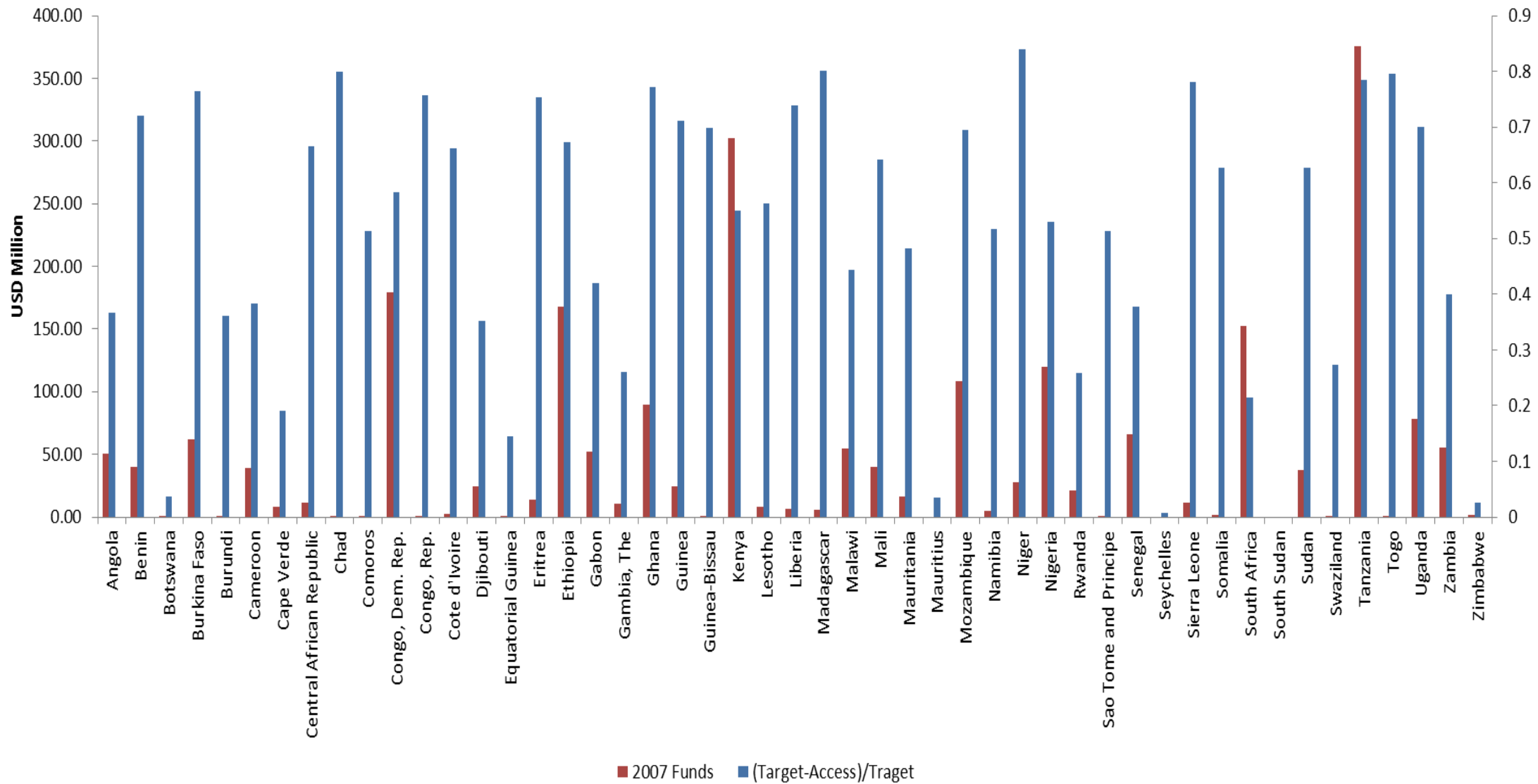


Figure 17: Difference between funding and progress towards target access rate - Sanitation 2007

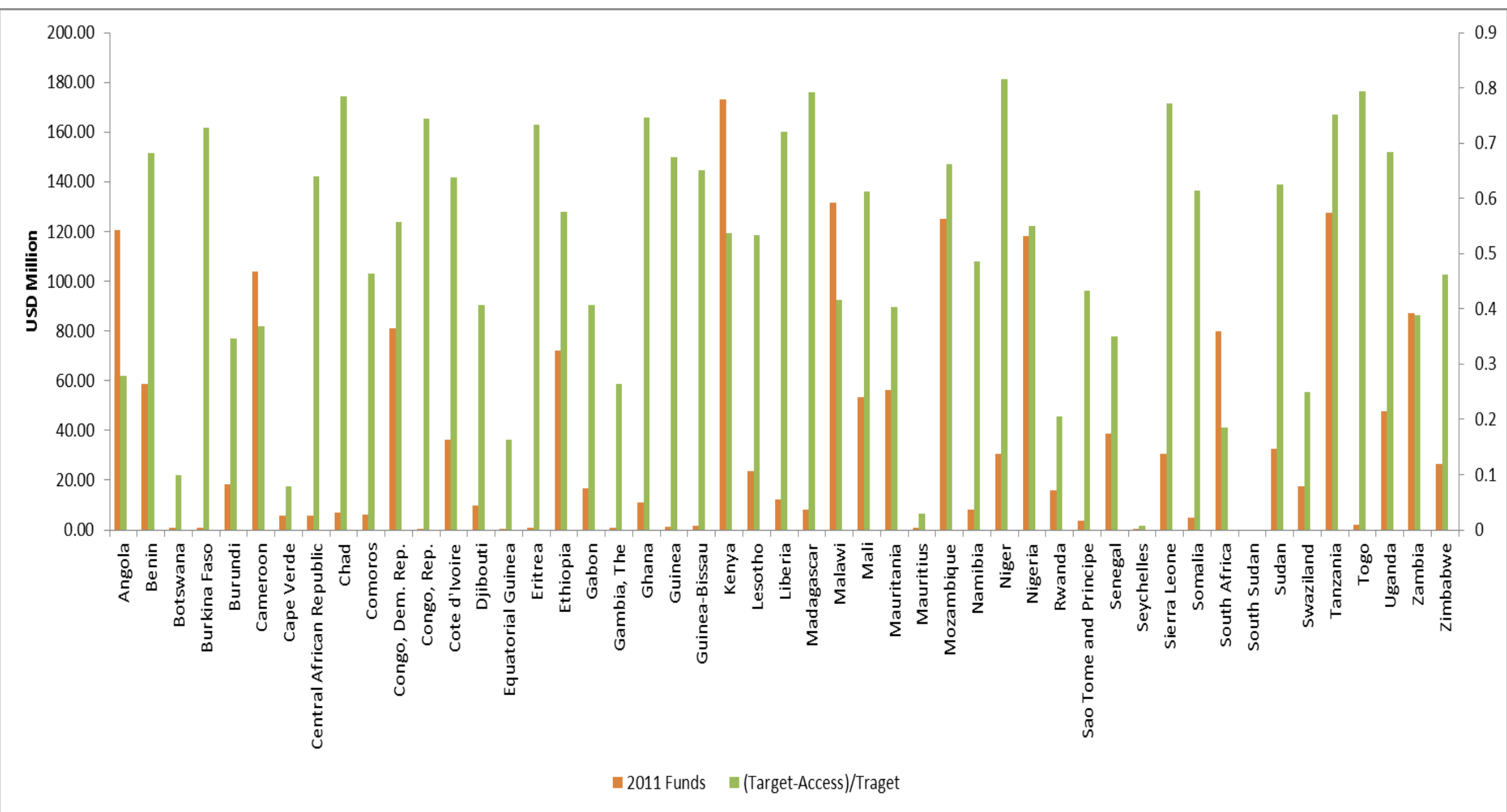


Figure 18: Difference between funding and progress towards target access rate - Sanitation 2011

5.4 Conclusion

Although there have been substantial improvements in access rates to improved water sources and adequate sanitation facilities on a global scale, many of the most vulnerable regions are lagging behind. Access rates in Sub-Saharan Africa reached 61% for improved water sources and 31% for adequate sanitation, whilst access rates in the LDC were reported as 63% for improved water sources and 36% for adequate sanitation. However, the majority of aid funding is directed to the regions most in need. Sub-Saharan Africa and South Central Asia received 2.2 billion USD and 2 billion USD respectively out of the 7.8 billion USD donated in 2011. Despite the majority of funds aimed at vulnerable regions, the lack of significant improvement is indicative of underlying issues other than lack of funding. This warrants a closer look at funding practices.

An analysis of financial data taken from the OECD reveals a correlation between funding and access rates, countries farther from reaching the target access rates for either improved water sources or adequate sanitation, or both received comparatively more funds. No link or correspondence was recognised between GDP and funding, or population and funding. Size of nations, population density, and land area may influence access rates. The analysis also uncovered inequalities in funding allocation. Larger sums were allocated to projects directed towards water and large systems compared to projects with a primary focus on sanitation or the basic needs of a population. Such disparity can be a factor causing slow progress, with investments targeted towards existing infrastructure and away from expanding coverage. This highlights the need for continuation of aid and better targeting, as well as improved funding practices.

The current fragmented and incoherent way of dealing with funding the water and sanitation sector, has led to slow progress and delays in meeting the targets, causing intense scrutiny of the MDGs and its methods. The examination of funding practices and the expansion of access to safe drinking water and adequate sanitation exposes the numerous lapses in the current situation and calls for a holistic approach. A further, more expansive investigation of the extent to which funding drives the lag in progress in the water and sanitation MDG is called for on a more detailed scale.

Chapter 6: Case study: Sub-Saharan Africa

6.1 Introduction

This chapter investigates the role and extent to which the funding mechanisms drive the delay in the completion of the water and sanitation MDG on a national level using the countries in Sub-Saharan Africa as a case study. Sub-Saharan Africa is one of three regions reported to contain 80% of the global population without access to safe drinking water and adequate sanitation (Hutton et al., 2007), and is viewed as one of the poorest areas. The region has made considerable progress in improving education and health outcomes, but seems to lag behind in the provision of safe drinking water and adequate sanitation (Ndikumana and Pickbourn, 2017). This could be due to smaller investments in the sector. Donors at the G8 summit in 2005 committed to increasing aid to the sector and sub-Saharan Africa specifically, to improve infrastructure and public services for education, health, water, and sanitation (Wolf, 2007). However, the share apportioned to the water and sanitation sector in sub-Saharan Africa remains low in comparison to other sectors and regions (Wolf, 2007, Salami et al., 2014, Ndikumana and Pickbourn, 2017). The World Bank have stated that the capital investment required to complete the SDGs for water, sanitation, and hygiene is approximately 3 times the current investment levels (Hutton and Varughese, 2016). According to the latest available figures in World DataBank, 67.6% of the population in Sub-Saharan Africa have access to an improved water source, and 29.7% of the population have access to improved sanitation facilities. This is despite 1.6 billion USD in aid channelled to the sector in the region in 2015 (OECD, 2016). The discrepancies between the amount of funds directed towards the water and sanitation sector and access rates is indicative of more complex issues than just a lack of funding or resources. While some nations, such as Botswana, have already achieved their targets, some countries, for example Somalia or Togo, have yet to make a dent in one or both of theirs. Most efforts to increase access to social services in Africa focus on mobilising financial resources, and not on the effectiveness of the existing allocations in achieving development goals. This is a big part of the problem (Ndikumana and Pickbourn, 2017). It is important to look into the progress made in regions like Sub-Saharan Africa to estimate the effectiveness of resources in achieving aid goals. In order to perform better and increase access rates to safe drinking and adequate sanitation, it is important to understand the current system. An extremely important issue in funding the water and sanitation sector is understanding how nations utilize the limited ODA designated to the water and sanitation sector to achieve the best possible performance in delivering services (Salami et al., 2014). To better understand the improvement being made in the region, an analysis of spending patterns over the 5-year period from 2007 to 2011 compared with access rates to safe drinking water and adequate sanitation was completed. The OECD divides the water supply and sanitation sector into 7 sub-components prior to 2010, later increased to 11 in 2010 in its reporting system, Creditor Reporting System. The categories cover all aspects of the water and sanitation sector, from resource protection to building large complex systems. All categories are listed below in table 18 with a brief description. Prior to 2010, water and sanitation were combined in the same category: basic drinking

water supply and basic sanitation, and water supply and sanitation – large systems, making it more difficult to separate funds earmarked for water supply versus those for sanitation.

It is also important to note that all figures for access rates and therefore rates of improvement are based on reported numbers by the countries themselves. Monitoring and follow-up on progress made towards achieving the MDG is the responsibility of the individual nations, and relies on the collection of quality and accessible data. This has the potential to result in overestimations of access rates and the misallocation of resources.

Table 18: Sub-categories of the water supply and sanitation sector in the OECD

Basic drinking water supply and basic sanitation	Prior to 2010, all basic water and sanitation systems. After 2010, programmes where it is not known or components cannot be identified
Education/training: water supply & sanitation	Education and training for professionals and service providers in the water and sanitation sector.
River development	Integrated river basin projects with a focus on infrastructure and related institutional activities; dams, river flow control and reservoirs.
Waste management/disposal	Solid waste management including toxic and hazardous (municipal and industrial); collection, disposal and treatment; composting and reuse; landfill areas.
Water resources policy / administrative management	Activities in accordance with the Integrated Water Resource Management; water sector legislation, planning and management, regulation, transboundary management; policy and governance; institutional capacity building.
Water resources protection	The collection and use of qualitative and quantitative data for water resources protection; the dispersal of water knowledge; rehabilitation and conservation of surface waters, ground water and coastal waters; prevention of contamination.
Water supply & sanitation - large systems	Prior to 2010, all large water and sanitation systems. After 2010, programmes where it is not known or components cannot be identified.
Basic drinking water supply	Basic systems generally shared between household or shared connections; rural and urban water supply programs with hand pumps; rainwater collection and fog harvesting; spring catchments, storage tanks, gravity-fed systems; small distribution systems; urban local neighbourhood networks.
Basic sanitation	On-site disposal and alternative sanitation systems, latrines, the promotion of investment by communities for the construction of facilities.
Sanitation - large systems	Large scale sanitation facilities, including sewage pumping stations; industrial and domestic wastewater treatment plants; and trunk sewers.
Water supply - large systems	Large-scale potable water treatment plants; water supply pumping stations; intake works; storage; transportation and distribution systems.

(adapted from the OECD DAC Creditor Reporting System: Guidance for the use for water supply and sanitation purpose codes (Cotton, 2010))

6.2 Methodology

6.2.1 Financial Data

The financial data were sourced from the OECD as they are one of the few institutions that track their transfers with some accuracy (Trémolet and Rama, 2012). The data are made available through the Creditor Reporting System (CRS). The intention of the CRS database is to provide readily available basic data that allows the analysis of aid funding. It outlines where aid funds go, what purposes it serves and what policies it seeks to implement for all DAC members. The financial data on individual projects and programmes are collected, with some descriptive information made available. The geographic scope of the data is limited to developing countries and territories eligible to receive official development assistance (ODA) (OECD, 2016).

Financial data of funds received for the countries: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Republic of Congo, Cote d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe were collected from the Creditor Reporting System (CRS) (OECD, 2016) over the date range 2007 to 2011 for the categories: Basic drinking water supply and basic sanitation, education/training: water supply and sanitation, river development, waste management/disposal, water resources policy/administration management, water resources protection, water supply and sanitation – large systems, for 2010 and 2011: basic drinking water supply, basic sanitation, sanitation – large systems, water supply – large systems.

The total committed funds to water supply and sanitation was divided into the seven sectors or eleven for 2010 and 2011. This illustrated and indicated the types of projects and different sub-sectorial activities funded between 2005 and 2011. It also allowed for the comparison of the total funds directed to the provision of basic water and sanitation with access rates through the studies time period. This comparison demonstrated and supported by the data, indicated potential explanations as to why countries receiving large amounts of aid, did not necessarily increase access rates to safe drinking water and adequate sanitation.

A financial profile was developed for each country in Sub-Saharan Africa outlining the total amount of funds received per year, as well as the breakdown into the different identified sub-sectors. This was tabulated for 48 nations over the 5 years.

6.2.2 Access rates

Access rates to safe drinking water and adequate sanitation for 48 nations were retrieved from the World Bank Database: World DataBank, for the time period 2007 to 2011 (UNICEF and WHO, 2016).

DataBank (databank.worldbank.org) is an online analysis and visualisation tool that allows the generation of tables, charts, and maps, as well as the performance of customised queries, and to download data. It provides access to collections of time series data from over 55 databases. The database is consistently updated and maintains a record of calculated and reported changes related to development indicators, including the Millennium Development Goals (World Bank, 2016).

Sub-Saharan Africa was selected as it encompasses a wide range of situations, both in terms of funding and access rates, with countries having achieved half of Goal 7.C and other still lagging behind. It is a good extrapolation for the global scenario. The date range from 2007 to 2011 was used for the analysis. The data were used to plot the change in access rates to both safe drinking water and adequate sanitation throughout the years. The information was also utilised to calculate the percentage difference in access rates year from year. This was applied as a representation of the progress brought about by the investment in the sector.

Data on access rates to safe drinking water and adequate sanitation were retrieved to illustrate the progress made towards achieving the MDG targets throughout the 5-year period, from 2007 to 2011. The effects of mobilised activity and extra investment, encouraged by the creation of the MDGs, on access rates is also evident through the examination of the data.

6.2.3 Calculation of targets

The calculation of the national MDG 7, target 7.C targets for access to safe drinking water and adequate sanitation was completed using the following formulas:

$$\text{IMPROVEMENT}_i = 0.5 \cdot (100 - p_i)$$

where p_i is the estimated proportion of the population with access to water or sanitation in 2000.

$$\text{MDGtarget}_i = \text{ACCESS2000}_i + \text{IMPROVEMENT}_i$$

where ACCESS2000 is the proportion of the population with access to water or sanitation in 2000.

These were adapted from the formulas found in P.B. Anand's research paper: Millennium Development Goal 7: An Assessment of Progress with Respect to Water and Sanitation: Legacy, Synergy, Complacency or Policy? (Anand, 2006). Despite target 7.C stating the baseline as the 1990 values, for the purpose of this thesis, the values corresponding to access rates in 2000 were used as the baseline, since it is a more complete dataset (table 19).

Table 19: Access rate data available in 1990 and 2000

	1990		2000	
	Access to Safe Drinking Water	Access to Adequate Sanitation	Access to Safe Drinking Water	Access to Adequate Sanitation

Total Number of Countries (Global)	217	217	217	217
Complete Data	171	164	202	201
Total Number of Countries (sub-Saharan Africa)	49	49	49	49
Complete Data	41	38	48	48

6.2.4 Limitations

As with all forms of research, there are limitations to the approach taken in the research and the analysis. These limitations, as they apply to this thesis, are discussed in this section. The financial data used in this thesis represents funds committed to the aid sector, rather than disbursements. Nations capacity to absorb aid effectively is part of the problem and the current funding practices. The use of committed funds instead of disbursement is an indication of the amount of funds available to the sector, not only what is actually used on the ground. These data were employed since they are tracked with some degree of accuracy by the OECD. This can be considered as a shortcoming, as it does not necessarily represent the actual sums that reach the designated recipients.

It is also worth mentioning that there is a lag between the commitment of funds to the sector, investment, and disbursement. This represents the flow of funds from donor to recipients, allocation to specific projects, capital and maintenance works to be commissioned, procured, and completed. The lag translates into delayed changes in access rates to safe drinking water and adequate sanitation.

Access rates to safe drinking water and adequate sanitation for 217 nations were retrieved from the World Bank Database: World DataBank, for the time period 1990 to 2011. These datasets are estimated based on reported national figures, making them a limitation of this methodology. Coverage reported by the World Bank is a weighted average of data compiled by the Joint Monitoring Program of the WHO and UNICEF. The WHO and UNICEF derive the data per country as a best-fit trend line drawn through country estimates for water and sanitation coverage gathered from nationally representative household surveys (Botting et al., 2010). This method of determining access rates leaves considerable potential for smoothing over of figures and overestimations. Adjusting the data to a best fit trend line could disguise any direct impact of funding fluctuations on the funding progress in increasing coverage.

Also, the study does not directly factor in or consider the political, cultural, and diplomatic impacts that effect the commitment of funds and progress in access rates.

6.2.5 Political Risk Index

The political risk index (PRI) measures the level of risk present to governments, investors, and corporations according to political and economic features. It was developed by the CountryWatch and is calculated using the combined scores of the following criteria: (Coleman, 2016e)

- Political stability: record of smooth and peaceful transition of power, and ability of government to carry out duties with a productive executive-legislative relationship.
- Political representation: multi-party participation in free and fair elections, right of suffrage and the influence of foreign powers.
- Democratic accountability: constitutional protection of human and political rights, and civil liberties, as well as a good record of respecting rights.
- Freedom of expression: constitutional protection of freedom of expression and the media, as well as right to dissent.
- Security and crime: degree to which the protection and safety of citizens and law and order is ensured.
- Risk of conflict: threat or presence of conflict; record of civil unrest and coups; threats posed by internal/external tension or terrorism/insurgency.
- Human development: access to education, quality of life, and socio-economic conditions.
- Jurisprudence and regulatory transparency: impartiality of the legal system, and transparency and durability of the regulatory system.
- Economic conditions: investment climate and economic stability.
- Corruption: degree of perceived corruption and governmental efforts to combat it.

The score is assigned from 0 to 10, with 0 representing the highest political risk, and 10 marking the lowest (Coleman, 2016b).

6.2.6 Corruption Perception Index

The corruption perception index (CPI) is released on a yearly basis by Transparency International and is the most widely used corruption indicator. It scores and ranks countries according to how corrupt nation's public sector is perceived to be. The scores and ranks are determined using a combination of surveys and assessments of corruption, conducted by reputable institutions. A minimum of 3 CPI data sources are necessary for a country to be included in the ranking, meaning if a nation is not featured; it is due to insufficient information. CPI sources are independent institutions specialising in governance and business climate analysis that provide a score and measure perceived corruption in the public sector. All methodology used by CPI sources is reviewed by Transparency International to ensure quality standards. Examples of CPI sources are: African Development Bank Governance Ratings, Bertelsmann Foundation Sustainable Governance Indicators, Bertelsmann Foundation Transformation Index, Economist Intelligence Unit Country Risk Ratings, Freedom House Nations in Transit, Global Insight Country Risk Ratings, IMD World Competitiveness Yearbook, Political and Economic Risk Consultancy Asian Intelligence, Political Risk Services International Country Risk Guide, World Bank - Country Policy and Institutional Assessment, World Economic Forum Executive Opinion Survey (EOS), World Justice Project Rule of Law Index.

The CPI is calculated using the following steps:

- Select data sources. All data sources used for the determination of the CPI must meet the criteria:
- Quantifies perceptions of corruption in the public sector
- Be based on a valid methodology, scoring and ranking multiple nations on the same scale
- Performed by a credible institution and expected to be repeated regularly
- Allows for sufficient variation of scores to distinguish between countries.
- Standardize data sources to a scale of 0 – 100. 0 indicates the highest level of perceived corruption and 100 the lowest level of perceived corruption. This is achieved by subtracting the mean of the data set and dividing by the standard deviation, resulting in z-scores. These are adjusted to have a mean of approximately 45 and a standard deviation of approximately 20, making the data set fit in the CPI 0 – 100 scale. For comparison purposes, the mean and standard deviation are taken from the 2012 scores, creating a comparable baseline year.
- Calculate the average. A minimum of 3 sources are required to have assessed a country for it to be included in the CPI. All the standardised scores available for a country are averaged out to create a CPI score. Scores are rounded to whole numbers.
- Report a measure of uncertainty. The corruption perception index is accompanied by a standard error and confidence interval that captures the variation in scores of the data sources available for each territory.

All scores are range from 0 to 100, where 0 represents a high perception of corruption in the public sector and 100 a low perception of corruption. A country's score is calculated from a minimum of 3 sources and is indicative of how corrupt the public sector is perceived to be. A nation's rank is its comparative position to other countries in the index.

6.3 Results: Examination of funding allocation practices

A snapshot of funding practices in the water and sanitation sector for the 5-year period from 2007 to 2011 in the 48 countries in Sub-Saharan Africa reveals areas prioritised for resource allocation. This information allows for a direct comparison between targeted funding and access rates to safe drinking water and adequate sanitation. The evaluation is a good indication of whether the capital directed to the sector and its sub-categories is helping to achieve the main goal of increasing access to safe drinking water and adequate sanitation. Based on these conclusions, the potential of a change in practice is highlighted and the benefits of applying a NBA to the sector are made evident. As previously demonstrated, a main strength of a NBA is the identification of needs (what needs to be done/accomplished), and their prioritisation. This helps avoid misallocation of resources, and contributes to transparency. The application of a NBA to the water and sanitation sector greatly increases the efficiency and effectiveness of funded projects, therefor justifying funding practices and prioritised areas. Not only does this provide an objective rationale to funding decisions, but also would help in minimising wasting resources while working towards reaching the target.

6.3.1 Regional funding practices

To illustrate the current practices of funds allocation, a dissection of the received resources per activity for Sub-Saharan Africa was completed. LDCs were included as a representation of nations not part of the Sub-Saharan region, but still recipients of large amounts of aid. In both cases, the bias towards water supply and large systems are easily identifiable. Funds donated for large systems, be it for water supply or sanitation, are significantly more than those for basic water supply and sanitation. In 2009, water supply and sanitation – large systems (1.1 billion USD) received almost double the funds allocated to basic drinking water supply and basic sanitation (661 million USD) for Sub-Saharan Africa (table 20). The difference is more pronounced in the LDC for both 2007 and 2008, where large systems was more than double (table 21).

Table 20: Funds Donated Per Activity in Sub-Saharan Africa from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	472.5573	572.9516	661.0712	364.0857	467.3623
Educ./training: water supply & sanitation	7.6369	34.7822	6.7938	54.9048	6.3989
River development	211.9304	141.9190	10.0189	38.8679	40.7572
Waste management/disposal	49.9914	26.9355	5.6168	18.1711	45.4909
Water resources policy/admin. management	478.3175	322.1775	214.6123	202.5357	262.9038
Water resources protection	36.8001	29.8074	2.3428	11.1162	45.5276
Water supply & sanit. - large systems	1107.7155	998.5644	1149.624	739.5394	379.7199
Basic drinking water supply	N/A	N/A	N/A	154.2690	101.3915
Basic sanitation	N/A	N/A	N/A	44.4863	84.3078
Sanitation - large systems	N/A	N/A	N/A	108.5434	93.3232
Water supply - large systems	N/A	N/A	N/A	434.0470	501.4739
TOTAL	2364.9491	2127.137	2050.080	2170.566	2028.6570

Once the distinction between funds meant for water supply and those for sanitation is made, it is evident that water supply (large systems and basic) received larger sums than those pledged to sanitation (large systems and basic), reemphasising the previously mentioned prioritisation of water over sanitation. However, even with this inequality, large systems continued to take advantage of larger sums than basic provision. In 2011, 501.4 million USD were allotted to large water supply systems compared to 101.3 million USD for basic drinking water supply. While large sanitation systems were dealt 93.32 million USD, basic sanitation received 84.3 million USD (table 20). The same discrepancies are visible in the LDC (table 21).

Table 21: Funds Donated per Activity in the LDC from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	461.7149	452.9509	839.2348	391.3593	485.8192
Educ./training: water supply &	7.9081	33.1637	4.4895	55.6245	8.8760

sanitation					
River development	77.1123	214.1915	90.2313	43.6181	324.3556
Waste management/disposal	43.0318	14.4541	1.46E+02	20.5783	48.6656
Water resources policy/admin. management	253.1732	384.4111	253.0695	242.0227	206.5929
Water resources protection	72.6439	40.6953	8.3018	4.5023	52.2948
Water supply & sanit. - large systems	1025.7346	923.8968	943.3651	491.6325	348.0235
Basic drinking water supply	N/A	N/A	N/A	119.2515	238.7191
Basic sanitation	N/A	N/A	N/A	31.9927	27.1081
Sanitation - large systems	N/A	N/A	N/A	103.2218	60.0581
Water supply - large systems	N/A	N/A	N/A	395.9704	676.8455
TOTAL	1941.3188	2063.7634	2284.4461	1899.7741	2477.3584

A yearly comparison of fund allocation, for both regions, is illustrated in figure 15 and figure 16 below. As can be seen, the majority of funds in sub-Saharan Africa are allocated for water supply and sanitation, with significant sums earmarked for water resources policy and administrative management. As previously mentioned and illustrated, large water supply and sanitation systems receive notably more funds than any other activity, as made evident in figure 15. The distribution of funds in the LDC is more varied, with water resource protection, waste management, and river development apportioned notable sums. However, water supply and sanitation remains the principle recipient of the funds.

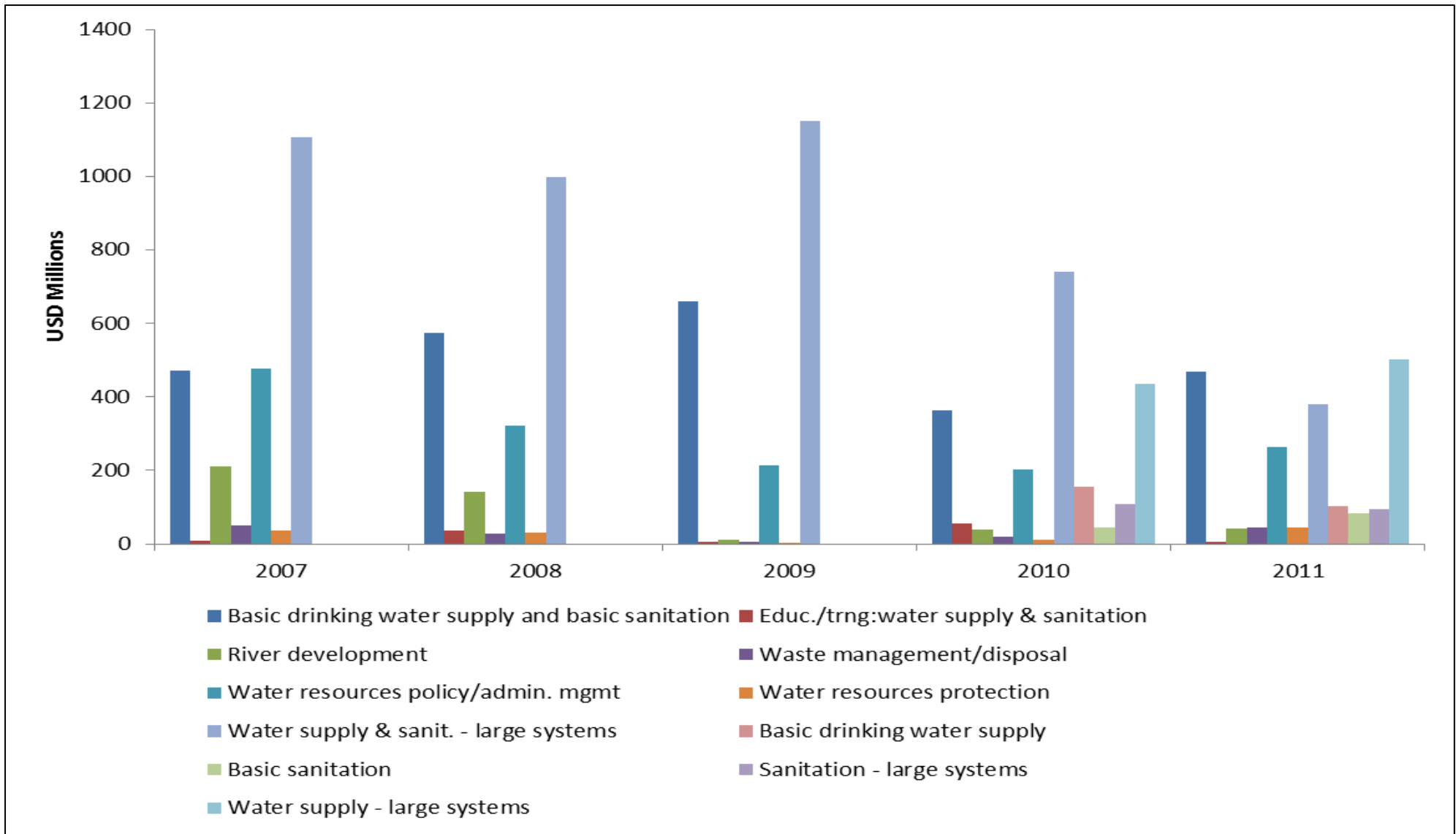


Figure 19: Funds received per activity in Sub-Saharan Africa

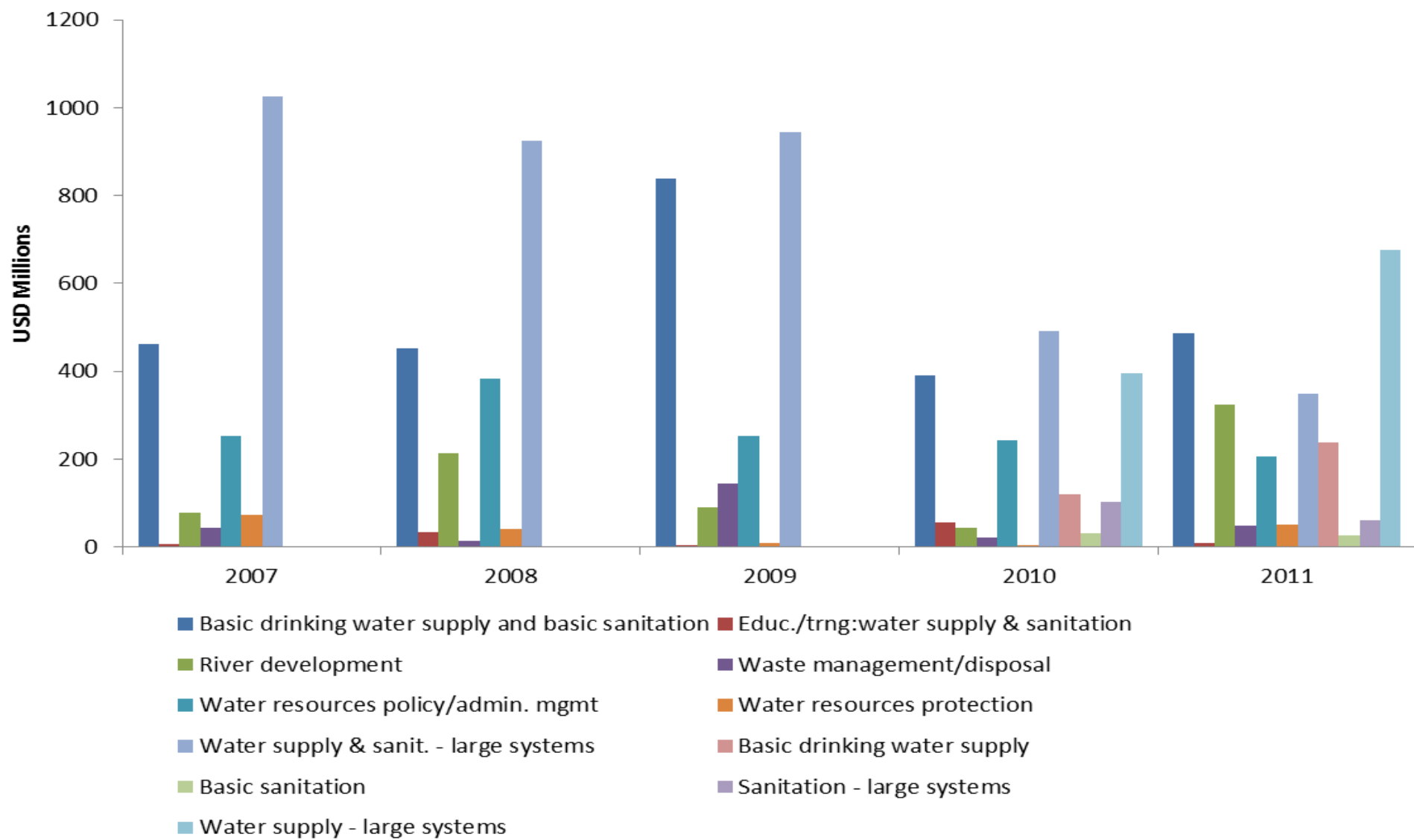


Figure 20: Funds received per activity in LDC

6.3.2 National funding allocation practices and the delivery of MDG 7

To better demonstrate the need for new funding practices in the sector, an analysis of individual country's resource allocation in the water supply and sanitation sector from 2007 to 2011 was completed for all 48 countries in Sub-Saharan Africa.

6.3.2.1 Angola

Access rates in Angola steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 21 illustrates the percentage left to complete the water and sanitation targets in Angola.

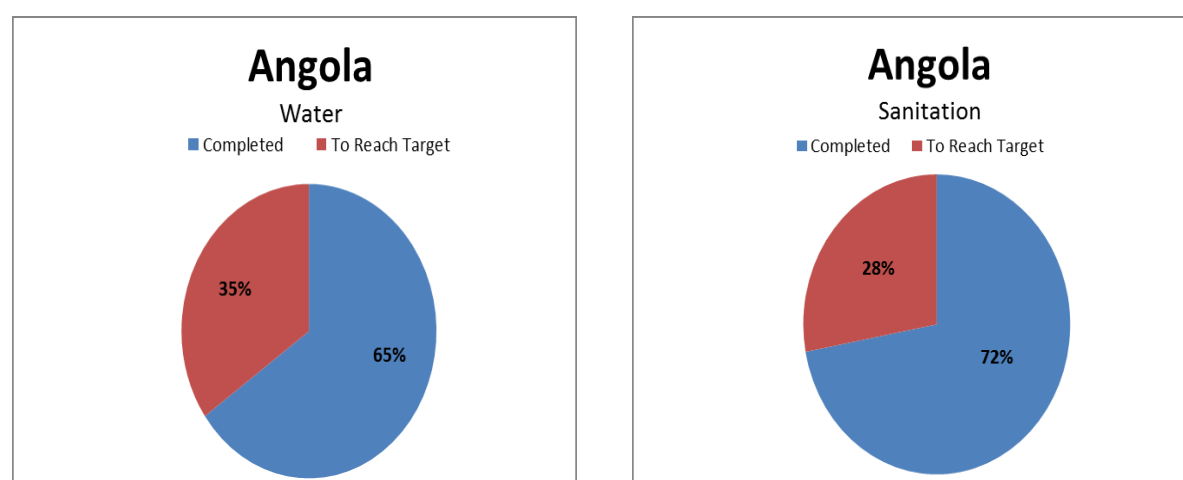


Figure 21: Percent completion of water and sanitation targets - Angola

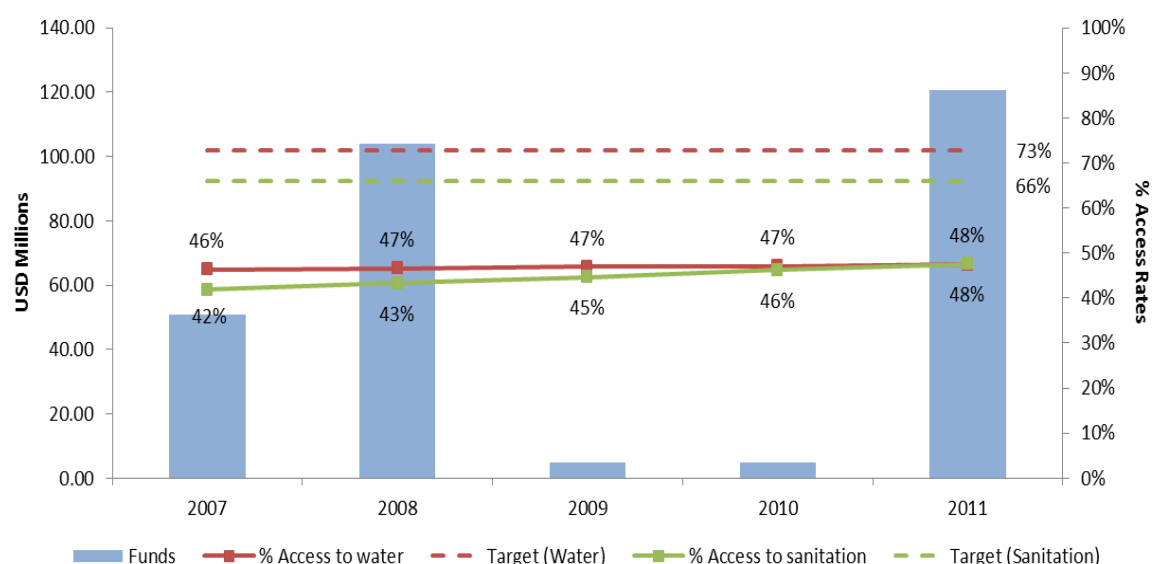


Figure 22: Evolution of access rates compared to funding from 2007 to 2011 - Angola

Table 22 is the breakdown of funds donated per activity in Angola from 2007 to 2011. Funding allocation in Angola is largely limited to water supply, sanitation, and water resources policy and management. Water supply and sanitation – large systems represents the bulk of funds over the 5

year period, with the exception of 2008, where water resources policy/administrative management was allocated 12.8 million USD more (57.2160 million USD vs. 44.3747 million USD), and 2011, where water supply – large systems received more than double all the other categories combined. Taking a further look at the data available after 2010, it is clear that the majority of funds are dedicated to water supply: in 2011, 64.8 million USD were allocated to water supply – large systems, and 40 thousand USD to basic drinking water supply, versus the 4 thousand USD reserved for sanitation – large systems and no sum was reported for basic sanitation, rather than split equally between both divisions. Based on this information, it is safe to assume that in previous years, the majority of funds were allotted to water supply when reported in the combined categories. The funds pledged to combined categories have decreased since the inclusion of distinct activities in 2010, with both water supply areas receiving the majority of the funds. Another area heavily funded in Angola is water resources policy/administrative management, having been apportioned 28.9 million USD in 2011 alone.

Further investigation indicates that water supply, be it basic drinking water supply or water supply – large systems, is the most funded activity in Angola, indicating that it is prioritised over sanitation. Nonetheless, the effects of this prioritisation are not reflected in water access rates. From 2007 to 2011, access to safe drinking water in Angola has increased from 46.4% to 47.5%, a total of 1.1%. Sanitation has received a slither of the contribution directed to water supply, yet has increased from 41.8% in 2007, to 47.6% in 2011, a total of 5.8%. The changes in access rates suggest that the funds directed to water supply are not having the desired effect, while resources aimed at sanitation are exceeding expectations. Possible explanations for this are the misappropriation of aid funds or poor selection of interventions projects.

Angola has a Corruption Perception Index score of 18, ranking it at 164. Angola is seen as a high strategic risk with an overall risk rating of 3 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 4.5 (IHS Global Inc., 2016a).

Table 22: Funds Donated per Activity in Angola from 2007 to 2011

USD Millions	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	3.7843	2.3074	2.3284	0.3474	0.4512
Educ./training: water supply & sanitation	0.0231	0.0055	0	0	0
River development	0	0	0	0	0
Waste management/disposal	0	0	3.25E-5	0	0
Water resources policy / admin. management	8.1503	57.2160	0.2437	0.0131	28.9106
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	38.7215	44.3747	2.4300	4.18	26.4
Basic drinking water supply				0.2167	0.0399
Basic sanitation				0	0
Sanitation - large systems				0	0.0038
Water supply - large systems				0	64.8

6.3.2.2 Benin

Access rates in Benin steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 23 illustrates the percentage left to complete the water and sanitation targets in Benin. Benin is close to achieving the water target, yet remains very far from the required sanitation access rate.

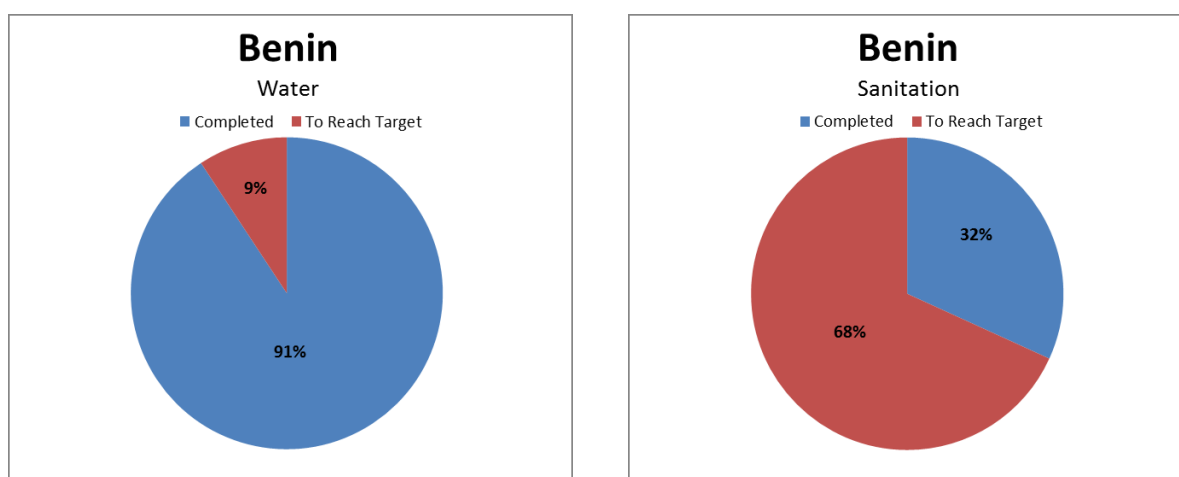


Figure 23: Percent completion of water and sanitation targets - Benin

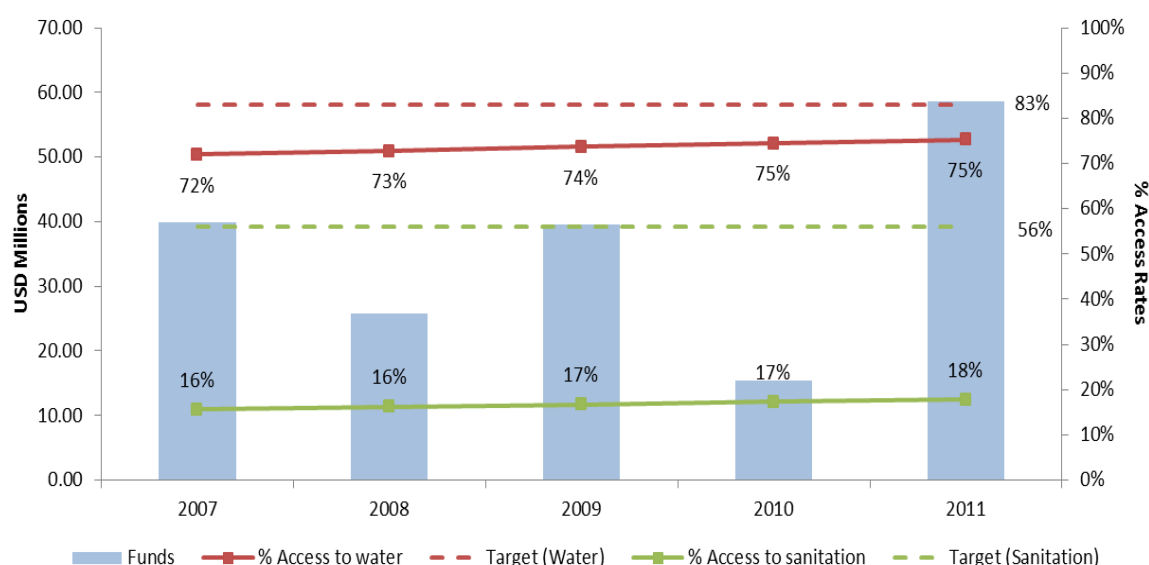


Figure 24: Evolution of access rates compared to funding from 2007 to 2011 - Benin

Table 23 summarises the funds donated per activity in Benin from 2007 to 2011. Funding allocation in Benin is varied over the 5 year period, and spread across all activities, with water supply and sanitation receiving the majority of funds. Basic drinking water supply and basic sanitation is apportioned the largest sum in 2007, and from 2009 to 2011. In 2008, water supply and sanitation – large systems was assigned 12 million USD, 4 times the sum allocated to basic drinking water supply and basic sanitation.

Other highlighted areas are waste management/disposal, 8 million and 14.8 million USD in 2008 and 2011 respectively, water resources policy/administrative management, 13.7 million USD over the 5 year period, river development, 8.5 million USD from 2007 to 2011, and education and training in water supply and sanitation 6 million USD in 2007. After 2010, the combined category for basic water supply and basic sanitation continued to receive the majority of funds, resulting in it being challenging to distinguish between water supply and sanitation. Although, in 2011, water supply – large systems, was the third highest funded activity, with 4.7 million USD, surpassing sanitation – large systems by 3.4 million USD.

A comparison of basic drinking water supply and sanitation, and water supply and sanitation – large systems indicates that meeting basic needs are prioritised over larger more complex projects. In 2011, basic drinking water supply and sanitation were allotted 32.6 million USD, compared to 6.1 million USD assigned to large systems. While it is problematic discerning between water supply and sanitation, it is encouraging that Benin is investing in improving access. There is still much work to be done to achieve the targets, more so in the case of access to adequate sanitation, where access rates in 2011 were just 17.8%, an improvement of 2.2% from the 2007 figure of 15.6%. Access to safe drinking water has increased by 3.3% to 75.3% in 2011. The water target for Benin is 83%; the sanitation target stands at 55.95%. Benin has a Corruption Perception Index score of 36, a rank of 95, and has a political risk index score of 5.5, where a score of 0 is the highest political risk and 10 marks the lowest political risk (Coleman, 2015a).

Table 23: Funds Donated per activity in Benin from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	14.486	3.3095	38.557	8.8088	32.5623
Educ./training: water supply & sanitation	6.0233	0.0593	1.00E-5	0.01975	0
River development	7.4990	0.6293	0.3021	0.0334	0.0781
Waste management/disposal	0	8.3827	0	0	14.8342
Water resources policy/admin. management	4.2724	1.0144	0.6460	3.9706	3.8477
Water resources protection	0	0.1186	0	0.3290	1.0547
Water supply & sanit. - large systems	7.6171	12.2839	0	0.0437	0
Basic drinking water supply				0.1409	0.0084
Basic sanitation				0.0780	0.0477
Sanitation - large systems				1.875	1.375
Water supply - large systems				0.1236	4.7266

6.3.2.3 Botswana

Botswana is the only country in Sub-Saharan Africa to have achieved both targets. However, this has not stopped Botswana from continuing its effort to increase access rates to both safe drinking water and adequate sanitation. Figure 25 illustrates the completion of both targets in Botswana.

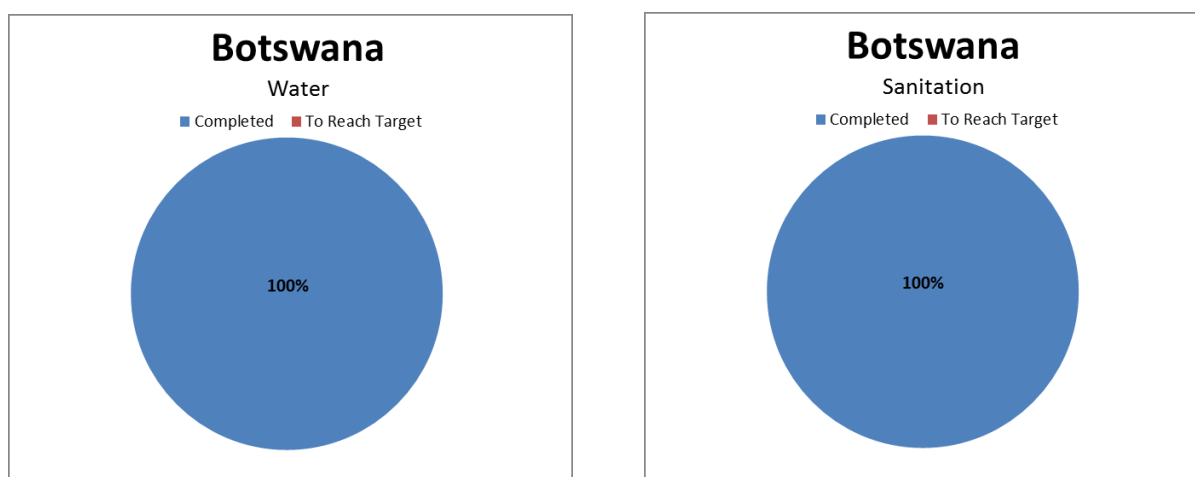


Figure 25: Percent completion of water and sanitation - Botswana

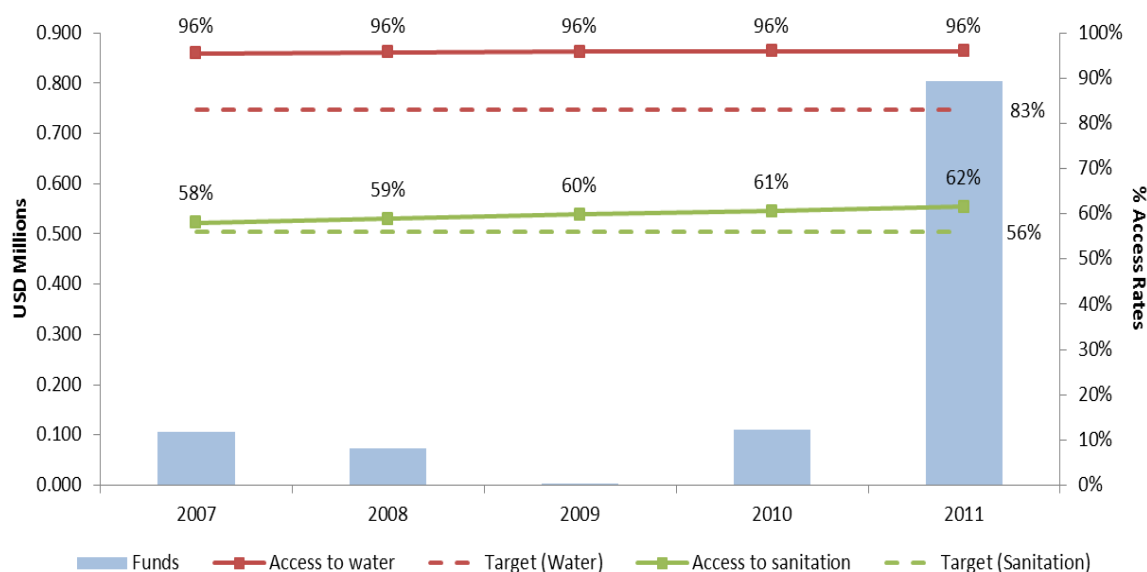


Figure 26: Evolution of access rates compared to funding from 2007 to 2011 - Botswana

Table 24 summarises the funds donated per activity in Botswana from 2007 to 2011. Botswana received insignificant sums of aid spread over all activities. A total of 1.1 million USD was directed to Botswana over the 5 year period, with 116 thousand USD dedicated to basic water supply and sanitation, and water supply and sanitation – large systems combined.

Botswana achieved both the water and sanitation target prior to 2007, with access rates standing at 96% and 61.5% for water and sanitation respectively. However, efforts can be made to achieve universal access to safe drinking water and adequate sanitation.

Botswana has a Corruption Perception Index score of 60, a rank of 35, and has a political risk index score of 8 (IHS Global Inc., 2016b).

Table 24: Total funds donated per activity in Botswana from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.0851	0	0.0023	0	0
Educ./training: water supply & sanitation	0	0	0	0.0116	0
River development	0	0.0109	0	0	0
Waste management/disposal	0	0.0269	0	0	0.0139
Water resources policy/admin. management	0.0088	0.0256	0.0009	0.0998	0.7738
Water resources protection	0	0.0109	0	0	0
Water supply & sanit. - large systems	0.0115	0	0	0	0
Basic drinking water supply				0	0
Basic sanitation				0	0
Sanitation - large systems				0	0
Water supply - large systems				0	0.0170

6.3.2.4 Burkina Faso

Access rates in Burkina Faso steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 27 illustrates the percentage left to complete the water and sanitation targets in Burkina Faso. Burkina Faso has achieved the water target, yet remains very far from the required sanitation access rate.

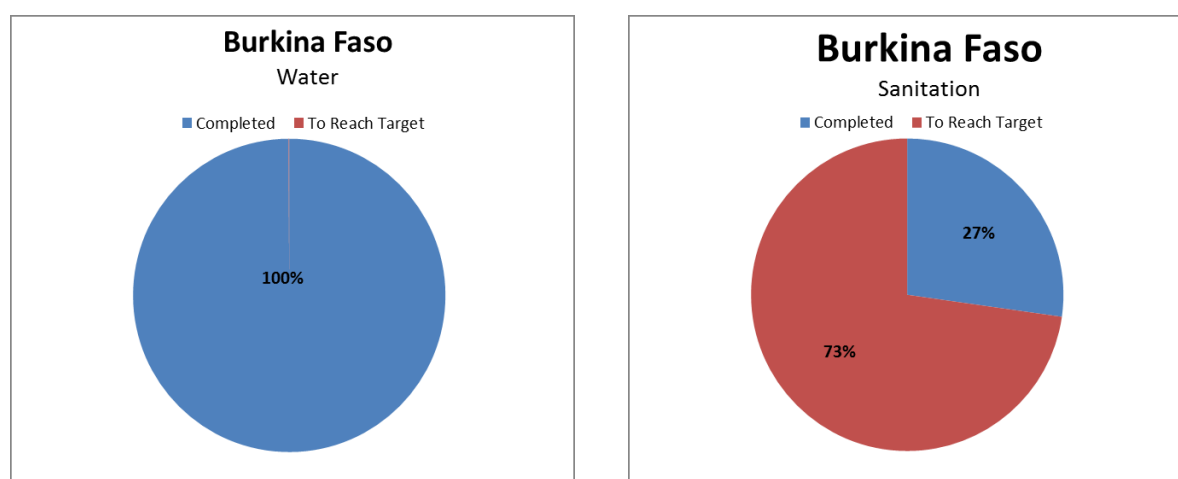


Figure 27: Percent completion of water and sanitation targets - Burkina Faso

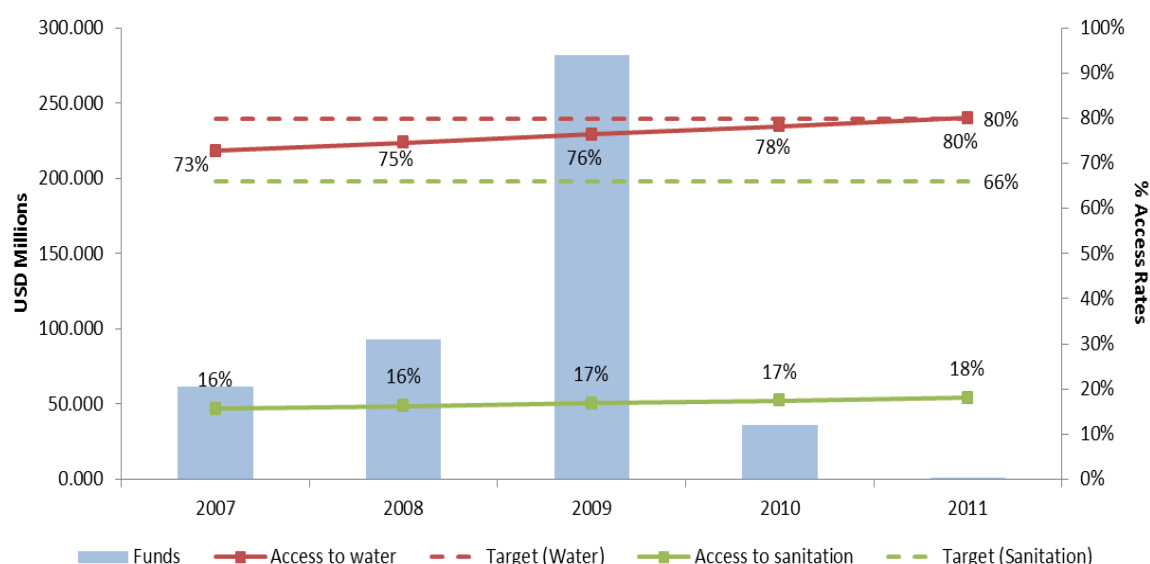


Figure 28: Evolution of access rates compared to funding from 2007 to 2011 - Burkina Faso

Table 25 summarises the total funds donated per activity in Burkina Faso from 2007 to 2011. The majority of funds over the 5 year period are split between basic drinking water and basic sanitation, and water supply and sanitation – large systems. A total of 226.4 million USD were earmarked for basic drinking water supply and sanitation, and 187.9 million USD for water supply and sanitation – large systems from 2007 to 2011, compared to 79.6 million USD to all other activities combined. Other funded areas include water resources policy/administrative management, 66.9 million USD over the 5 year period, river development, 5.6 million USD from 2007 to 2011, and education and training in water supply and sanitation 6.2 million USD in 2007. Sanitation – large systems received no funds in 2010 and 2011, while water supply – large systems was attributed 2.4 million USD in the same years. Basic drinking water supply also edged out basic sanitation during the same time period, 0.6 million USD versus 0.5 million USD respectively. The combined categories were still heavily funded in 2010 and 2011.

As previously mentioned, the provision of drinking water and sanitation is prioritised for funding in Burkina Faso. A comparison between basic supply and large systems indicates that improving access to basic supply is given more importance than large systems, 226.4 million USD versus 187.9 million USD. The effects of this investment can be seen in an expansion of access rates, access has increased by 7.2 % from 2007 to 2011, and by 2.4% to water and sanitation respectively. Burkina Faso reached the water target in 2011, but is still far from achieving the sanitation target of 66%, with access rate at 18% in 2011. This calls for better investment in the sanitation sector.

Burkina Faso has a Corruption Perception Index score of 42, a rank of 72, and has a political risk index score of 5 (Coleman, 2016a).

Table 25: Total funds donated per activity in Burkina Faso from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	3.4761	2.5031	188.4287	19.2262	11.5826
Educ./training: water supply & sanitation	0	4.5626	0.3994	1.3007	0
River development	0.5213	0.9719	0.6997	1.4408	2.0205
Waste management/disposal	0.0807	0.0017	0.0084	0.0071	0.2585
Water resources policy/admin. management	11.8176	35.6632	12.3103	4.5876	2.6033
Water resources protection	0	0.1685	0.0060	0.0004	0.1937
Water supply & sanit. - large systems	45.662	49.440	79.9828	9.2715	1.1429
Basic drinking water supply				0.1828	0.4323
Basic sanitation				0.0201	0.5524
Sanitation - large systems				0	0
Water supply - large systems				0.0046	2.4056

6.3.2.5 Burundi

Access rates in Burundi steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 29 illustrates the percentage left to complete the water and sanitation targets in Burundi. Burundi is closer to achieving the water target, yet remains far from the required sanitation access rate.

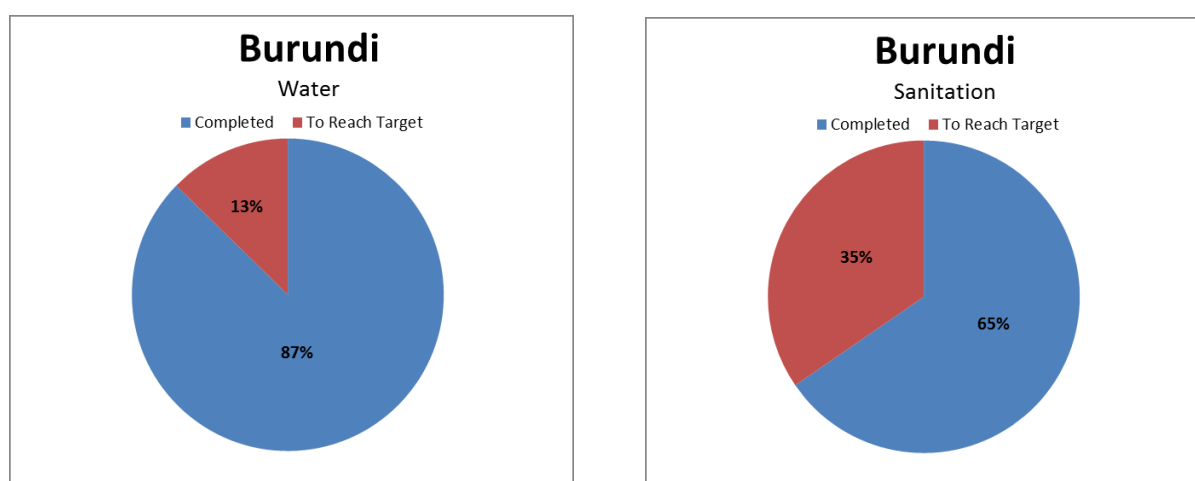


Figure 29: Percent completion of water and sanitation targets - Burundi



Figure 30: Evolution of access rates compared to funding from 2007 to 2011 - Burundi

Table 26 represents funds donated per activity in Burundi from 2007 to 2011. A large portion of funds donated in Burundi are divided over 3 activities: basic drinking water supply and sanitation (32.8 million USD), water resources policy/administrative management (27.1 million USD), and water supply and sanitation – large systems (21.8 million USD). River development is the only other activity receiving a considerable sum of 2.8 million USD over the 5-year period. The combined categories remained heavily funded after 2010, meaning it is challenging to determine a difference of funding between drinking water supply and sanitation in Burundi. However, it is clear that basic water supply and sanitation were prioritised over large systems from 2007 to 2011. Access rates in Burundi have increased by 1.2% for water and 1.1% for sanitation, but have yet to reach either target. Burundi had a 75% access rate to safe drinking water and a 47.2% access rate to adequate sanitation in 2011. As seen in the figures below, a 13% improvement is required to meet the water target, and an increase of 35% for the sanitation target.

Burundi has a Corruption Perception Index score of 20, a rank of 159, and has a political risk index score of 4 (Coleman, 2015b).

Table 26: Funds Donated per Activity in Burundi from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.6309	1.9516	6.6144	18.7306	4.9003
Educ./training: water supply & sanitation	0.1045	0.0052	0	0	0
River development	0.0253	1.6013	0	0.0051	1.1875
Waste management/disposal	0	0	0	0	0
Water resources policy/admin. management	0.0015	12.2316	2.9643	0	11.9342
Water resources protection	0	0.1952	0	0.0580	0.1031
Water supply & sanit. - large systems	0.0180	15.0000	6.6768	0.1478	0
Basic drinking water supply				0	0
Basic sanitation				0.0132	0.0087
Sanitation - large systems				0	0
Water supply - large systems				0	0.1093

6.3.2.6 Cameroon

Access rates in Cameroon have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 31 illustrates the percentage left to complete the water and sanitation targets in Cameroon. Cameroon is very close to achieving the water target, yet remains very far from the required sanitation access rate.

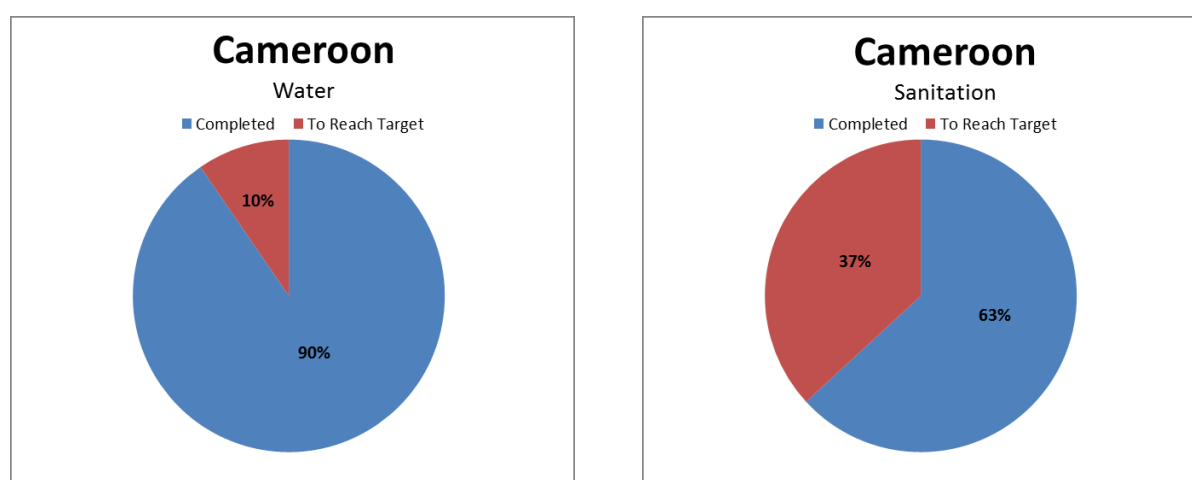


Figure 31: Percent completion of water and sanitation targets - Cameroon

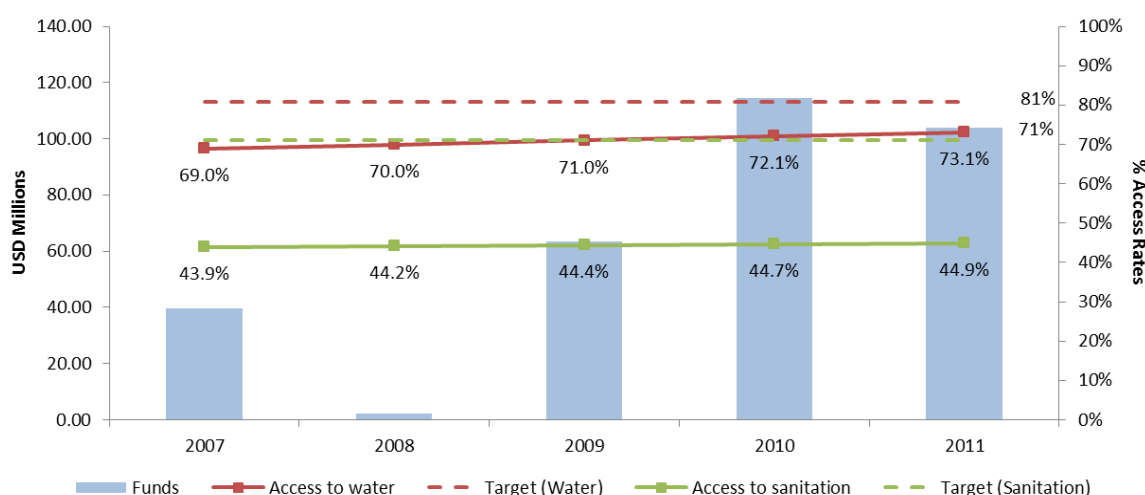


Figure 32: Evolution of access rates compared to funding from 2007 to 2011 - Cameroon

Table 27 summarised the funds donated per activity in Cameroon from 2007 to 2011. A total of 323.48 million USD were donated in the 5 year period, of which 304.3 million was allocated to water supply and sanitation – large systems. The remaining 19.1 million was mainly distributed between basic drinking water supply and basic sanitation (10.4 million USD), and water resources policy/administrative management (6.6 million USD). It is clear that large systems are the main priority for funding in Cameroon. Based on the 2011 figures, water supply receives the larger share of funds in the large systems category, implying that water supply is given more significance and importance when distributing funds. This is even true for basic supply; in 2010 and 2011, 1.4 million USD was allotted to basic drinking water supply, while sanitation received 37 thousand USD.

The high investment in water has paid off with an increase of 4.1% from 2007 to 2011, bringing Cameroon closer to reaching their target of 80.85%, being 73.1% in 2011. But it also means that the lack of funds directed towards sanitation has slowed progress in the sector, achieving an increase of 1% over the same time frame. Cameroon is far off the sanitation target of 71.1%, having reached 44.9% in 2011. The inequitable distribution of funds has led to an uneven increase in access rates.

Cameroon has a Corruption Perception Index score of 26, a rank of 145, and has a political risk index score of 5 (Coleman, 2016b).

Table 27: Funds Donated per Activity in Cameroon from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	5.0959	0.9979	0.5542	0.6254	1.7744
Educ./training: water supply & sanitation	0	0.0071	0.0537	0	0.4425
River development	0	0.0071	0.0032	0.0261	0.0222
Waste management/disposal	0	0	0.0408	0.0024	0.6021
Water resources policy/admin. management	0	0.2344	0.7719	0.2521	5.4117
Water resources protection	0	0.1015	0.1501	0.3521	0.1477
Water supply & sanit. - large systems	34.4299	0.8538	61.8016	112.3891	0
Basic drinking water supply				0.8713	0.5437
Basic sanitation				0.0264	0.0105
Sanitation - large systems				0	32.7536
Water supply - large systems				0	62.1285

6.3.2.7 Cape Verde

Access rates in Cape Verde have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 33 illustrates the percentage left to complete the water and sanitation targets in Cape Verde. Cape Verde is very close to achieving both the water and sanitation targets.

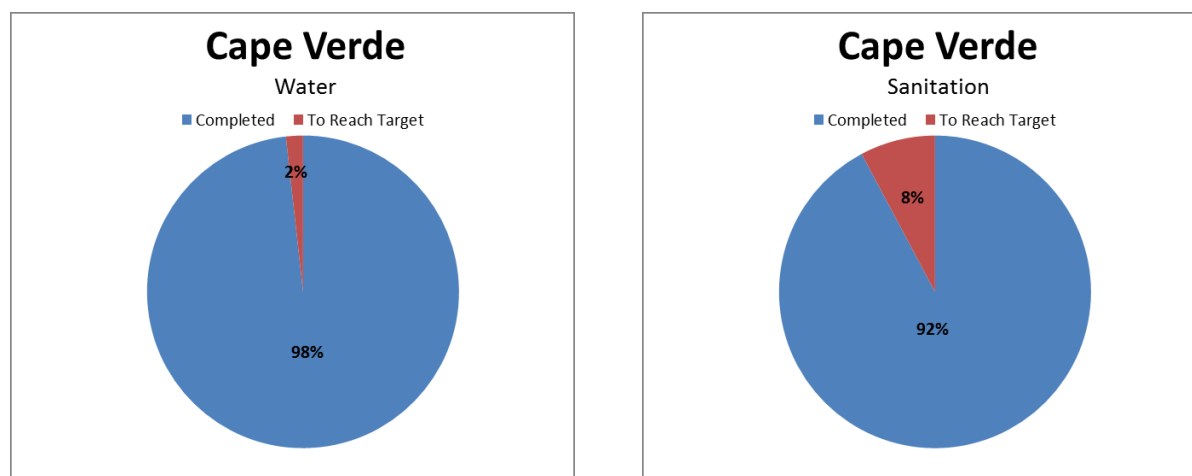


Figure 33: Percent completion of water and sanitation targets - Cape Verde

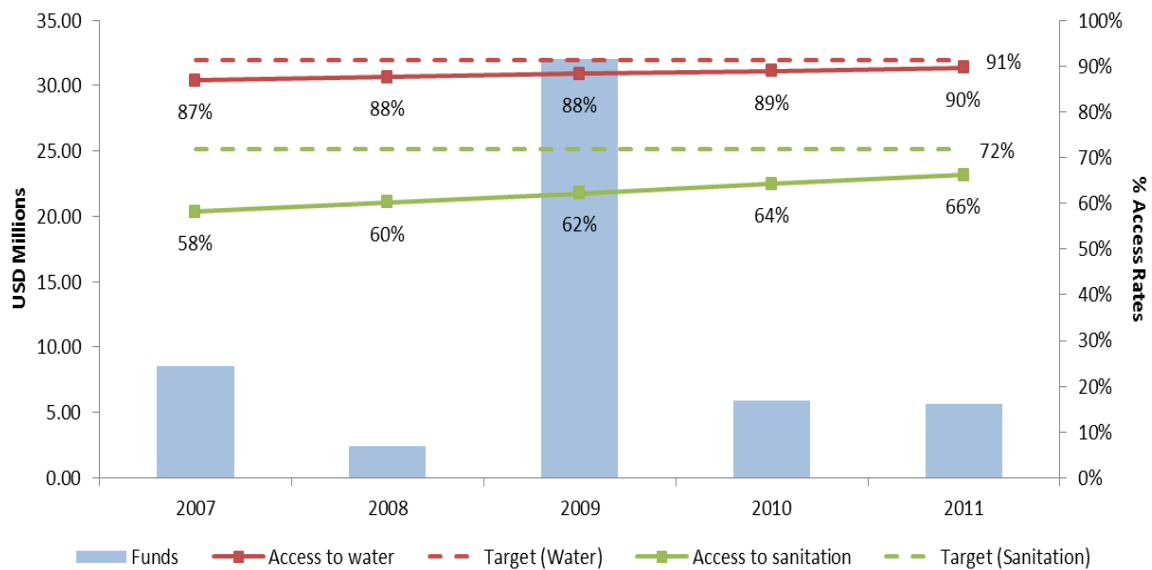


Figure 34: Evolution of access rates compared to funding from 2007 to 2011 - Cape Verde

From 2007 to 2011, 31.3 million USD were donated in Cape Verde to water supply and sanitation – large systems. In the same time period, all other activities combined received 23.2 million USD, basic water supply and sanitation representing a large portion (13.9 million USD). The only other noteworthy sum of 7.2 million was allotted to waste management/disposal. All funds donated per activity in Cape Verde from 2007 to 2011 are in table 28. The financial data indicate that the bulk of funds are directed towards large systems, highlighting them as a priority in Cape Verde. The figures reported after 2010 reveal that water supply in large systems was attributed all the funds (7.4 million USD).

Despite heavy investment in only water supply, access rates to adequate sanitation in Cape Verde have increased by 8.1% from 2007 to 2011. Access rates to water have also increased by 2.7% in the same time frame. Cape Verde is close to achieving both targets, but requires more financing in the sanitation sector.

Cape Verde has a Corruption Perception Index score of 59, a rank of 38, and has a political risk index score of 6 (Coleman, 2016c).

Table 28: Funds Donated per Activity in Cape Verde from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.7265	0.1878	9.5233	3.3659	0
Educ./training: water supply & sanitation	0	0	0	0	0
River development	0.0024	0.2810	0.4946	0.1987	0
Waste management/disposal	6.9815	6.78E-05	0.2228	0	0
Water resources policy/admin. management	0.1603	0.0312	0.2481	0.1001	0.3244
Water resources protection	0	0.2741	0	0	0
Water supply & sanit. - large systems	0.7016	1.6479	21.5379	0.0139	0
Basic drinking water supply				0.0306	0
Basic sanitation				0.0699	0.0084
Sanitation - large systems				0	0
Water supply - large systems				2.1346	5.3348

6.3.2.8 Central African Republic

Access rates in Central Africa Republic have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 35 illustrates the percentage left to complete the water and sanitation targets in Central African Republic. Central African Republic is closer to achieving the water target, yet remains very far from the required sanitation access rate.

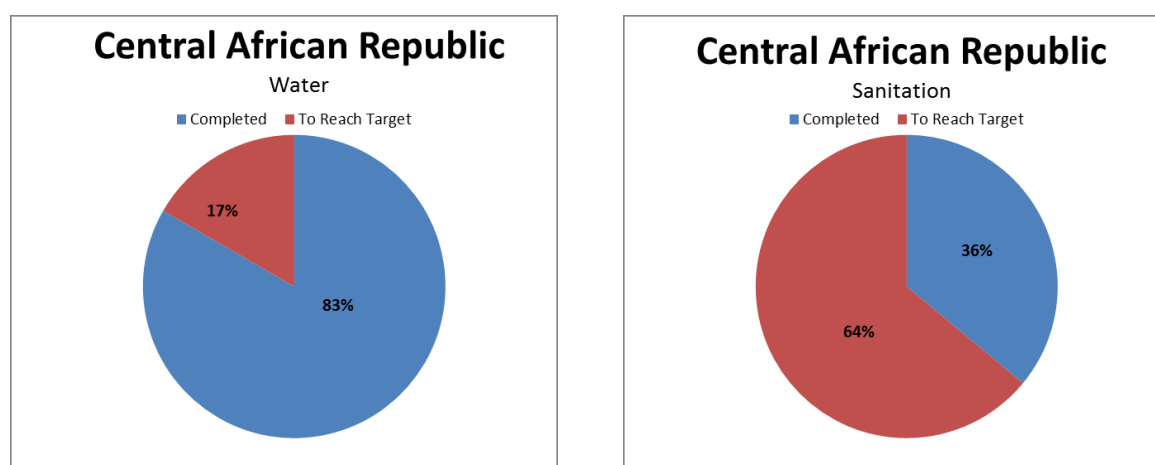


Figure 35: Percent completion of water and sanitation targets - Central African Republic

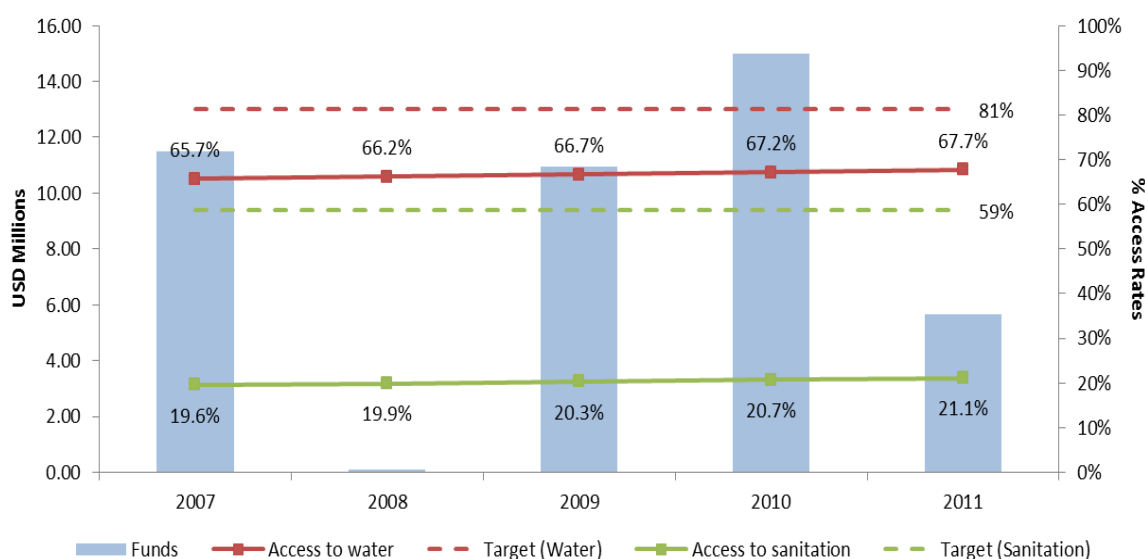


Figure 36: Evolution of access rates compared to funding from 2007 to 2011 - Central African Republic

Table 29 summarises funds donated per activity in the Central African Republic from 2007 to 2011. All funds were divided between 4 activities: basic drinking water supply and basic sanitation (2.1 million USD), waste management/disposal (6.7 million USD), water resources policy/administrative management (0.18 million USD), and water supply and sanitation – large systems (34.1 million USD). The majority of aid was directed towards large systems and appears divided evenly between water supply and sanitation. In 2010, both water supply and sanitation – large systems were allotted 5.4 million USD. This equality is not extended to basic drinking water supply and sanitation. In 2011, basic drinking water supply was allocated 899 thousands USD versus 6 hundred for basic sanitation, in the same year the combined category received 521 thousand USD.

Despite large investment in both water supply and sanitation, access rates in the Central African Republic have only increased by 2% and 1.5% for water and sanitation respectively. While it is close to achieving the water target of 81.25%, standing 67.7% in 2011, a lot more work is needed to approach the sanitation target of 58.6%. In 2011, 21.1% of the population of the Central African Republic had access to adequate sanitation. Central African Republic has a Corruption Perception Index score of 20, a rank of 159, and has a political risk index score of 3 (Coleman, 2016d).

Table 29: Funds Donated per Activity in Central African Republic from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.3501	0.0727	0.1240	0.1523	0.5216
Educ./training: water supply & sanitation	0	0	0	0	0
River development	0	0	0	0	0
Waste management/disposal	2.8800	0	0	3.8240	0
Water resources policy/admin. management	0	0	0.0488	0.0333	0.1031
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	8.2800	0.0210	10.7918	0	4
Basic drinking water supply				0	0.8990
Basic sanitation				0	0.0006
Sanitation - large systems				5.4970	0
Water supply - large systems				5.4970	0.0452

6.3.2.9 Chad

Access rates in Chad have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 37 illustrates the percentage left to complete the water and sanitation targets in Chad. Chad is closer to achieving the water target, yet remains extremely far from the required sanitation access rate.

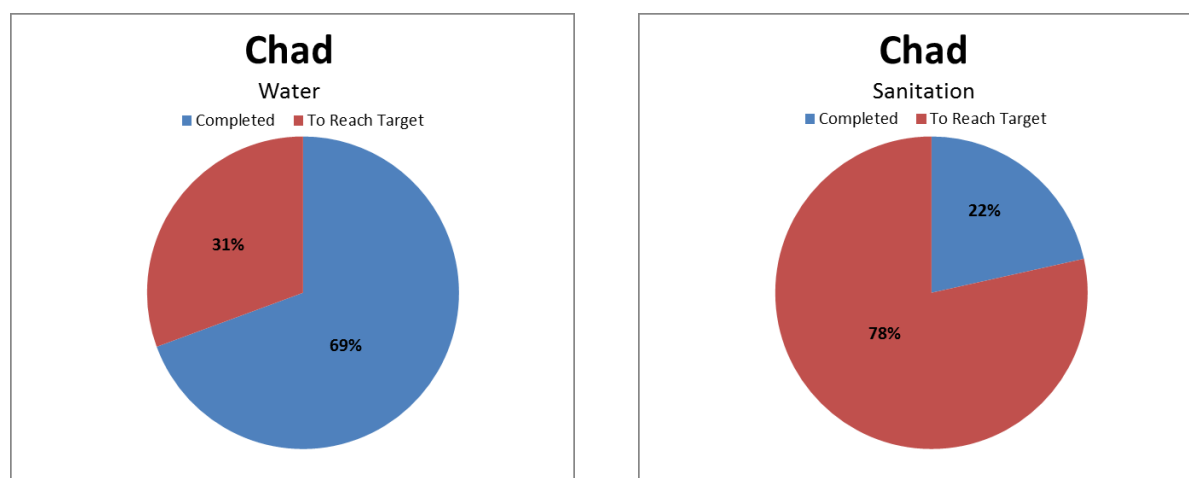


Figure 37: Percent completion of water and sanitation targets - Chad

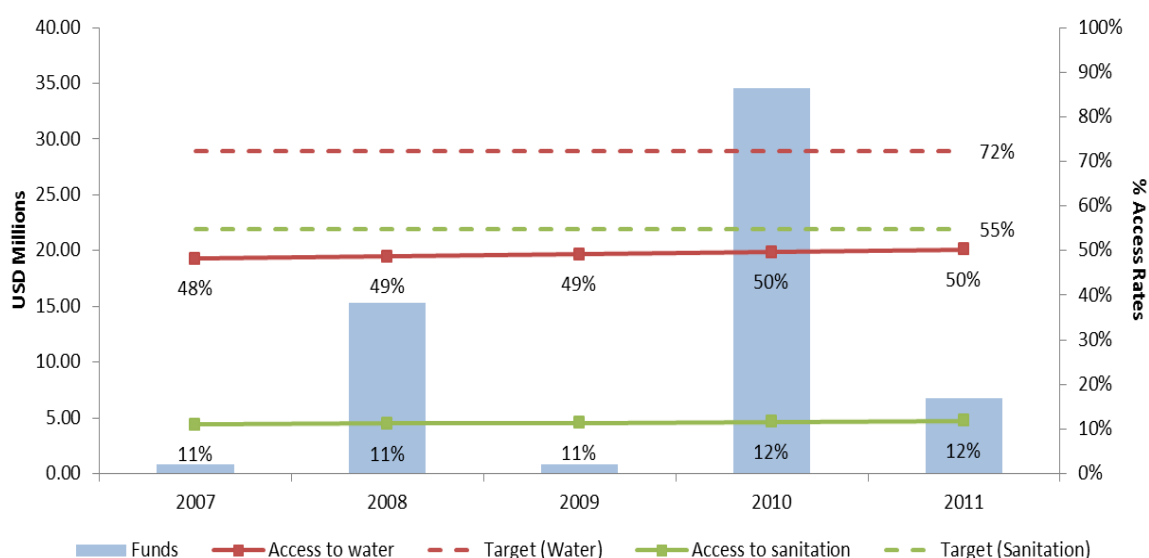


Figure 38: Evolution of access rates compared to funding from 2007 to 2011 - Chad

From 2007 to 2011 36.5 million USD were invested in basic water supply and sanitation, and 15.9 million USD on water supply and sanitation – large systems, in Chad. Funding to Chad is unevenly distributed over the activities and the years, with large sums allocated to different categories in different years. 14.4 million USD was diverted to water supply and sanitation – large systems in 2008, with less than 1 million allotted to other activities. The major contribution in 2010 was 31.1million USD to basic drinking water supply and sanitation, 3.2 million directed to basic drinking water supply. Another significant financial contribution of 4.5 million USD was made in 2011 to water resources policy/administrative management. Overall, the largest proportion of funds is directed towards basic water supply and basic sanitation, making it a priority. However, this is not reflected in the access rates. Access rates to safe drinking water and adequate sanitation have increased by 2% and 0.8% respectively, over the 5 year period. All funding per activity in Chad from 2007 to 2011 is summarised in table 30.

Chad has a Corruption Perception Index score of 20, a rank of 159, and has a political risk index score of 4 (Coleman, 2016e).

Table 30: Funds Donated per Activity in Chad from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.8171	0.3508	0.5805	31.1367	0.3192
Educ./training: water supply & sanitation	0	0.2487	0	0	0
River development	0.0516	0	0	0.0229	0.0210
Waste management/disposal	0	0	0	0	0
Water resources policy/admin. management	0	0.2649	0.2565	0.1975	4.5670
Water resources protection	0	0	0	0	0.2954
Water supply & sanit. - large systems	0	14.4478	0	0	1.4292

Basic drinking water supply	3.2038	0.0554
Basic sanitation	0	0.0468
Sanitation - large systems	0	0
Water supply - large systems	0	0.0605

6.3.2.10 Comoros

Access rates in Comoros have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 39 illustrates the percentage left to complete the water and sanitation targets in Comoros. Comoros is very close to achieving the water target, but reports no change in access rates to safe drinking water over the 5 year period. Access rates to adequate sanitation have improved, however remaining far from the target.

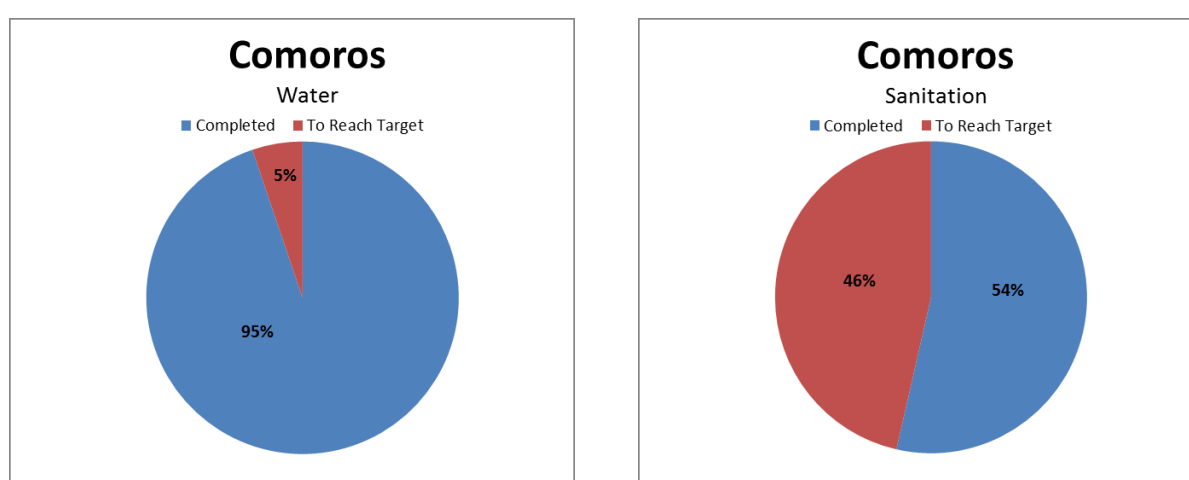


Figure 39: Percent completion of water and sanitation targets - Comoros

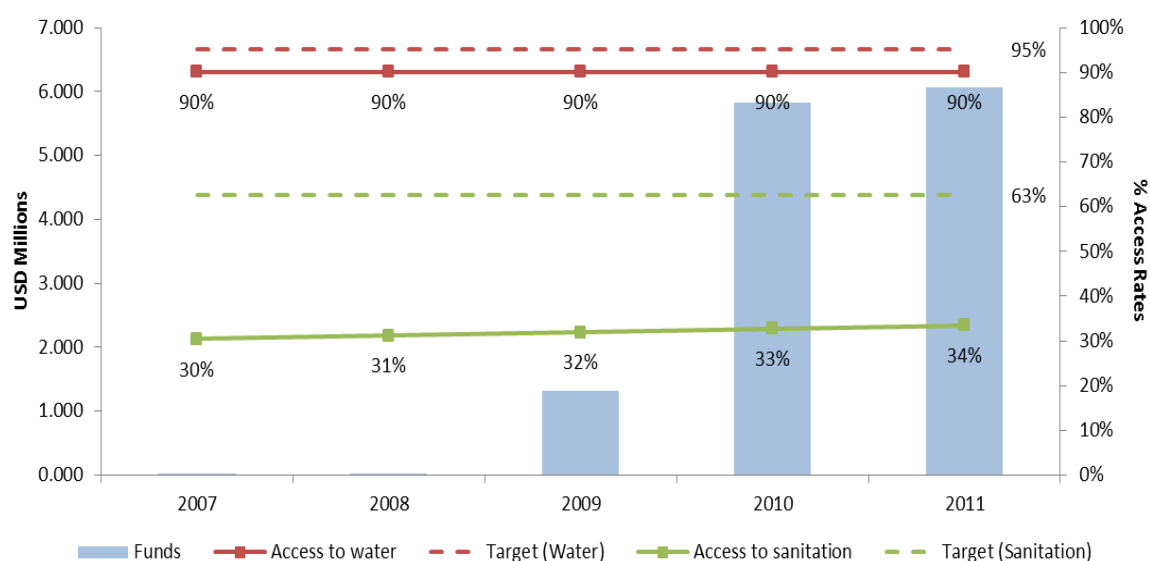


Figure 40: Evolution of access rates compared with funding from 2007 to 2011 - Comoros

Comoros received a total of 13.2 million USD over the 5 year period, from 2007 to 2011, the bulk, 11.4 million USD, directed towards water supply and sanitation – large systems, in 2010 and 2011. This is indicative that large systems are being prioritised for aid funding. It is unclear whether the sum is meant for water supply or sanitation, as it was all reported in the combined category. Comoros state no change to access rates to safe drinking water during the analysed period, but an increase of 3.1% to access to adequate sanitation in that time. The improvement suggests that the resources were invested in sanitation projects; bringing Comoros just pass the halfway point to achieving the sanitation target. All funds are included in table 31.

Comoros has a Corruption Perception Index score of 24, a rank of 153, and has a political risk index score of 6 (Coleman, 2015c).

Table 31: Funds Donated per Activity in Comoros from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.0037	0	0.0028	0.1095	0.0012
Educ./training: water supply & sanitation	0	0	0	0	0
River development	0	0	0	0.0171	0.0222
Waste management/disposal	0	0	0	0	0
Water resources policy/admin. management	0	0	0.2785	0	0.1031
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	0	0.0060	1.0444	5.5629	5.8398
Basic drinking water supply				0.1393	0
Basic sanitation				0	0
Sanitation - large systems				0	0
Water supply - large systems				0	0

6.3.2.11 Democratic Republic of Congo

Access rates in the Democratic Republic of Congo have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 41 illustrates the percentage left to complete the water and sanitation targets in the Democratic Republic of Congo. The Democratic Republic of Congo is closer to achieving the water target, but access rates to adequate sanitation remain very far from the target.

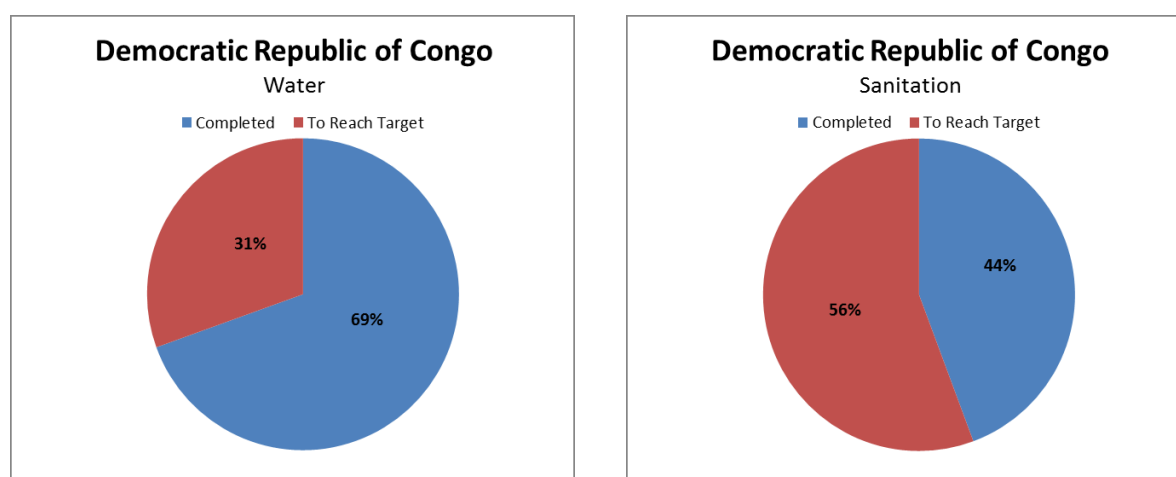


Figure 41: Percent completion of water and sanitation targets - Democratic Republic of Congo

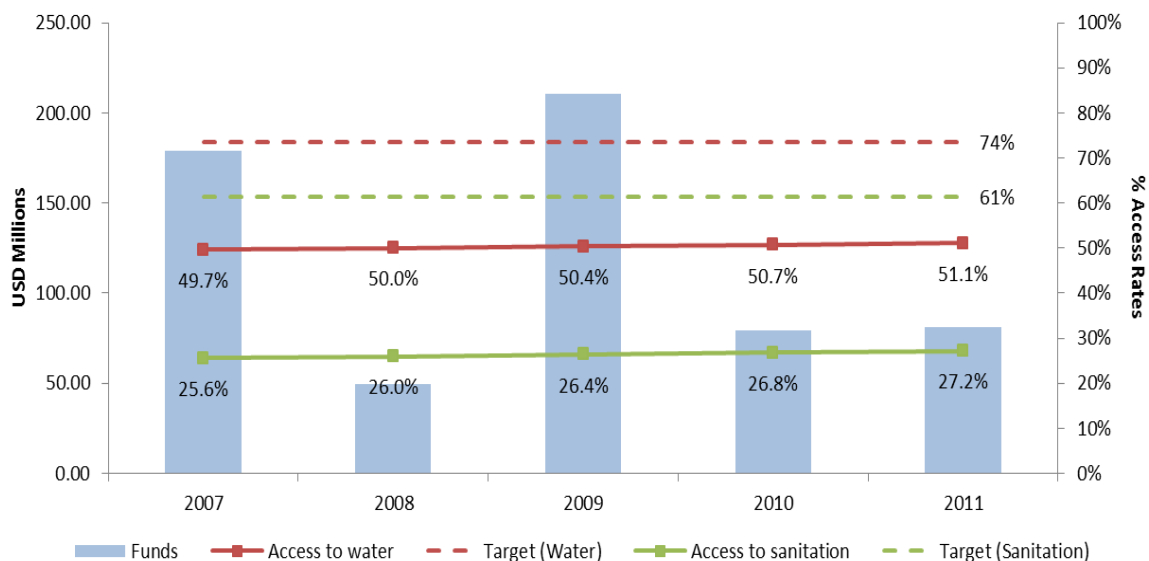


Figure 42: Evolution of access rates compared to funding from 2007 to 2011 - Democratic Republic of Congo

Table 32 is the breakdown of the funds donated per activity in the Democratic Republic of Congo from 2007 to 2011. In total, water supply and sanitation – large systems received almost triple the funding attributed to basic drinking water supply and basic sanitation: 433.5 million USD vs 143.9 million USD. The only other activity to be assigned a noteworthy sum is water resources policy/administrative management, which received 20.5 million USD over the 5 year period. Further investigation reveals that water supply, both basic and large systems, receive more funding than basic and large systems sanitation. The Democratic Republic of Congo prioritises water supply over sanitation. The effects of this decision are seen in the improvement in access rates, access to safe drinking water has increased by 1.4%, passing the halfway point to achieving the target. While sanitation has improved by 1.6%, it remains far off the target of 61.35%, reaching 27.2% in 2011.

Democratic Republic of Congo has a Corruption Perception Index score of 21, a rank of 156. The Democratic Republic of Congo is seen as a very high strategic risk with an overall risk rating of 4 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 3 (IHS Global Inc., 2016c).

Table 32: Funds Donated per Activity in Democratic Republic of Congo from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	13.6051	7.5361	45.3372	3.0286	70.3407
Educ./training: water supply & sanitation	0.0332	0.7655	0.0038	0	0
River development	0.0272	0.6305	0	0.0601	0.0420
Waste management/disposal	0.1124	0.0144	0	0.0132	0
Water resources policy/admin. management	1.3689	0.0216	18.6107	0.0443	0.5165
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	163.833	40.490	146.904	10.457	5.6496
	0	7	3	5	

Basic drinking water supply	0.4243	2.3925
Basic sanitation	0	1.3164
Sanitation - large systems	0	0
Water supply - large systems	65.293	0.9175
	3	

6.3.2.12 Republic of Congo

Access rates in the Republic of Congo have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 43 illustrates the percentage left to complete the water and sanitation targets in the Republic of Congo. The Republic of Congo is close to achieving the water target, but access rates to adequate sanitation remain extremely far from the target.

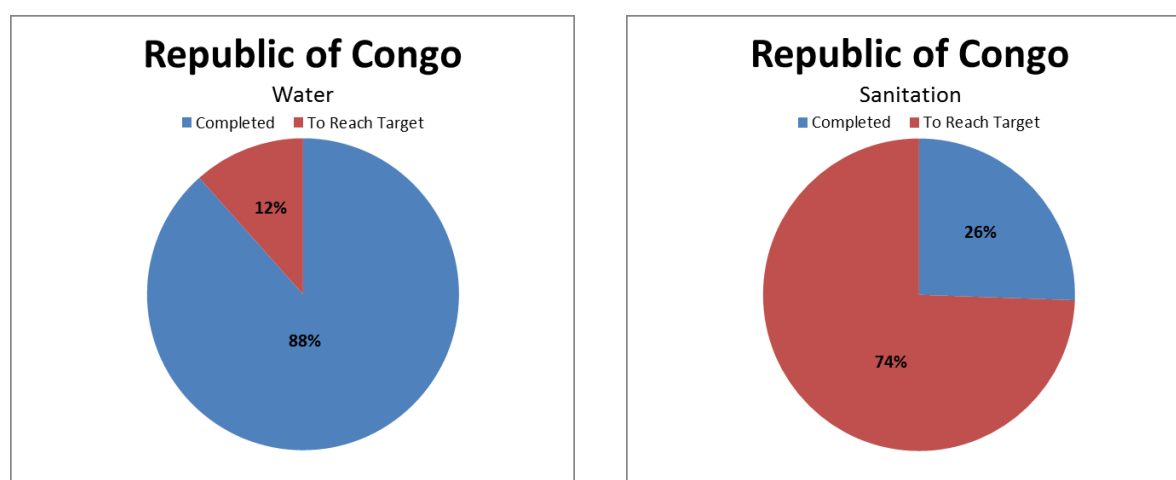


Figure 44: Percent completion of water and sanitation targets - Republic of Congo

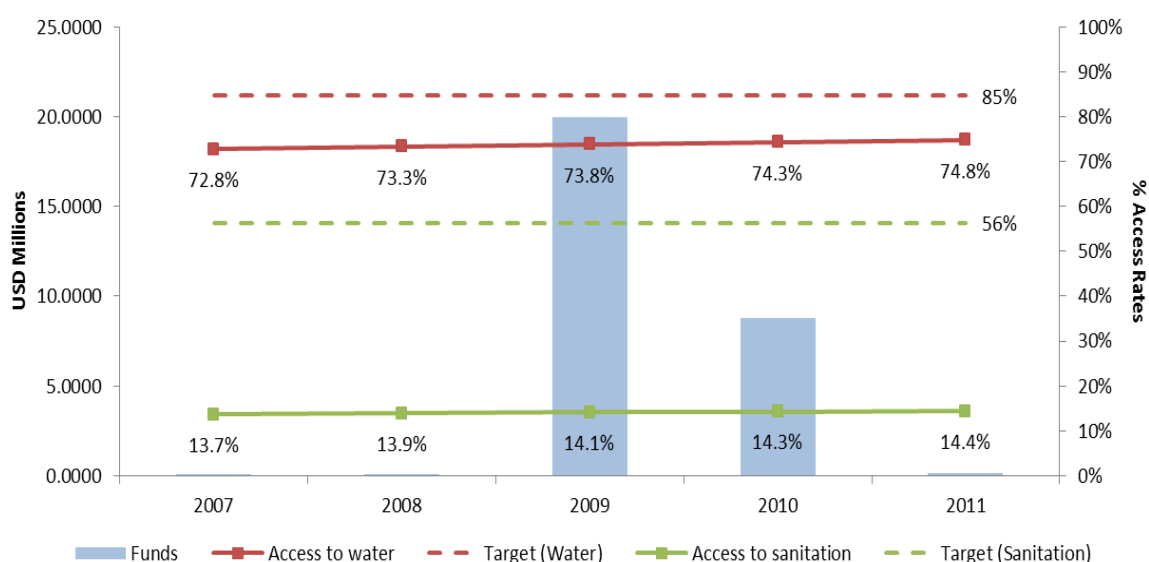


Figure 43: Evolution of access rates compared to funding from 2007 to 2011 - Republic of Congo

The Republic of Congo received 28.9 million USD from 2007 to 2011. 24 million USD were apportioned to water supply and sanitation – large systems. 4.3 million of the remaining were diverted

to water resources policy/administrative management, leaving less than 1 million USD to be distributed between waste management/disposal, education and training in water supply and sanitation, river development, water resources protection, and basic drinking water supply and basic sanitation. 4.3 million USD of the 24 million was attributed to water supply systems, while the rest were reported in the combined category of water supply and sanitation – large systems.

The prioritisation of large systems, particularly for water supply is detrimental to achieving the targets for both water and sanitation. Access to adequate sanitation only increased by 0.7% over the 5 year period, reaching a high of 14.4% of the population with access. The target set is 56.35%. Better improvement has been made in the water sector, with an increase of 2%. Total funds donated from 2007 to 2011 are described in table 33.

The Republic of Congo has a Corruption Perception Index score of 20, a rank of 159, and has a political risk index score of 5 (Coleman, 2016f).

Table 33: Funds Donated per Activity in Republic of Congo from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.0014	0.0512	0.0662	0.1344	0.0685
Educ./training: water supply & sanitation	0	0	0.0217	0	0
River development	0	0	0	0	0.0048
Waste management/disposal	0	0.0017	0	0	0
Water resources policy/admin. management	0.0019	0.0022	0.0102	4.3350	0
Water resources protection	0	0	0	0	0.0296
Water supply & sanit. - large systems	0	0.0180	19.8618	0	0
Basic drinking water supply				0	0.0008
Basic sanitation				0	0
Sanitation - large systems				0	0
Water supply - large systems				4.3353	0.0205

6.3.2.13 Cote d'Ivoire

Access rates in Cote d'Ivoire have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 45 illustrates the percentage left to complete the water and sanitation targets in Cote d'Ivoire. Cote d'Ivoire is very close to achieving the water target, but access rates to adequate sanitation remain extremely far from the target.

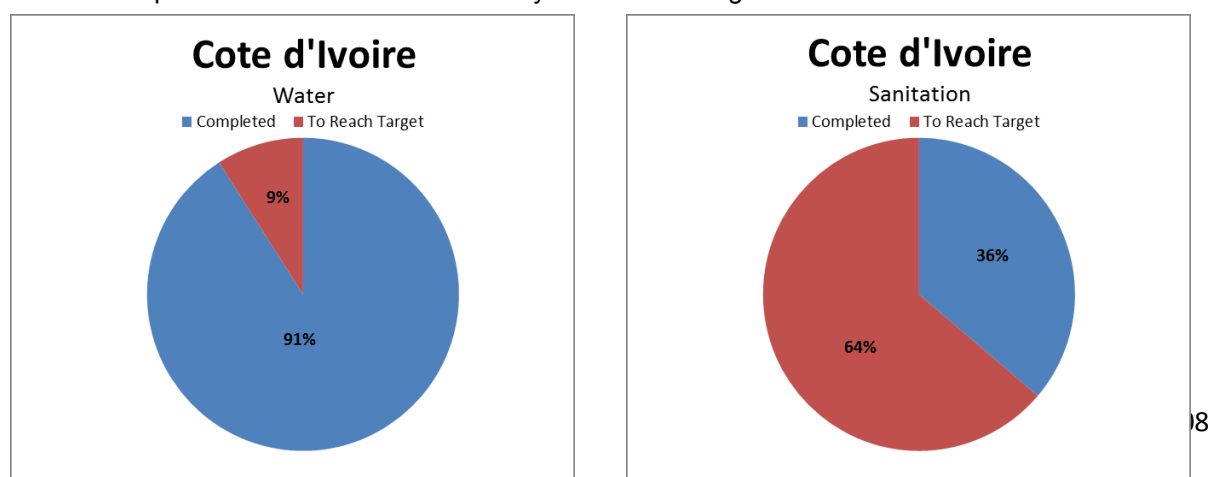


Figure 45: Percent completion of water and sanitation targets - Cote d'Ivoire

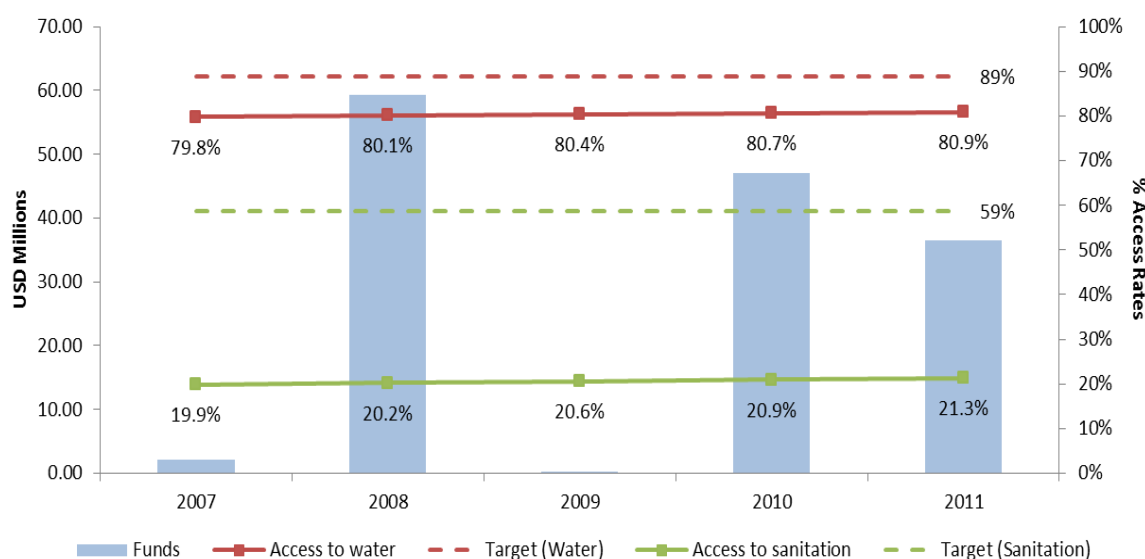


Figure 46: Evolution of access rates compared to funding from 2007 to 2011 - Cote d'Ivoire

Table 34 summarised the funds donated per activity in Cote d'Ivoire from 2007 to 2011. Cote d'Ivoire received 145 million USD over the 5 year period from 2007 to 2011, distributed over all activities in the sector. The bulk of which was earmarked for water supply and sanitation – large systems (89.9 million USD). Basic drinking water supply and basic sanitation's portion was limited to 17.4 million, with waste management/disposal accounting for 20.1 million, and water resources protection for 17.4 million USD. In 2010, sanitation - large systems were allocated 12 million USD, and water supply was designated 6 million USD, while basic drinking water supply received 7 million.

Cote d'Ivoire has achieved an increase of 1.1% in access to safe drinking water, and is near to reaching the target. But despite a steered investment of 12 million USD for sanitation, it is far from accomplishing the target of 58.8%, standing at 21.3% in 2011, with a change of 1.4%.

Cote d'Ivoire has a Corruption Perception Index score of 34, a rank of 108, and has a political risk index score of 4.5 (Coleman, 2016g).

Table 34: Funds Donated per Activity in Cote d'Ivoire from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.3375	0.9690	0.0943	8.8341	0.0678
Educ./training: water supply & sanitation	0.0004	0.0265	0	0	0
River development	0	0	0	0.0013	0
Waste management/disposal	0	13.1617	0	7.0069	0
Water resources policy/admin. management	0.0680	0.0035	0.0125	0	0
Water resources protection	0	11.2800	0.1036	6.0634	0.0065
Water supply & sanit. - large systems	1.7127	33.8610	0	0	36.3246
Basic drinking water supply				7.0615	0.0384
Basic sanitation				0	0.0050
Sanitation - large systems				12	0.0139

6.3.2.14 Djibouti

Djibouti is a nation reporting a decrease in access rates to adequate sanitation and an increase in access to safe drinking water, and requires more work to meet the MDG targets. Figure 47 illustrates the percentage left to complete the water and sanitation targets in Djibouti. Djibouti is very close to achieving the water target, but reports a decrease in access rates to adequate sanitation over the 5 year period and remains far from the target.

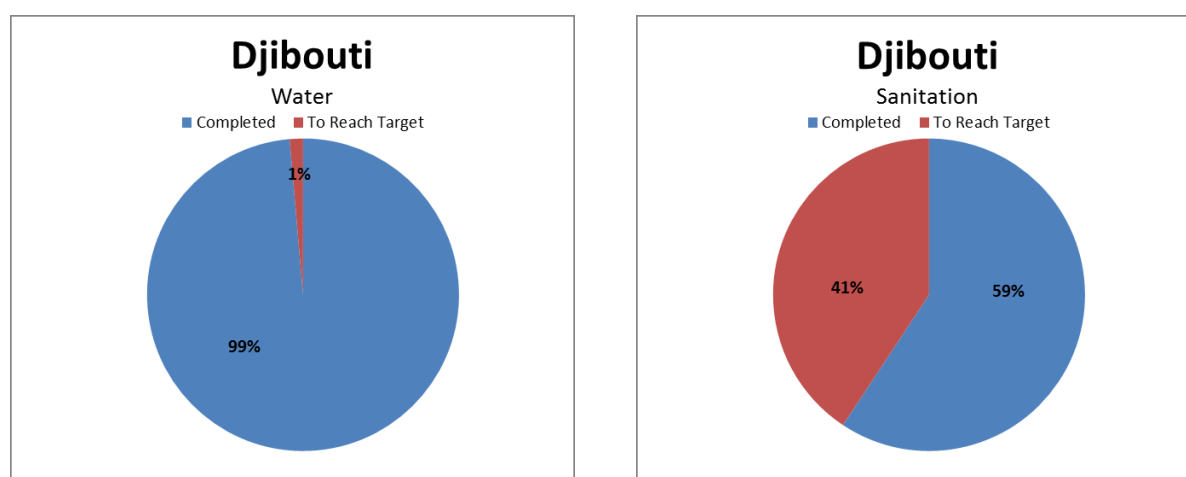


Figure 47: Percent completion of water and sanitation targets - Djibouti

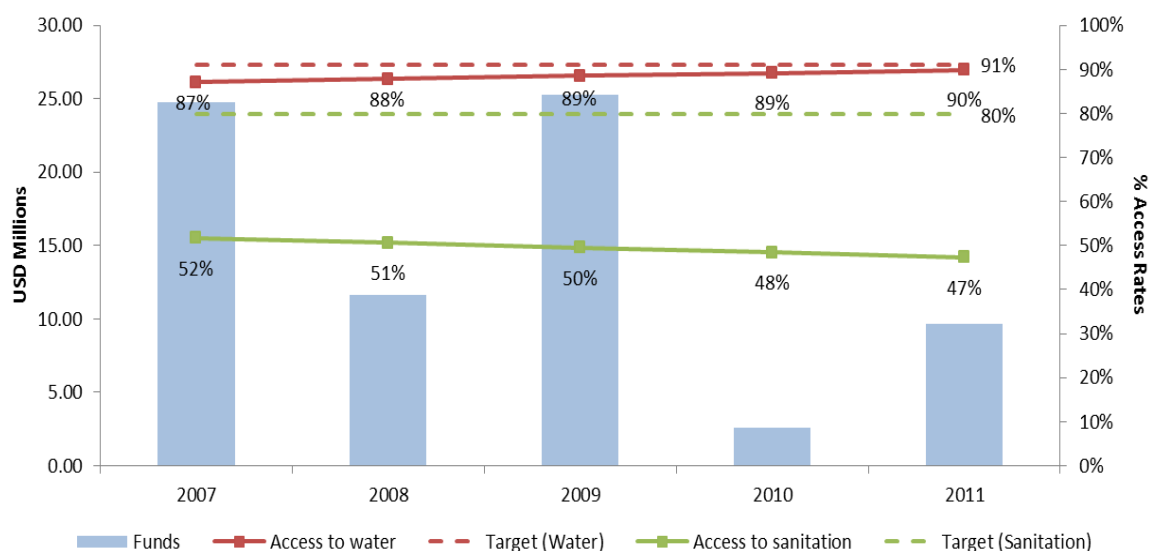


Figure 48: Evolution of access rates compared to funding from 2007 to 2011 - Djibouti

The funds donated per activity in Djibouti from 2007 to 2011 are described in table 35. 45.5 million USD was invested in large systems for water supply and sanitation over the 5 year period, 9.3 million specifically targeted to water supply. No figures were reported for funds dedicated to sanitation.

Waste management/disposal accounted for 25 million USD donated and 2.6 million for basic drinking water supply and basic sanitation. These figures explain how a country like Djibouti can have an improvement of 2.8% in access to safe drinking water, and be on the cusp of achieving the water target, and at the same time report a decrease of 4.4% in access to adequate sanitation. This calls for better investment and spending practices, prioritising actual needs and gaps, and efficient and effective allocation of resources.

Djibouti has a Corruption Perception Index score of 30, a rank of 123, and has a political risk index score of 5 (Coleman, 2015d).

Table 35: Funds Donated per Activity in Djibouti from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.5569	0.0267	0.6779	0.2693	1.1660
Educ./training: water supply & sanitation	0.0022	0.0004	0	0	0
River development	0	0	0.1807	0.0163	0.0222
Waste management/disposal	24.230 0	0.3317	0	0.3190	0.1828
Water resources policy/admin. management	0	0	0.0371	0.0973	0.1031
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	0	11.272 4	24.356 3	0.5772	0
Basic drinking water supply				0	0.0077
Basic sanitation				0	0.0011
Sanitation - large systems				0	0
Water supply - large systems				1.2726	8.0947

6.3.2.15 Equatorial Guinea

Equatorial Guinea is a nation reporting a decrease in access rates to adequate sanitation and a negligible increase in access to safe drinking water. Figure 49 illustrates the percentage left to complete the water and sanitation targets in Equatorial Guinea. Equatorial Guinea is closer to achieving the sanitation target despite reporting a decrease in access rates to adequate sanitation over the 5 year period. Access rates to safe drinking water remain far from the target.

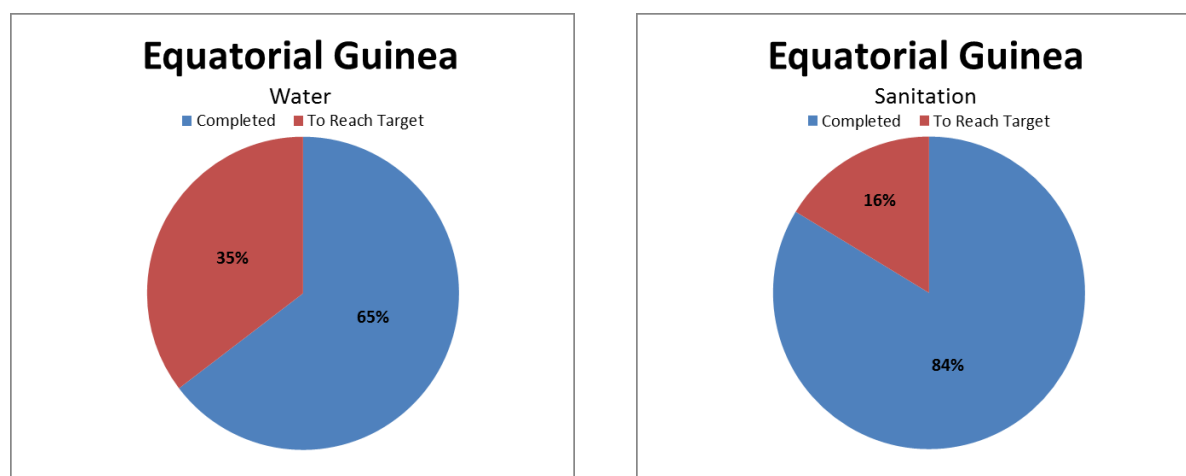


Figure 49: Percent completion of water and sanitation targets - Equatorial Guinea

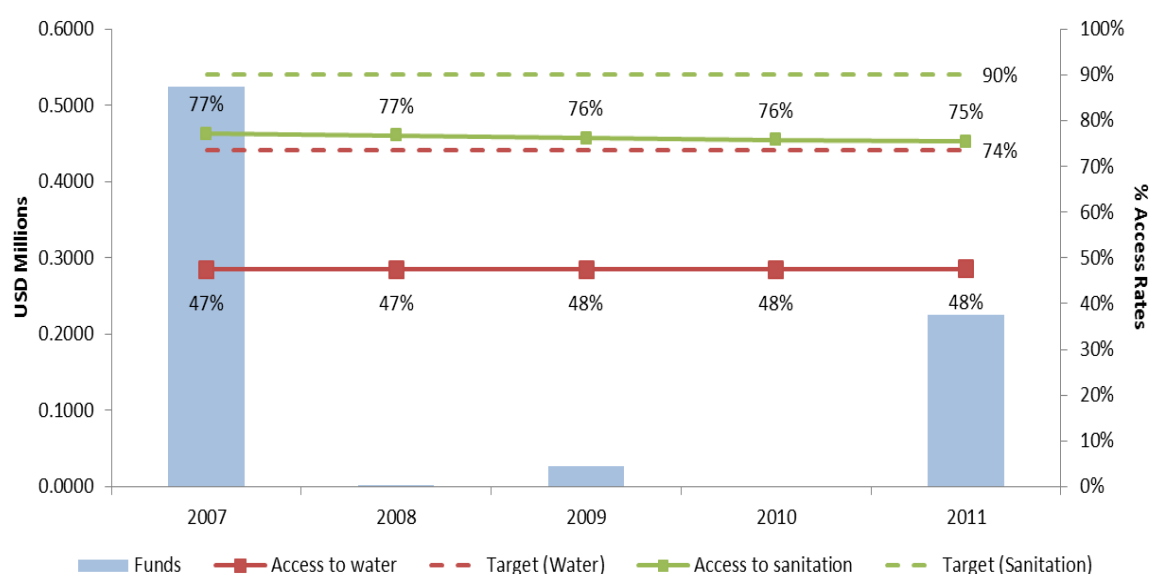


Figure 50: Evolution of access rates compared to funding from 2007 to 2011 - Equatorial Guinea

Equatorial Guinea received a total of 778.7 thousand USD from 2007 to 2011, summarised in table 36. 553 thousand USD were directed to basic drinking water supply and basic sanitation during the 5 year period. A lack of investment in the sector clarifies the lack of improvement of 0.2% to access to safe drinking water and a decrease of 1.7% in access rates to sanitation. Despite little investment in the sector, Equatorial Guinea can benefit from better funding practices with an efficient distribution of scarce resources.

Equatorial Guinea does not have a Corruption Perception Index score or rank, and but has a political risk index score of 4.5 (Coleman, 2015e).

Table 36: Funds Donated per Activity in Equatorial Guinea from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.5248	0.0017	0.0269	0	0
Educ./training: water supply & sanitation	0	0	0	0	0
River development	0	0	0	0	0
Waste management/disposal	0	0	0	0	0
Water resources policy/admin. management	0	0	0	0	0.1222
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	0	0	0	0	0
Basic drinking water supply				0	0
Basic sanitation				0	0
Sanitation - large systems				0	0
Water supply - large systems				0	0

6.3.2.16 Eritrea

Access rates in Eritrea have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 51 illustrates the percentage left to complete the water and sanitation targets in Eritrea. Eritrea is closer to achieving the water target, but access rates to adequate sanitation remain extremely far from the target.

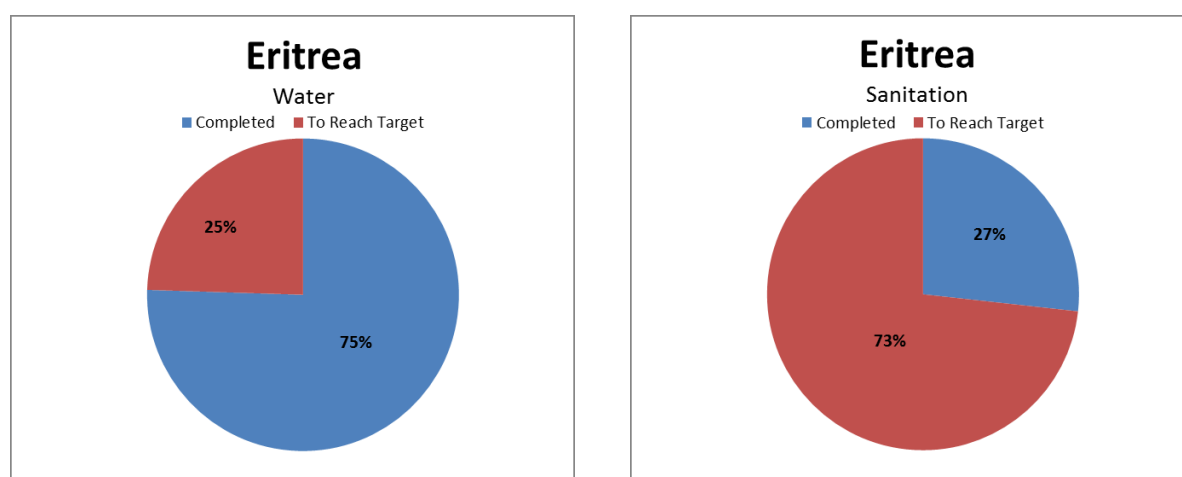


Figure 51: Percent completion for water and sanitation - Eritrea



Figure 52: Evolution of access rates compared to funding from 2007 to 2011 - Eritrea

Table 37 describes the funds donated per activity in Eritrea from 2007 to 2011. A total of 27.7 million USD were pledged to the nation over the 5 year period, split almost evenly between basic drinking water and basic sanitation, and water supply and sanitation – large systems, receiving 14.1 million and 13.2 million USD respectively. Eritrea has improved access to both safe drinking water and adequate sanitation during the time frame, marking an increase of 2.2% to access rates to safe drinking water, and 1.2% to access to adequate sanitation. However, it remains far from achieving the sanitation target, with access at 14.9% in 2011.

Eritrea has a Corruption Perception Index score of 18, a rank of 164, and has a political risk index score of 4 (Coleman, 2015f).

Table 37: Funds Donated per Activity in Eritrea from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.6107	11.6233	0.8064	0.7380	0.1322
Educ./training: water supply & sanitation	0.0064	0	0	0	0
River development	0	0	0	0	0
Waste management/disposal	0	0	0	0	0
Water resources policy/admin. management	0	0	0.0030	0	0.1031
Water resources protection	0.1747	0	0	0	0.1031
Water supply & sanit. - large systems	12.9582	0.0094	0	0	0.1321
Basic drinking water supply				0.0276	0.2048
Basic sanitation				0	0.0003
Sanitation - large systems				0	0
Water supply - large systems				0.0243	0.1384

6.3.2.17 Ethiopia

Access rates in Ethiopia have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 53 illustrates the percentage left to complete the water and sanitation targets in Ethiopia. Ethiopia is closer to achieving the water target, but access rates to adequate sanitation remain extremely far from the target.

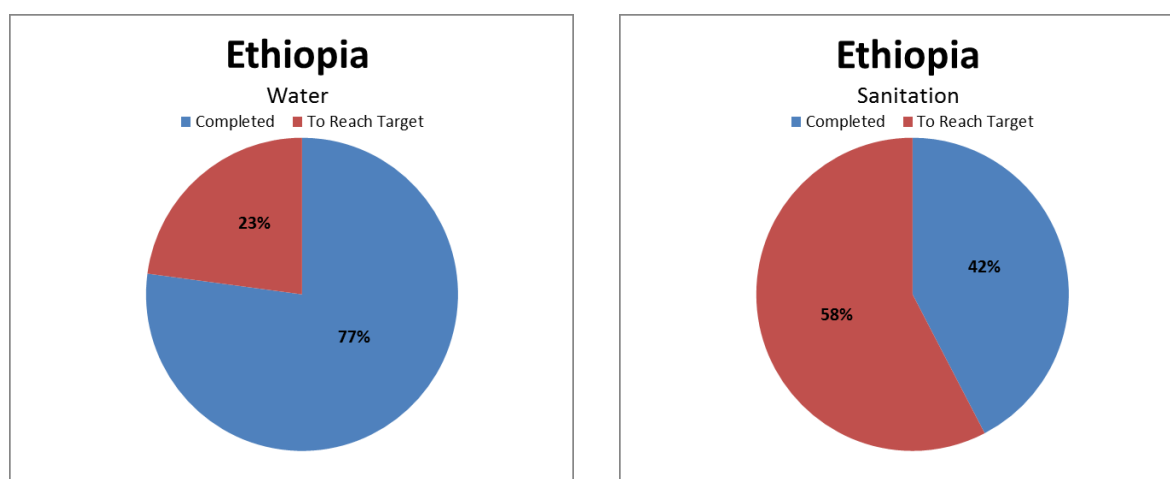


Figure 53: Percent completion of water and sanitation targets - Ethiopia

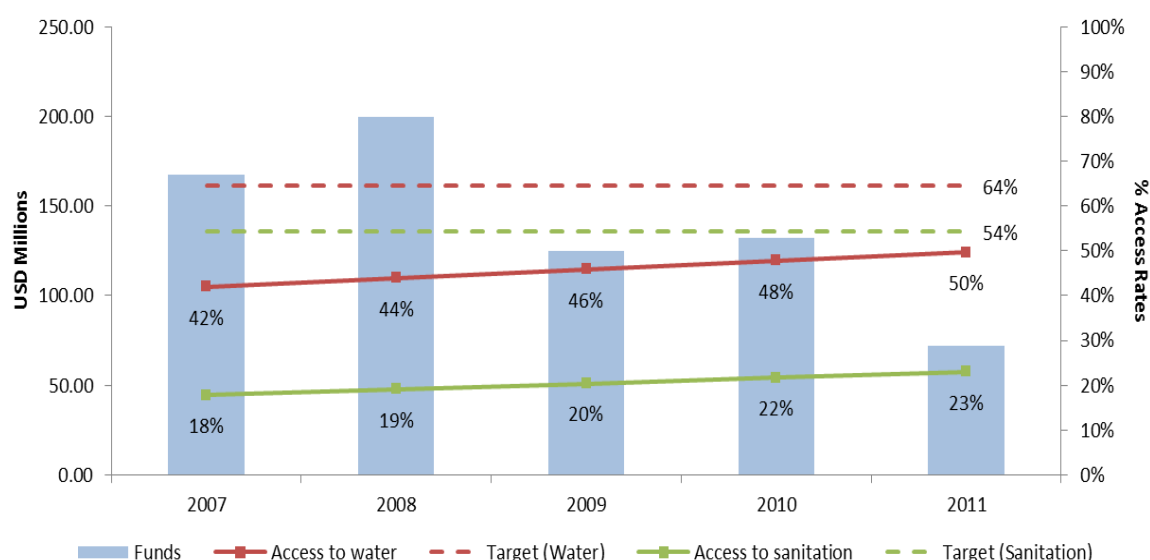


Figure 54: Evolution of access rates compared with funding from 2007 to 2011 - Ethiopia

Table 38 summarises the funds donated per activity in Ethiopia from 2007 to 2011. Ethiopia received a total of 696.6 million USD over the 5 year period from 2007 to 2011, 616.2 million of which were dedicated to water supply and sanitation, identifying it as a priority for funding. Other areas receiving the remaining funds were: education and training in water supply and sanitation (1.3 million), river development (40.7 million, and water resources policy/administrative management (37.3 million). A further look at the figures indicates that basic drinking water supply and sanitation is allocated the majority of funds, representing 432.1 million USD from 2007 to 2011. A further breakdown after 2010 discloses that basic drinking water supply accounts for the bulk, having been apportioned 48.7 million USD in 2010 and 2011 collectively, while basic sanitation received 27.3 million USD in the same years. In terms of large systems funding, water supply was also the major recipient with 5.6 million USD attributed in 2010 and 2011 combined. Large contributions were still made to the combined categories in the years after the division of the water supply and sanitation.

The large investments in the water supply and sanitation sector has proven beneficial with reported improvements in access rates of 7.7% for water and 5.2% for sanitation. However, Ethiopia has yet to reach the halfway point to meeting its sanitation target of 54.3% of the population with access to adequate sanitation.

Ethiopia has a Corruption Perception Index score of 34, a rank of 108, and has a political risk index score of 4 (Coleman, 2016h).

Table 38: Funds Donated per Activity in Ethiopia from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	32.8367	157.1368	108.9425	16.1928	40.8910
Educ./training: water supply & sanitation	0.0589	0.2533	0.1705	0.1859	0.6681
River development	9.0239	27.9910	1.2519	0.1942	2.2659
Waste management/disposal	0	0	0.0262	0.0560	0
Water resources policy/admin. management	5.6400	10.1051	6.3040	12.7367	2.5617
Water resources protection	0.0670	0	0.0793	0.1298	0.6792
Water supply & sanit. - large systems	120.0789	4.2150	8.1985	43.2596	2.6444
Basic drinking water supply				37.6894	11.0875
Basic sanitation				20.1941	7.1908
Sanitation - large systems				0	0.0173
Water supply - large systems				1.7122	3.9229

6.3.2.18 Gabon

Access rates in Gabon have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 55 illustrates the percentage left to complete the water and sanitation targets in Gabon. Gabon has achieved the water target, yet remains very far from the required sanitation access rate.

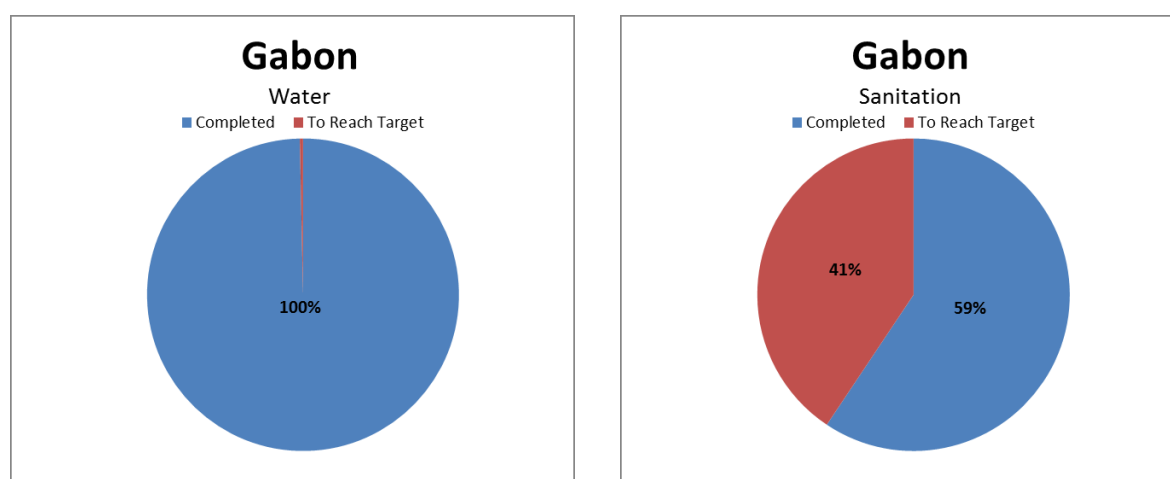


Figure 55: Percent completion of water and sanitation targets - Gabon

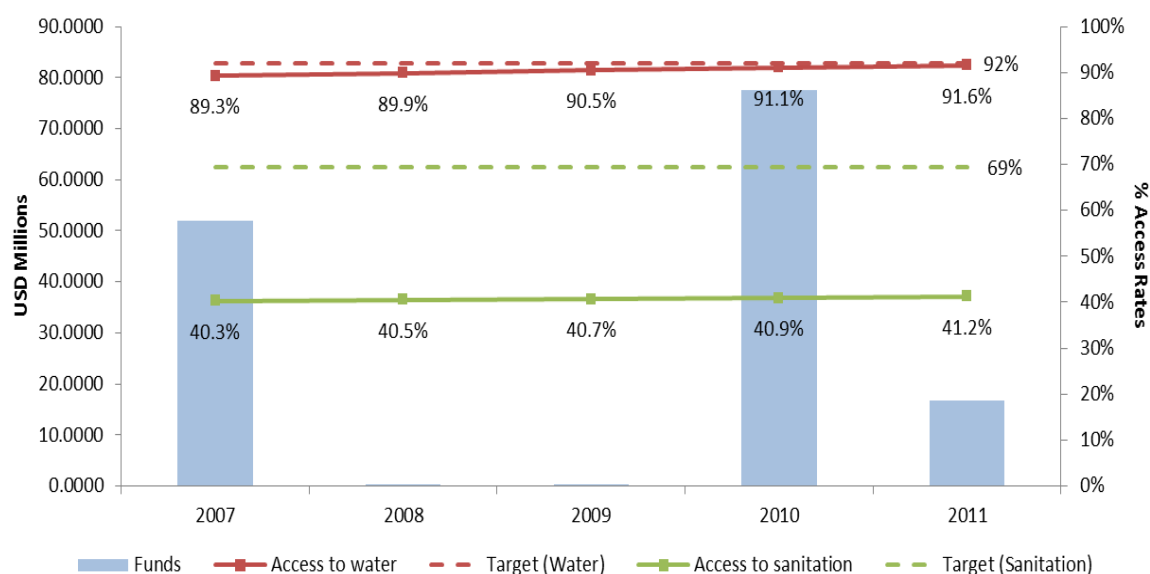


Figure 56: Evolution of access rates compared to funding from 2007 to 2011 - Gabon

Investment in the water and sanitation sector in Gabon over the 5 year period from 2007 to 2011 was limited to water supply and sanitation – large systems. The activity received a total of 146.1 million USD, given primarily in 2007 (52 Million), 2010 (77.4 Million), and 2011 (16.6 million). The conveyed figures were all in the combined category for large systems. Gabon has reported a consistent but slow progress in providing access to adequate sanitation with a total improvement of 0.9% from 2007 to 2011. Access rates to safe drinking water have increased by 2.3% over the same time frame, a marked advanced compared to sanitation. Gabon has focused the majority, if not all, its funds in one area and would benefit from better and more efficient resource allocation.

Gabon has a Corruption Perception Index score of 35, a rank of 101. Gabon is seen as a high strategic risk with an overall risk rating of 2.8 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 5 (IHS Global Inc., 2015).

Table 39: Funds Donated per Activity in Gabon from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0	0	0.0020	0	0
Educ./training: water supply & sanitation	0	0	0	0	0
River development	0	0	0	0	0
Waste management/disposal	0	0.0203	0	0	0.0967
Water resources policy/admin. management	0	0.1597	0.1860	0.1338	0
Water resources protection	0	0	0	0	0
Water supply & sanit. - large systems	52.019	0.0075	0	77.483	16.685
Basic drinking water supply				0	0
Basic sanitation				0	0
Sanitation - large systems				0	0
Water supply - large systems				0	0

6.3.2.19 *Gambia*

The Gambia have reported a slight decrease in the access to adequate sanitation and an increase in access rates to safe drinking water 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 57 illustrates the percentage left to complete the water and sanitation targets in the Gambia. The Gambia is extremely close to achieving the water target, yet remains far from the required sanitation access rate.

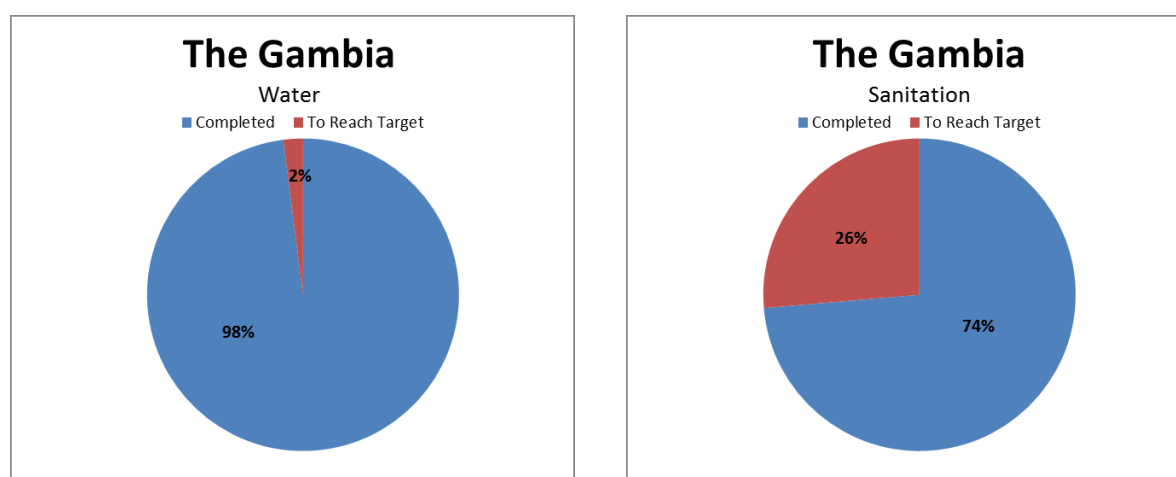


Figure 57: Percent completion of water and sanitation targets - The Gambia

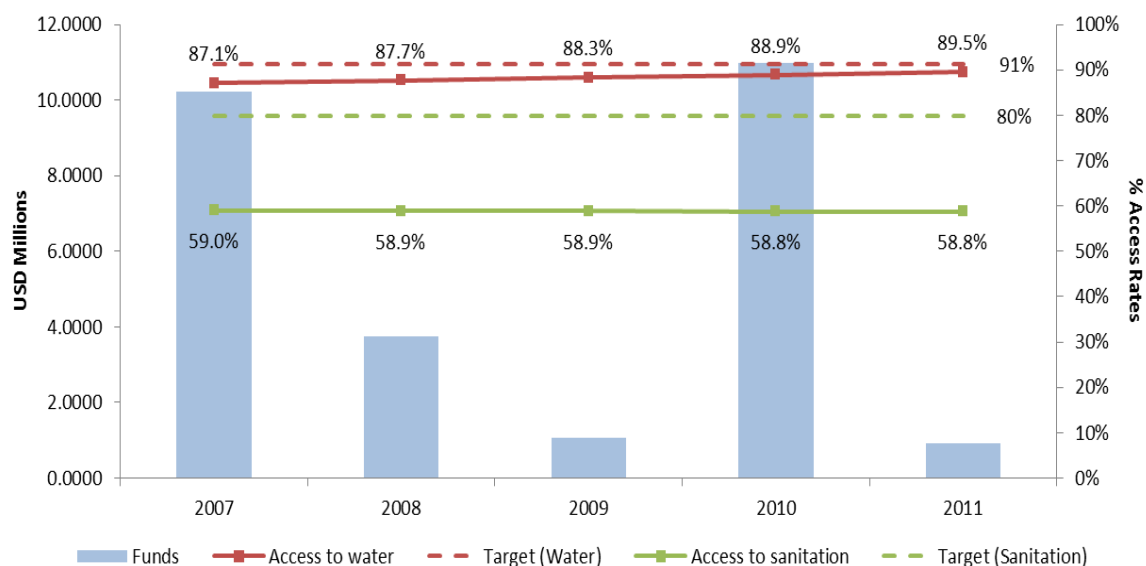


Figure 58: Evolution of access rates compared to funding from 2007 to 2011 - The Gambia

Funds donated per activity in the Gambia from 2007 to 2011 are found in table 40. The majority of investment in the Gambia is focused on water supply and sanitation, with 11 million USD directed towards basic drinking water supply and sanitation, and 14.3 million for water supply and sanitation – large systems. While a clear cut distinction cannot be made with the funds allotted to basic projects, 0.34 million were earmarked for basic drinking water supply and the remainder (10.6 million) given in

the combined category, it is evident that water supply received the bulk of the funding: a total of 10.2 million over the two year period from 2010 to 2011. Sanitation was apportioned 0.36 million USD.

These investment decisions have impacted access to both safe drinking water and adequate sanitation. The Gambia reports a decrease in access to adequate sanitation of 0.2% bringing it even further from the target of 79.85%. In 2011, access to adequate sanitation was 58.8%. Access to safe drinking water has increased by 2.4%, causing it to be 2% away from achieving the water target of 91.35%. The Gambia is a country that devotes its resources to water supply, ignoring sanitation. Gambia has a Corruption Perception Index score of 26, a rank of 145, and has a political risk index score of 4.5 (Coleman, 2015g).

Table 40: Funds Donated per Activity in the Gambia from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	10.183	0.0351	0.4139	0.0278	0.0139
Educ./training: water supply & sanitation	0.0032	0	0	0	0
River development	0.0407	0	0.6631	0.7029	0.0012
Waste management/disposal	0	0	0	0	0
Water resources policy/admin. management	0	0	0	0.0267	0.1151
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	0	3.7160	0	0	0
Basic drinking water supply				0.0175	0.3256
Basic sanitation				0	0
Sanitation - large systems				0	0.3623
Water supply - large systems				10.2210	0.0027

6.3.2.20 Ghana

Access rates in Ghana have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 59 illustrates the percentage left to complete the water and sanitation targets in Ghana. Ghana is extremely close to achieving the water target, yet remains exceedingly far from the required sanitation access rate.

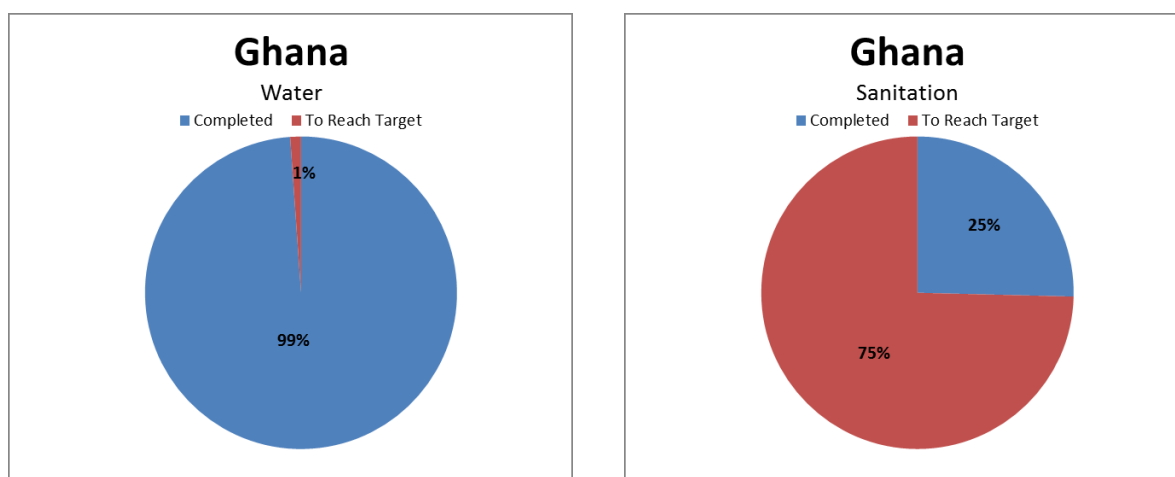


Figure 59: Percent completion of the water and sanitation targets - Ghana

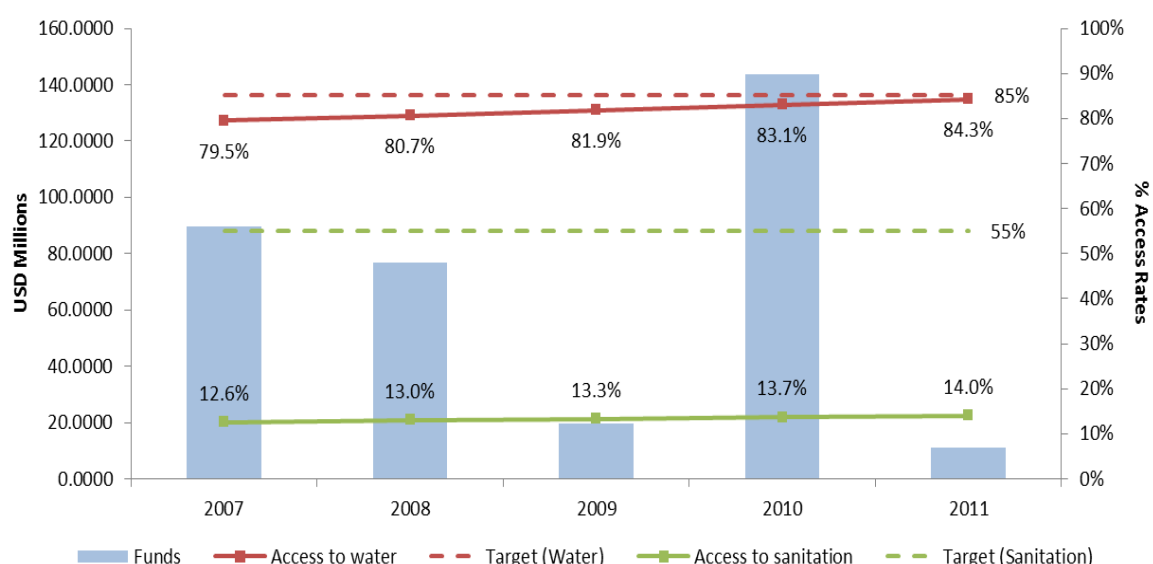


Figure 60: Evolution of access rates compared to funding from 2007 to 2011 - Ghana

From 2007 to 2011, Ghana received a total of 340.5 million USD in aid to the water and sanitation sector. These funds were principally distributed over 3 activities. 137.6 million USD was invested in basic drinking water supply and sanitation, with 46.6 million earmarked for basic drinking water supply and 12.8 for basic sanitation. Water supply and sanitation – large systems was allocated 157.8 million, with 26.8 million diverted to water supply. All remaining funds were reported in the combined categories. Water resources policy/administrative management obtained 41 million, with 27.3 million given in 2007 alone. All funding figures are summarised in table 41.

The preferential investment in water supply is reflected in the changes to access rates to safe drinking water and adequate sanitation. Ghana has achieved an increase of 4.8% in access to safe drinking water, and an increase of 1.4% in access to adequate sanitation. In 2011, access to safe drinking water stood at 84.3%, on the edge of the target of 85.25%. Access to adequate sanitation was 14%, extremely far from the target of 55.15%.

Ghana has a Corruption Perception Index score of 43, a rank of 70, and has a political risk index score of 7 (IHS Global Inc., 2016s).

Table 41: Funds Donated per Activity in Ghana from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	58.0369	4.1005	13.5449	0.8041	1.6300
Educ./training: water supply & sanitation	0.0024	0.0216	0.0256	0	0
River development	1.8214	0.0432	0.0708	0.0143	0
Waste management/disposal	0	0	0.0497	0.0534	0.0168
Water resources policy/admin. management	27.3867	9	3.8819	0.5002	0.3215
Water resources protection	0	0.9676	0	0.0243	0.8675
Water supply & sanit. - large systems	2.2094	62.7055	1.8858	60.1900	3.5200
Basic drinking water supply				46.5077	0.0980
Basic sanitation				9.0032	3.8782
Sanitation - large systems				0.5096	0
Water supply - large systems				26.0554	0.7534

6.3.2.21 *Guinea*

Access rates in Guinea have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 61 illustrates the percentage left to complete the water and sanitation targets in Guinea. Guinea is very close to achieving the water target, yet remains extremely far from the required sanitation access rate.

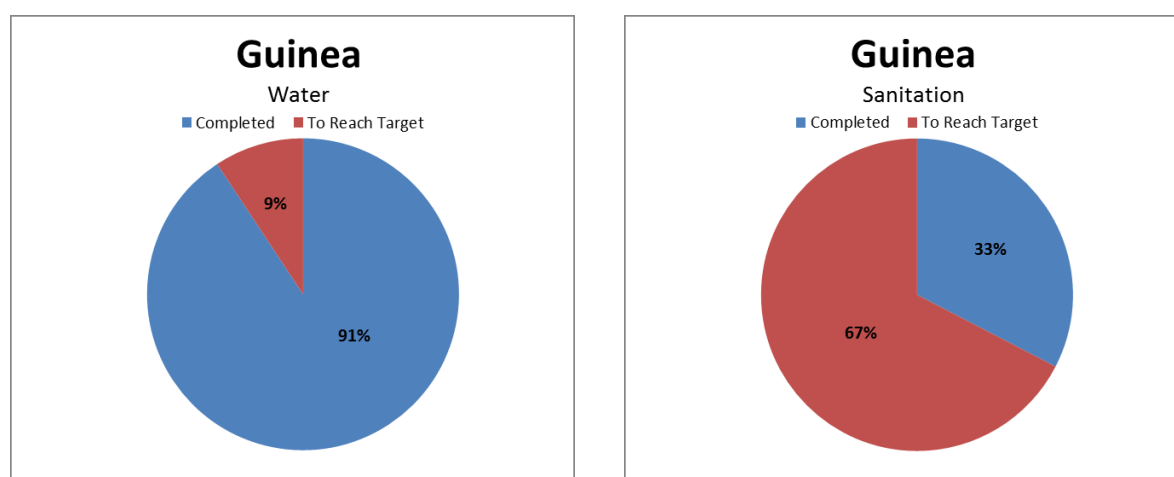


Figure 61: Percent completion of the water and sanitation targets - Guinea

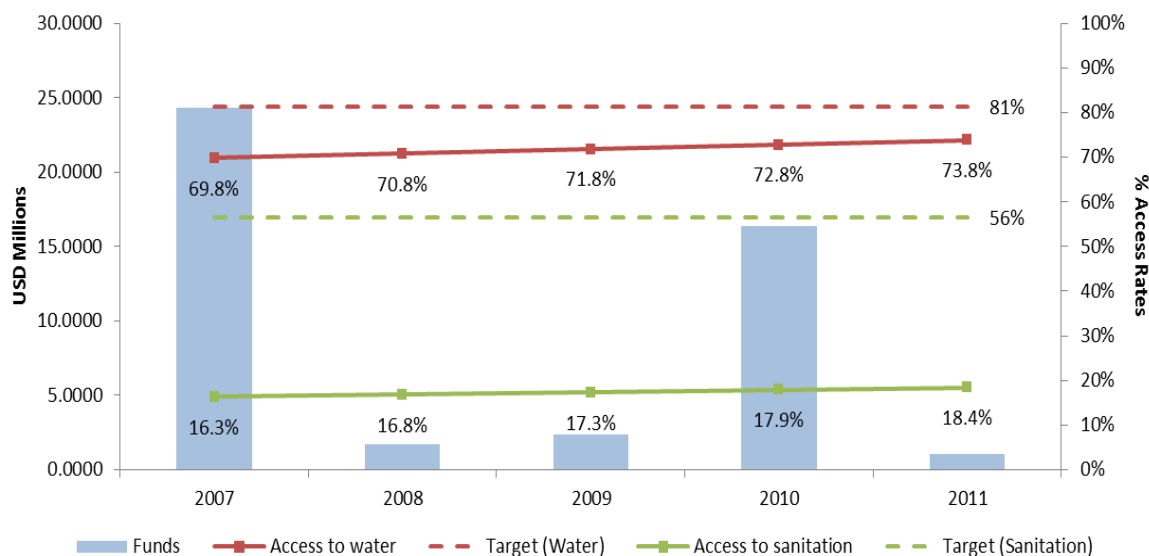


Figure 62: Evolution of access rates compared to funding from 2007 to 2011 - Guinea

The funds donated per activity in Guinea from 2007 to 2011 are in table 42. Aid funding in Guinea are predominantly split between basic drinking water supply and basic sanitation, and water supply and sanitation – large systems. River development received a bulk sum of 7.1 million USD in 2007, but was attributed little funding after that. Little can be concluded about the destination of the 13.3 million allocated to basic drinking water supply and basic sanitation, as figures are largely reported in the combined category. A lump sum of 6.3 million USD was diverted to water supply and sanitation – large systems combined category in 2007, receiving insignificant amounts in the following years. However water supply – large systems was allotted 14.7 million from 2010 to 2011.

The prioritisation of water supply translates to the access rates. Guinea reported an increase of 4% in access rates to safe drinking water, and an increase of 2.1% in access to adequate sanitation. Access to adequate sanitation lags behind progress made in access to safe drinking water, reaching in 2011 18.4%, a far cry from the target of 56.45%.

Guinea has a Corruption Perception Index score of 22, a rank of 142, and has a political risk index score of 3.5 (Coleman, 2016i).

Table 42: Funds Donated per Activity in Guinea from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	8.6552	0.5944	1.8520	1.6816	0.5490
Educ./training: water supply & sanitation	0.0092	0.1021	0.3585	0	0
River development	7.1100	0.0852	0	0	0
Waste management/disposal	1.6500	0.0017	0	0	0
Water resources policy/admin. management	0.5400	0.9372	0.1746	0	0.1741
Water resources protection	0	0	0	0.1987	0.1031
Water supply & sanit. - large systems	6.3753	0.0075	0	0	0
Basic drinking water supply				0	0
Basic sanitation				0	0.0509
Sanitation - large systems				0	0
Water supply - large systems				14.5108	0.2091

6.3.2.22 *Guinea-Bissau*

Access rates in Guinea-Bissau have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 63 illustrates the percentage left to complete the water and sanitation targets in Guinea-Bissau. Guinea-Bissau is very close to achieving the water target, yet remains extremely far from the required sanitation access rate.

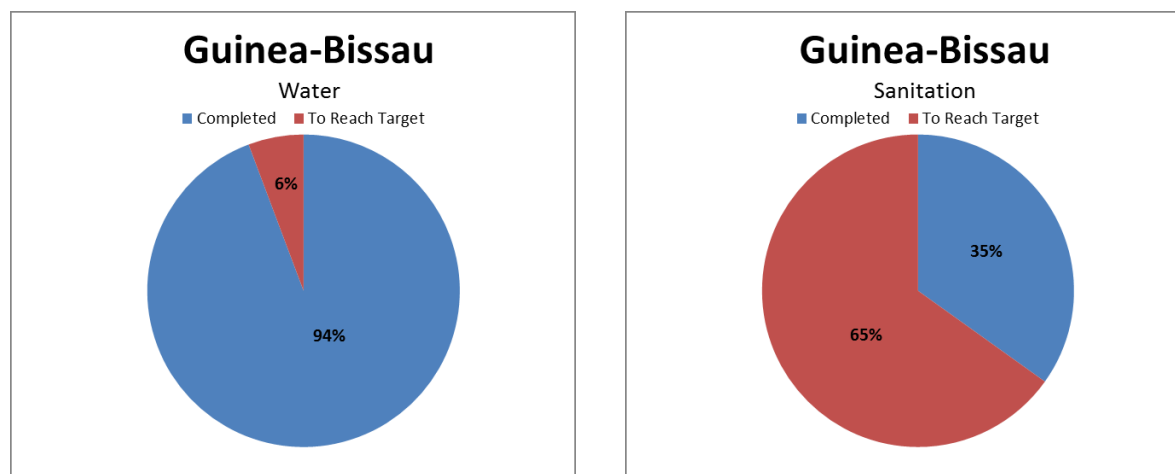


Figure 63: Percent completion of the water and sanitation targets - Guinea-Bissau

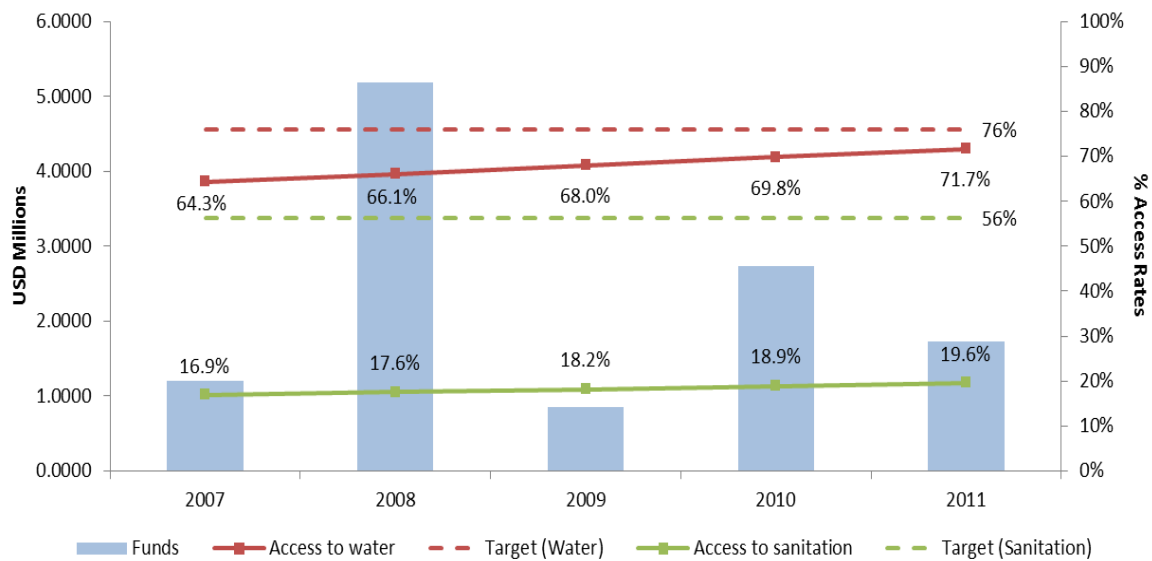


Figure 64: Evolution of access rates compared to funding from 2007 to 2011 - Guinea-Bissau

The majority of funding from 2007 to 2011 in Guinea-Bissau was directed to water resources policy/administrative management, accumulating to a total of 6.1 million USD. Basic drinking water supply and sanitation were attributed 2.3 million over the time frame, and water supply and sanitation – large systems 2.2 million USD, 1.9 million of which specifically earmarked for water supply.

With large investment to water supply and sanitation, and more specifically to water supply, it is easy to see how Guinea-Bissau reported, from 2007 to 2011, an improvement of 7.4% to access to safe drinking water and 2.7% to access to adequate sanitation. The described increase in access rates is positive, yet it is not sufficient. Progress made to sanitation is slow, leaving access rates in 2011 at 19.6%, with a target of 56.2%. Such a large sum dedicated to bureaucracy in a nation struggling to provide basic sanitation is a poor use of essential resources.

Guinea-Bissau has a Corruption Perception Index score of 16, a rank of 168, and has a political risk index score of 4 (Coleman, 2016j).

Table 43: Funds Donated per Activity in Guinea-Bissau from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.9360	0.5526	0.4253	0.0945	0.3874
Educ./training: water supply & sanitation	0	0	0	0	0
River development	0	0	0	0	0
Waste management/disposal	0.2631	0.1657	0	0	0.0056
Water resources policy/admin. management	0	4.3842	0.4230	1.0160	0.2872
Water resources protection	0	0.0759	0	0	0.1031
Water supply & sanit. - large systems	0	0.0075	0	0	0.2162
Basic drinking water supply				0.1219	0.1919
Basic sanitation				0	0.0358
Sanitation - large systems				0	0
Water supply - large systems				1.5014	0.4960

6.3.2.23 Kenya

Access rates in Kenya have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 65 illustrates the percentage left to complete the water and sanitation targets in Kenya. Kenya is closer to achieving the water target, yet remains extremely far from the required sanitation access rate.

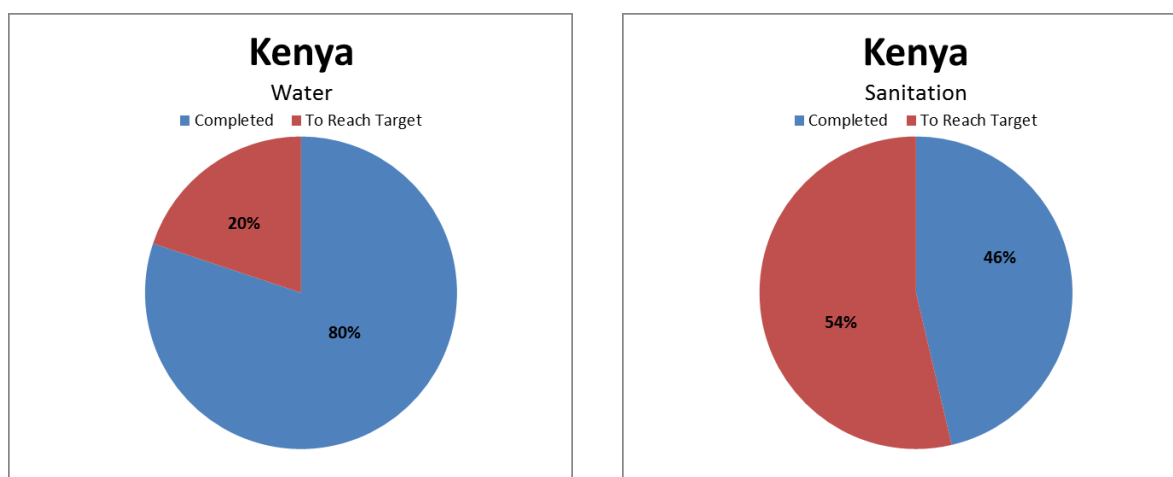


Figure 65: Percent completion of the water and sanitation targets - Kenya

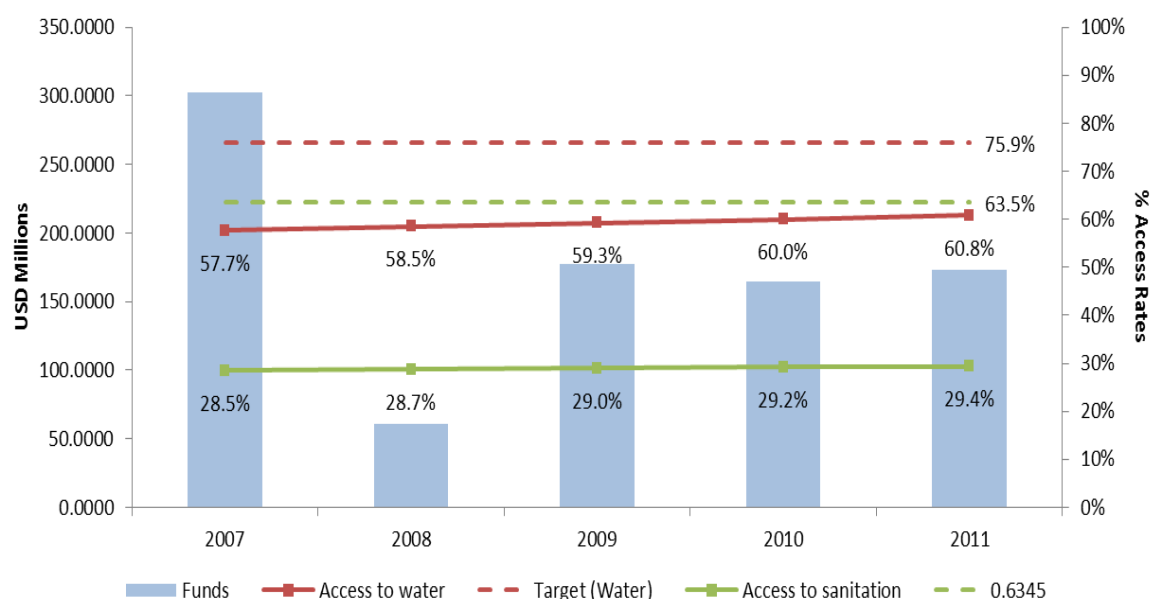


Figure 66: Evolution of access rates compared to funding from 2007 to 2011 - Kenya

Kenya is one of the countries that received the most funding, accumulating 877.5 million USD from 2007 to 2011, focused mainly in 4 activities: basic drinking water supply and basic sanitation (301.2 million), river development (34.9 million), water resources policy/administrative management (49.7 million), and water supply and sanitation – large systems (485.6 million). For the large systems, a greater proportion of funding is directed towards water supply, with 33.2 million USD earmarked. While the distribution of resources for basic supply is not even, drinking water supply is still apportioned a noteworthy sum of 26.4 million. Basic sanitation accounts for 55.8 million for 2010 and 2011. Significant donations were made to the combined activities in 2010 (basic drinking water supply and sanitation: 4.9 million, water supply and sanitation – large systems: 116.7 million) and 2011 (basic drinking water supply and sanitation: 70 million, water supply and sanitation – large systems: 6.4 million). All funds donated per activity in Kenya from 2007 to 2011 are summarised in table 44.

Despite the focus on basic sanitation, progress has been slow, but consistent, reaching a change of 0.9% and an access rate of 29.4%. The sanitation target for Kenya is 63.45%. Faster and better improvement is seen on the water side with an increase of 3.1%, to reach an access rate of 60.8%.

Kenya has a Corruption Perception Index score of 26, a rank of 145. Kenya is seen as a high strategic risk with an overall risk rating of 2.6 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 5.5 (IHS Global Inc., 2016d).

Table 44: Funds Donated per Activity in Kenya from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	48.4100	54.7657	40.0930	4.9399	70.7388
Educ./training: water supply & sanitation	0.1803	0.4029	0.5121	0.4455	0.1746
River development	33.1535	0.2567	0.3333	0.1072	1.1325
Waste management/disposal	0.0402	0.0089	0.9076	1.0933	0.8926
Water resources policy/admin. management	27.3621	0.5166	3.4147	9.5750	8.8566
Water resources protection	0	0.2260	0.0361	0.0276	0.9368
Water supply & sanit. - large systems	193.0530	4.3566	131.7745	116.7144	6.4439
Basic drinking water supply				0.3987	26.0736
Basic sanitation				0.3828	55.4743
Sanitation - large systems				0	0.0464
Water supply - large systems				30.9561	2.3352

6.3.2.24 Lesotho

Access rates in Lesotho have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 67 illustrates the percentage left to complete the water and sanitation targets in Lesotho. Lesotho is close to achieving the water target, yet remains extremely far from the required sanitation access rate.

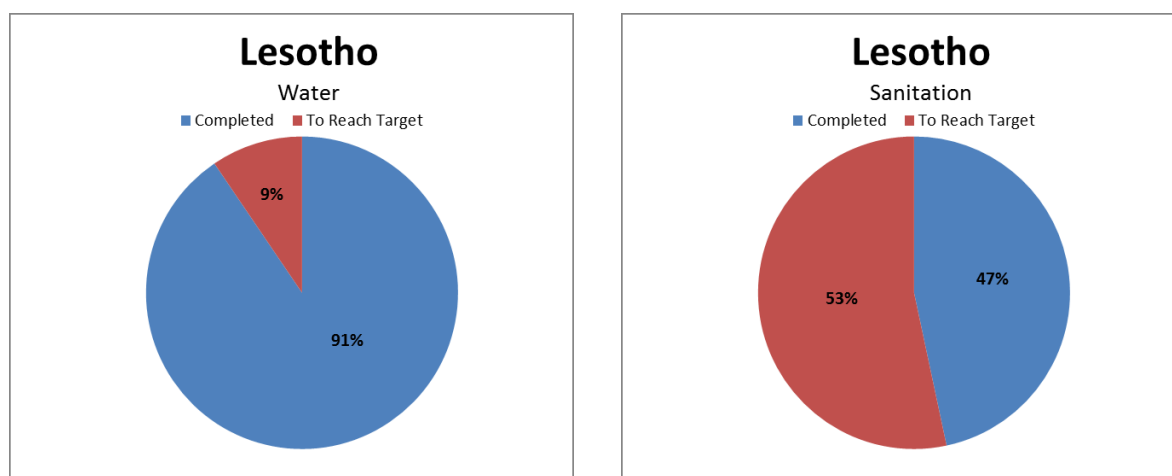


Figure 67: Percent completion of the water and sanitation targets - Lesotho

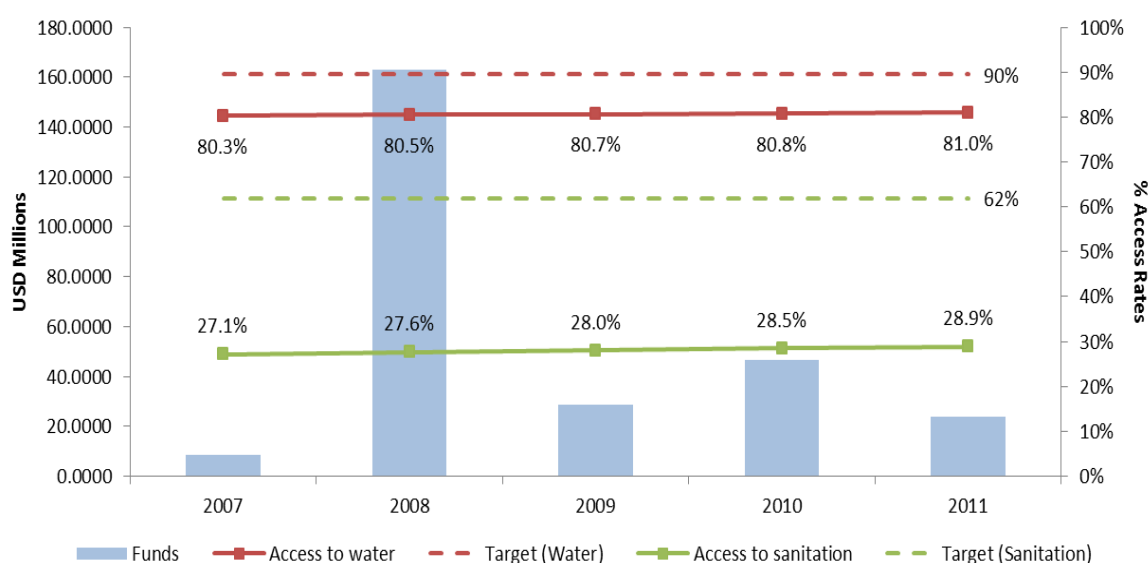


Figure 68: Evolution of access rates compared to funding from 2007 to 2011 - Lesotho

Table 45 describes the funds donated per activity in Lesotho from 2007 to 2011. A notable portion of the funds received in Lesotho is aimed at water supply and sanitation - large systems, totalling 154.9 million USD. The majority of funds were donated in the combined category, with 15.7 million earmarked for water supply in 2011. Water resources policy/administrative management receives the second large sum of 98.7 million USD, followed by basic drinking water supply and sanitation, given 10.8 million USD.

The substantial sums donated do not translate to access rates. Lesotho reported an increase of 0.7% in access to safe drinking water and 1.8% in access to adequate sanitation. Lesotho has yet to reach the halfway mark in meeting its sanitation target of 61.95%; in 2011 access rates were 28.9%.

Lesotho has a Corruption Perception Index score of 39, a rank of 83. Lesotho is seen as a high strategic risk with an overall risk rating of 2.5 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 6 (IHS Global Inc., 2016e).

Table 45: Funds Donated per Activity in Lesotho from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	3.4203	3.7749	2.8174	0.1027	0.6952
Educ./training: water supply & sanitation	0	0.5256	0.0438	0	0
River development	0	0	0	0	0
Waste management/disposal	0	0	0	0	0
Water resources policy/admin. management	0.5381	34.3805	12.5568	44.9142	6.3511
Water resources protection	0.3240	4.6440	0	0	0.1031
Water supply & sanit. - large systems	4.1781	119.5819	13.0417	1.6750	0.7605
Basic drinking water supply				0	0
Basic sanitation				0	0
Sanitation - large systems				0	0
Water supply - large systems				0	15.760

6.3.2.25 *Liberia*

Access rates in Liberia have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 69 illustrates the percentage left to complete the water and sanitation targets in Liberia. Liberia is close to achieving the water target, yet remains exceedingly far from the required sanitation access rate.

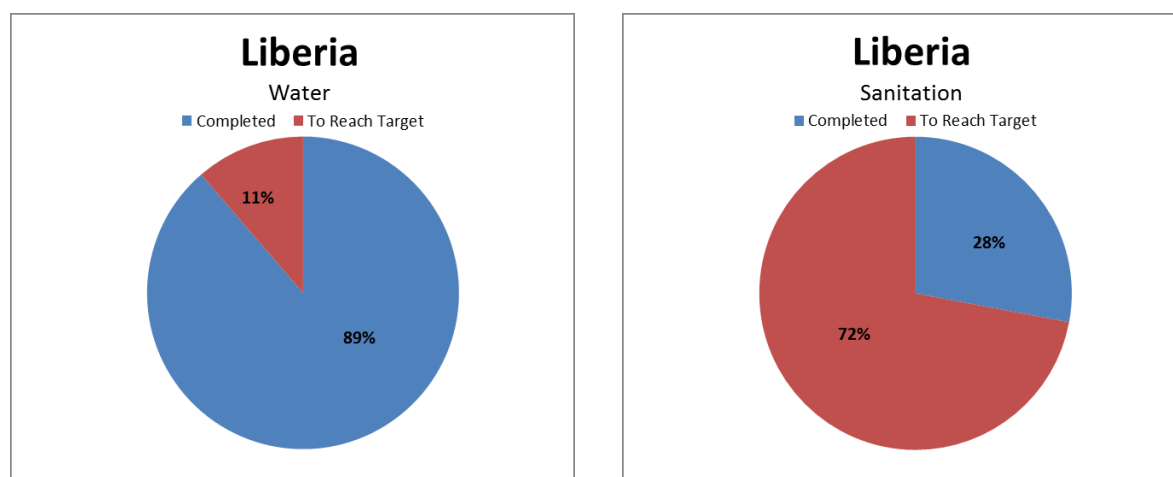


Figure 69: Percent completion of the water and sanitation targets - Liberia



Figure 70: Evolution of access rates compared to funding from 2007 to 2011 - Liberia

The principal portion of funds donated in Liberia from 2007 to 2011 were centred around water supply and sanitation – large systems, representing 62.7 million USD of the 86.7 million received. Basic drinking water supply and basic sanitation was allocated 19.3 million USD over the 5 year period, and waste management/disposal obtained 4.2 million. There has not been much distinction between funds aimed at water supply and those for sanitation in reporting. However, Liberia related an increase of 3.5% in access to safe drinking water, and 1% in access to adequate sanitation. Sanitation is lagging behind access to water in Liberia, with access rates in 2011 at only 15.8% for sanitation and 72% for water.

Liberia has a Corruption Perception Index score of 37, a rank of 90, and has a political risk index score of 3.5 (Coleman, 2015h).

Table 46: Funds Donated per Activity in Liberia from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	6.1916	6.1041	1.4523	3.8022	1.8446
Educ./training: water supply & sanitation	0.0186	0.1313	0	0	0
River development	0	0	0	0	0
Waste management/disposal	0.2336	0	0	0	4
Water resources policy/admin. management	0	0	0.0059	0	0.1090
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	0	2.4750	6.1100	47.8654	6.2420
Basic drinking water supply				0	0
Basic sanitation				0	0.0090
Sanitation - large systems				0.0409	0.0173
Water supply - large systems				0	0.0034

6.3.2.26 Madagascar

Access rates in Madagascar have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 71 illustrates the percentage left to complete the water and sanitation targets in Madagascar. Madagascar is closer to achieving the water target, yet remains tremendously far from the required sanitation access rate.

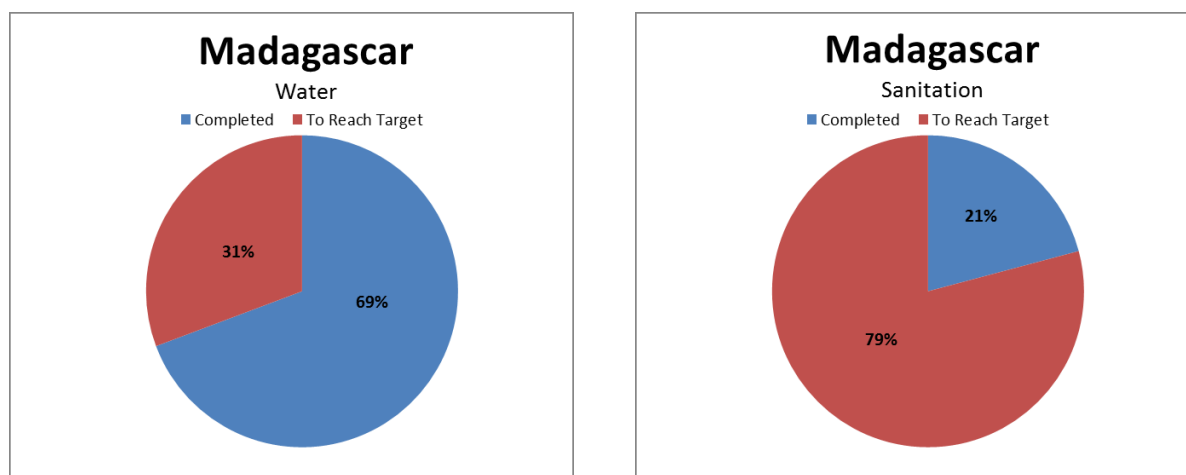


Figure 71: Percent completion of the water and sanitation targets - Madagascar



Figure 72: Evolution of access rates compared to funding from 2007 to 2011 - Madagascar

Table 47 outlines the funds donated per activity in Madagascar from 2007 to 2011. Funding to Madagascar was split somewhat evenly between basic drinking water supply and basic sanitation, and water supply and sanitation – large systems. Other areas receiving mentionable sums are water resources policy/administrative management (2.8 million USD), and river development (1.3 million). No distinction was made to the distribution of funds for basic drinking water and basic sanitation, instead 15 million was accredited to the combined category. Water supply and sanitation – large systems received 18.2 million over the 5 year period.

Despite no division reported in the funding, based on access rates, it is safe to assume that funding favours water supply, with an increase of 3.8% in access to safe drinking water. Access to adequate sanitation in Madagascar in 2011 stood at 11.5%, an increase of 0.5% from 2007. The target set for access to adequate sanitation in Madagascar is 55.15%.

Madagascar has a Corruption Perception Index score of 26, a rank of 145, and has a political risk index score of 4 (Coleman, 2015i).

Table 47: Funds Donated per Activity in Madagascar from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	4.5821	1.0206	2.3016	3.4184	3.0907
Educ./training: water supply & sanitation	0.1186	0.5503	0.0817	0.0167	0
River development	0.4651	0.0323	0.4524	0	0.4119
Waste management/disposal	0	0.0017	0	0	0
Water resources policy/admin. management	3.58E-01	1.5985	0.6653	0.0782	0.1247
Water resources protection	0.0214	0	0	0	0.1031
Water supply & sanit. - large systems	0.0200	8.0160	0.2576	6.2938	3.2856
Basic drinking water supply				0	0.6510
Basic sanitation				0	0.0018
Sanitation - large systems				0	0
Water supply - large systems				0	0.4236

6.3.2.27 Malawi

Access rates in Malawi have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 73 illustrates the percentage left to complete the water and sanitation targets in Malawi. Malawi has achieved the water target, yet remains very far from the required sanitation access rate.

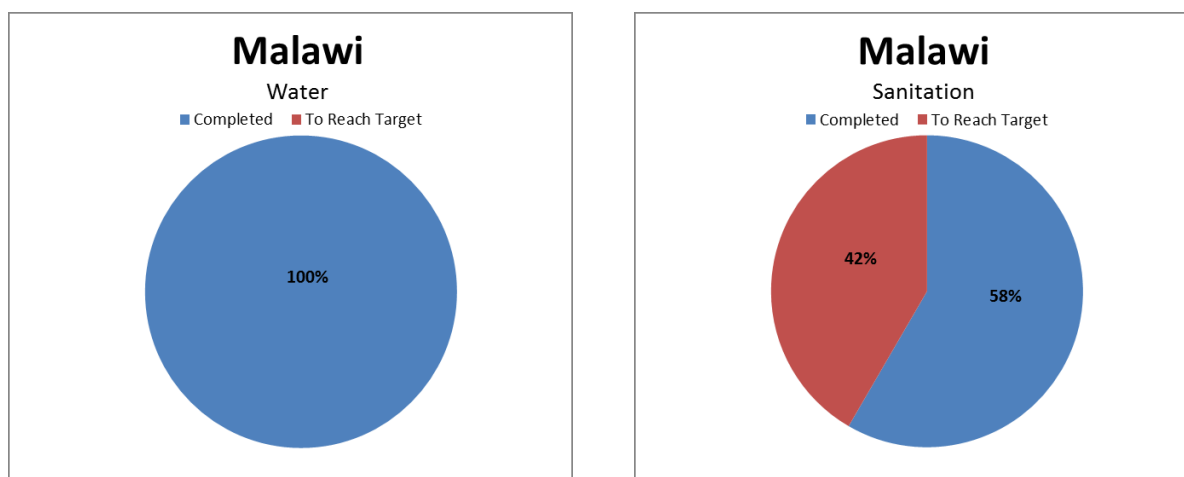


Figure 73: Percent completion of the water and sanitation targets - Malawi

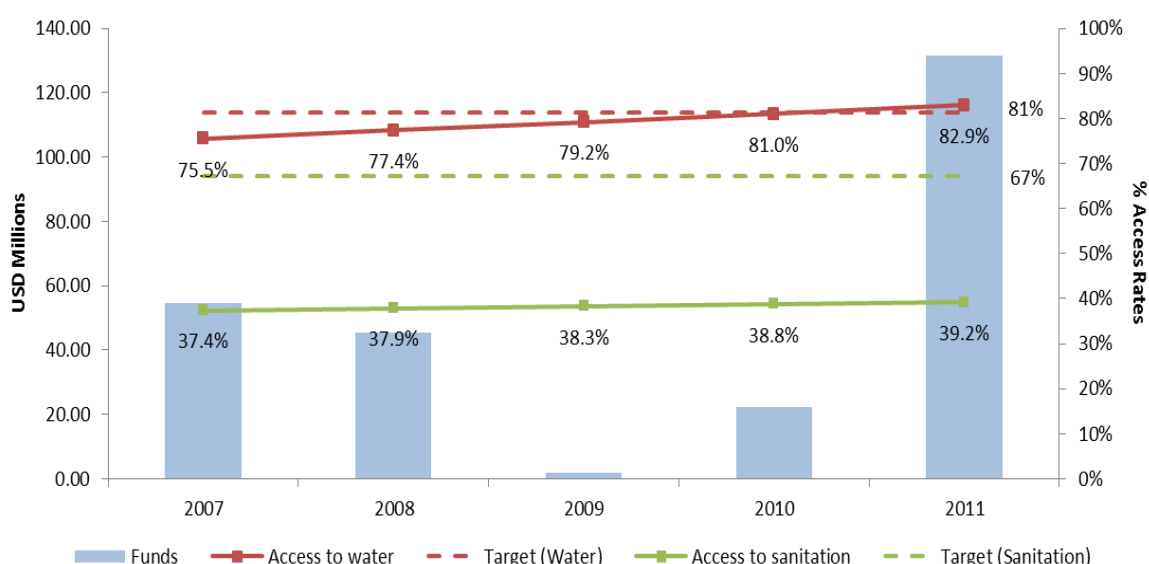


Figure 74: Evolution of access rates compared to funding from 2007 to 2011 - Malawi

Table 48 summarises the funds donated per activity in Malawi from 2007 to 2011. Over the 5 year period from 2007 to 2011, Malawi invested 113.9 million USD in water supply and sanitation – large systems, 35.1 million on basic drinking water supply and basic sanitation, 61.6 million on water resources policy/administrative management, and 42.6 million on water resources protection. Basic drinking water supply was allocated 5.5 million in 2011, while water supply – large systems was allotted 39.1 million in the same year. The only significant sum diverted to sanitation was 38.4 million in 2011, for large systems.

Malawi access rates to water have seen an improvement of 7.4%, achieving the water target in 2011, but still lags behind in access to adequate sanitation with an increase of 1.8%, reaching in 2011 39.2% with a target of 67.5%.

Malawi has a Corruption Perception Index score of 31, a rank of 120. Malawi is seen as a high strategic risk with an overall risk rating of 2.8 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 4.5 (IHS Global Inc., 2016f).

Table 48: Funds Donated per Activity in Malawi from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	3.0542	3.8082	1.1615	17.4787	4.1165
Educ./training: water supply & sanitation	0.0146	0.0039	0.0523	0	0.1460
River development	0	0	0.1735	1.0609	0.6861
Waste management/disposal	0	0	9.00E-05	0.0877	0.0591
Water resources policy/admin. management	6.8401	41.0598	0.1678	0.1682	13.4611
Water resources protection	12.5057	0	0	0.0131	30.1115
Water supply & sanit. - large systems	32.1282	0.5931	0.3241	3.3122	0.0504
Basic drinking water supply				0.0235	5.4812
Basic sanitation				0	0.0267
Sanitation - large systems				0.0187	38.4000
Water supply - large systems				0.0341	39.0907

6.3.2.28 *Mali*

Access rates in Mali have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 75 illustrates the percentage left to complete the water and sanitation targets in Mali. Mali is very close to achieving the water target, yet remains extremely far from the required sanitation access rate.

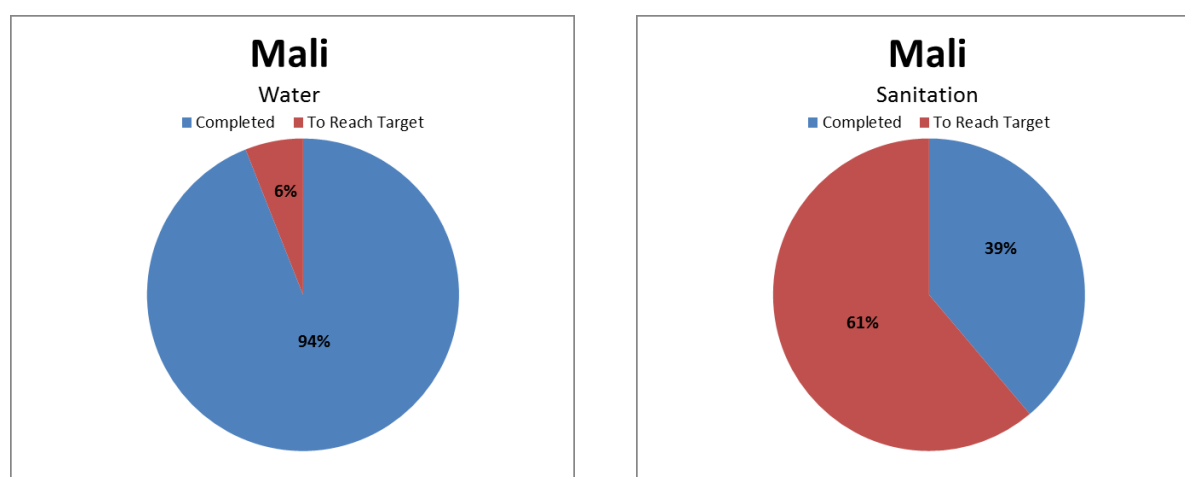


Figure 75: Percent completion of the water and sanitation targets - Mali

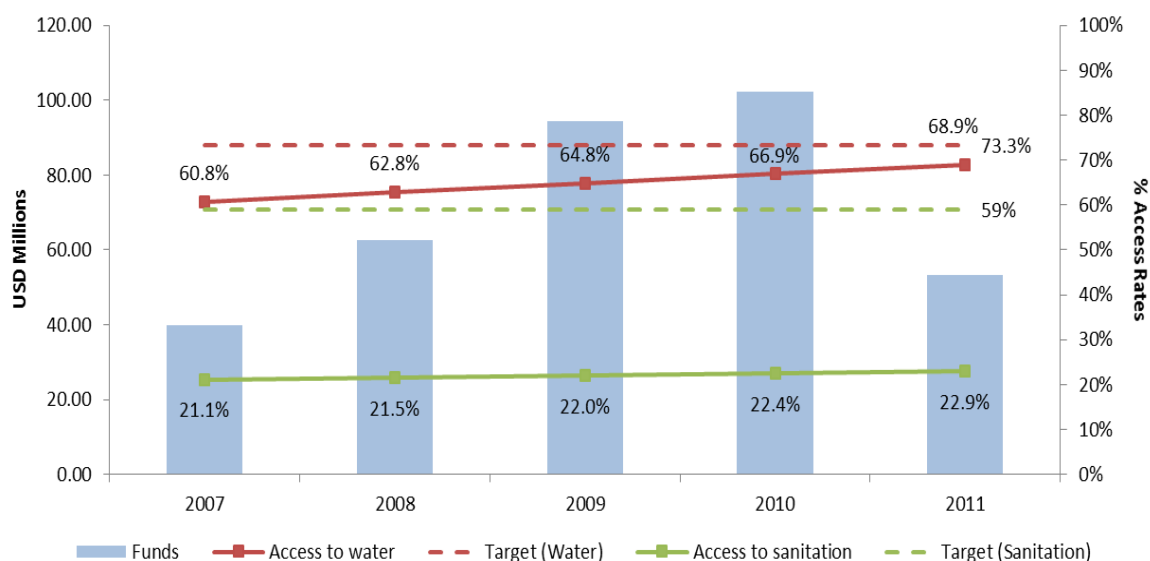


Figure 76: Evolution of access rates compared to funding from 2007 to 2011 - Mali

The principal part of funds donated from 2007 to 2011 to Mali was directed towards basic drinking water and basic sanitation, accumulating to 111.8 million USD. Water resources policy/administrative management followed with 71.1 million USD, the water supply and sanitation – large systems with 50.9 million, and river development with 34.1 million USD. While substantial sums were donated to the combined categories of basic drinking water supply and basic sanitation, and water supply and sanitation – large systems, 6.7 million was earmarked for basic sanitation, 2.8 million for basic drinking water supply, and 17.6 million to water supply – large systems. The increased expenditure for water supply translated to an increase of 8.1% in access rates to safe drinking water in Mali. Progress made in access to adequate sanitation was not as considerable reaching 22.9% in 2011, a change of 1.8% over the 5 year period. This does not reflect the large investment to sanitation. All funds donated per activity in Mali from 2007 to 2011 are outlined in table 49.

Mali has a Corruption Perception Index score of 32 a rank of 116. Mali is seen as a high strategic risk with an overall risk rating of 3 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 4.5 (Coleman, 2016k, IHS Global Inc., 2016g).

Table 49: Funds Donated per Activity in Mali from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	23.2047	19.1923	9.3186	42.2389	8.3307
Educ./training: water supply & sanitation	0	0.1250	0.3683	0	0
River development	14.2609	0.1211	0.5799	19.1353	0.0124
Waste management/disposal	0.5995	0.1984	0.1640	0.1702	0.2741
Water resources policy/admin. management	1.0800	42.0126	2.2954	22.0730	3.7228
Water resources protection	0.0179	0.2764	0	0.2545	0.1274
Water supply & sanit. - large systems	0.5797	0.6501		0.0888	31.4159
Basic drinking water supply				0.7328	2.0993
Basic sanitation				0.4469	6.2649
Sanitation - large systems				0.5500	0
Water supply - large systems				16.6370	1.0213

6.3.2.29 Mauritania

Access rates in Mauritania have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 77 illustrates the percentage left to complete the water and sanitation targets in Mauritania. Mauritania is closer to achieving the water target, yet remains extremely far from the required sanitation access rate.

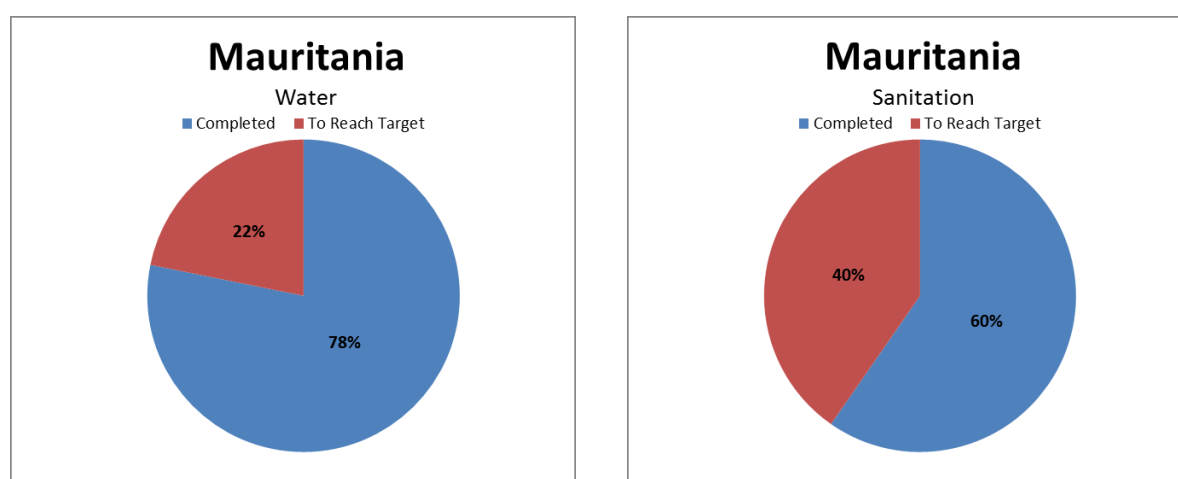


Figure 77: Percent completion of the water and sanitation targets - Mauritania

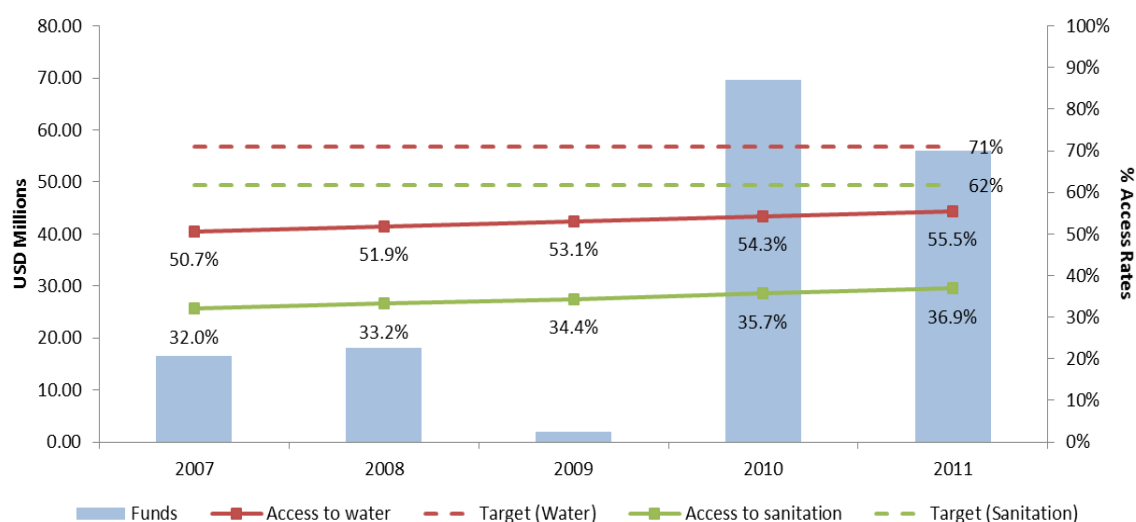


Figure 78: Evolution of access rates compared to funding from 2007 to 2011 - Mauritania

162 million USD of aid was invested in Mauritania from 2007 to 2011. 110.6 million were directed towards large systems, specifically water supply. 49.6 million were dedicated to basic drinking water supply and basic sanitation, 12.8 million aimed directly at basic drinking water supply. This considerable investment to the water and sanitation sector has seen an improvement of 4.8% and 4.9% in access rates to safe drinking water and adequate sanitation respectively.

Mauritania has a Corruption Perception Index score of 27, a rank of 142, and has a political risk index score of 4.5 (Coleman, 2016l).

Table 50: Funds Donated per Activity in Mauritania from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	16.2046	17.3473	1.3472	1.1487	0.7237
Educ./training: water supply & sanitation	0	0	0	0	0
River development	0	0.0333	0	0	0
Waste management/disposal	0	0.0017	0	0.0132	0
Water resources policy/admin. management	0	0.6299	0.5121	0.1899	0.2968
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	0.2481	0.0721	0	0.7364	0.5562
Basic drinking water supply				12.7251	0.0911
Basic sanitation				0	0.0324
Sanitation - large systems				0	0
Water supply - large systems				54.762	54.310

6.3.2.30 Mauritius

Mauritius boasts access rates in the 90th percentile for both water and sanitation. It has already achieved its water target and is within 3% of meeting the sanitation target of 95.7%. Figure 79 illustrates the percentage left to complete the water and sanitation targets in Mauritius.

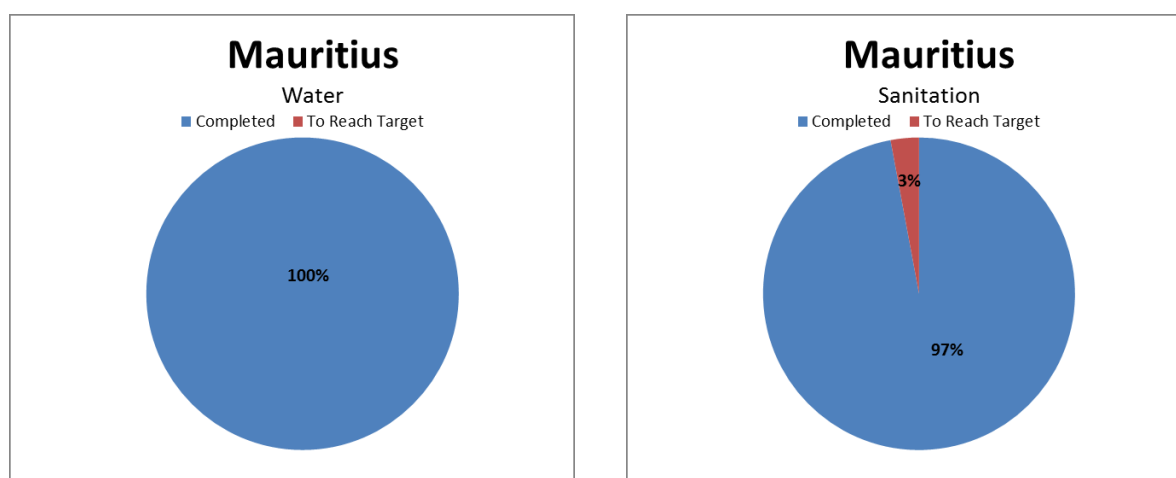


Figure 79: Percent completion of the water and sanitation targets - Mauritius

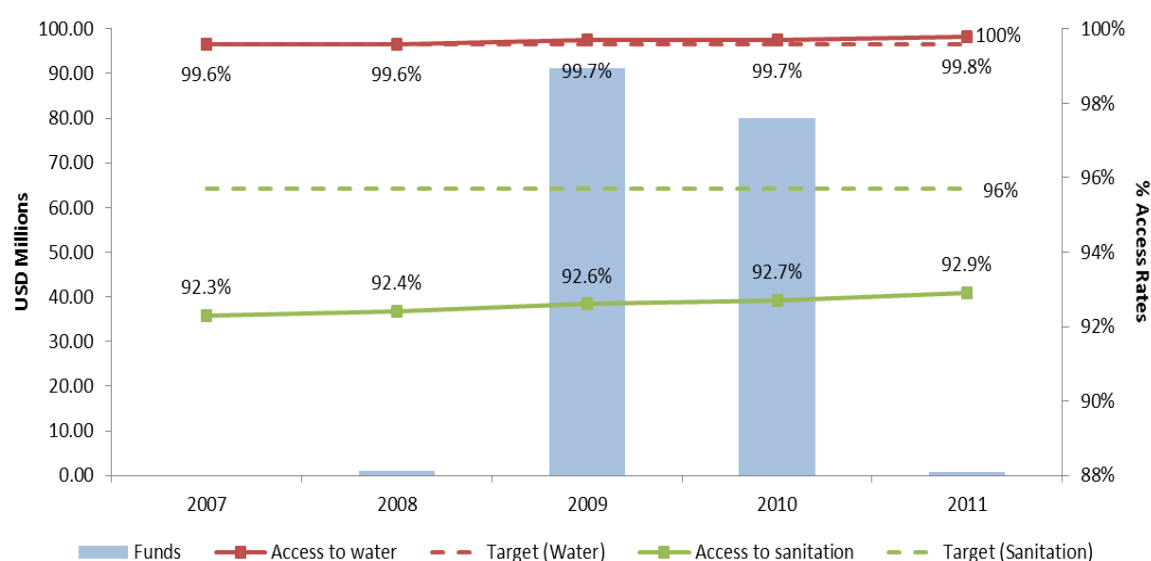


Figure 80: Evolution of access rates compared to funding from 2007 to 2011 - Mauritius

The only significant sums received were both aimed at water supply and sanitation – large systems, 90.5 million USD in 2010, and 79.8 million specifically earmarked for sanitation – large systems.

Mauritius has a Corruption Perception Index score of 54, a rank of 50. Mauritius is seen as a moderate strategic risk with an overall risk rating of 1 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 8 (Coleman, 2016m, IHS Global Inc., 2016h).

Table 51: Funds Donated per Activity in Mauritius from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0	0	0	0	0
Educ./training: water supply & sanitation	0	0	0	0	0
River development	0	0	0	0	3.82E-5
Waste management/disposal	0	0	0	0	0
Water resources policy/admin. management	0	0	0.0257	0.0304	0
Water resources protection	0	0	0.5416	0.0216	0.0661
Water supply & sanit. - large systems	0	0.9813	90.564	0	0
Basic drinking water supply				0	0
Basic sanitation				0	0
Sanitation - large systems				79.899	0.4844
Water supply - large systems			0.0728	0.2511	

6.3.2.31 *Mozambique*

Access rates in Mozambique have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 81 illustrates the percentage left to complete the water and sanitation targets in Mozambique. Mozambique is closer to achieving the water target, yet remains extremely far from the required sanitation access rate.

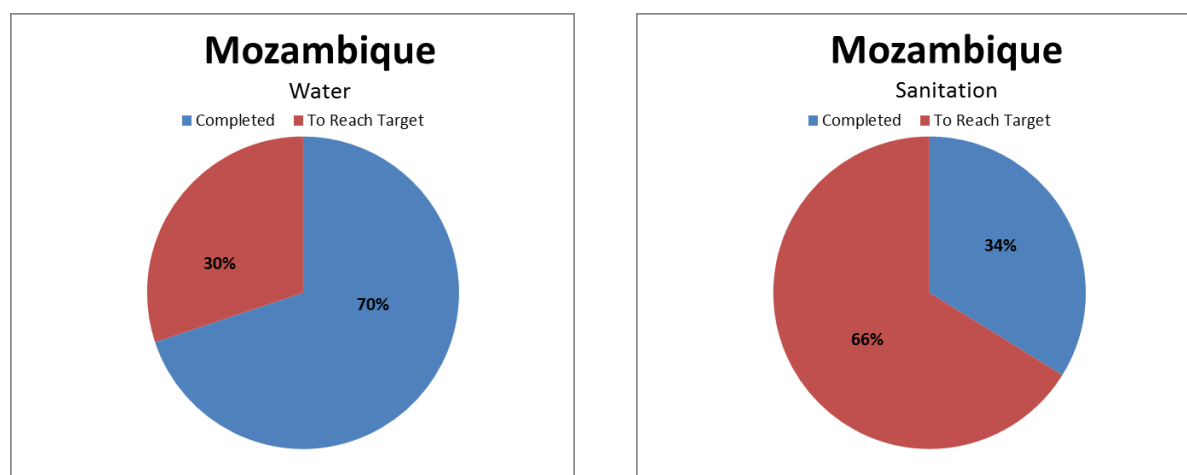


Figure 81: Percent completion of the water and sanitation targets - Mozambique

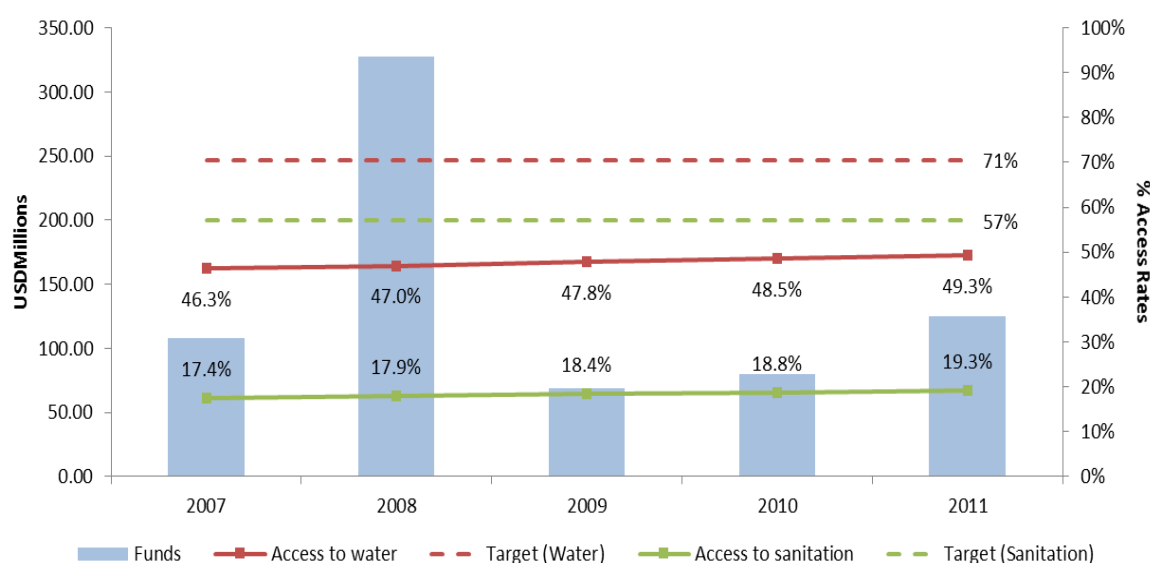


Figure 82: Evolution of access rates compared to funding from 2007 to 2011 - Mozambique

Mozambique is one of the countries that received the most funding, accumulating 709.8 million USD from 2007 to 2011, focused mainly in 6 activities: basic drinking water supply and basic sanitation (104.9 million), river development (22.8 million), waste management/disposal (5.6 million), water resources policy/administrative management (82.9 million), and water supply and sanitation – large systems (355.9 million). For the large systems, a greater proportion of funding is directed towards water supply, with 34.8 million USD earmarked. While the distribution of resources for basic supply is not even, drinking water supply is still apportioned 1.3 million. Basic sanitation accounts for 2.6 million for 2010 and 2011. Significant donations were made to the combined activities in 2010 (basic drinking water supply and sanitation: 4.1 million, water supply and sanitation – large systems: 8.4 million) and 2011 (basic drinking water supply and sanitation: 5.4 million, water supply and sanitation – large systems: 50.1 million). All funds donated per activity in Mozambique from 2007 to 2011 are summarised in table 52.

Despite the focus on basic sanitation, progress has been slow, but consistent, reaching a change of 1.9% and an access rate of 19.3%. The sanitation target for Mozambique is 57.05%. Faster and better improvement is seen on the water side with an increase of 3%, to reach an access rate of 49.3%.

Mozambique has a Corruption Perception Index score of 27, a rank of 142. Mozambique is seen as a high strategic risk with an overall risk rating of 3 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 5 (IHS Global Inc., 2016i).

Table 52: Funds Donated per Activity in Mozambique from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	3.6159	30.0177	13.2292	4.1331	54.0023
Educ./training: water supply & sanitation	0.0006	21.2203	0	1.4094	0.2669
River development	0.7557	87.1056	0.7101	1.7641	8.0435
Waste management/disposal	0	0.0001	1.4315	4.1387	0.0396
Water resources policy/admin. management	21.9969	2.4008	24.9990	23.7694	9.8063
Water resources protection	0	0.0753	0	0	0.1036
Water supply & sanit. - large systems	81.6819	187.1131	2.85E+1	8.4899	50.1100
Basic drinking water supply				0.6194	0.7574
Basic sanitation				2.6490	0
Sanitation - large systems				0	0
Water supply - large systems				32.7559	2.0951

6.3.2.32 *Namibia*

Access rates in Namibia have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 83 illustrates the percentage left to complete the water and sanitation targets in Namibia. Namibia is extremely close to achieving the water target, yet remains considerably far from the required sanitation access rate.

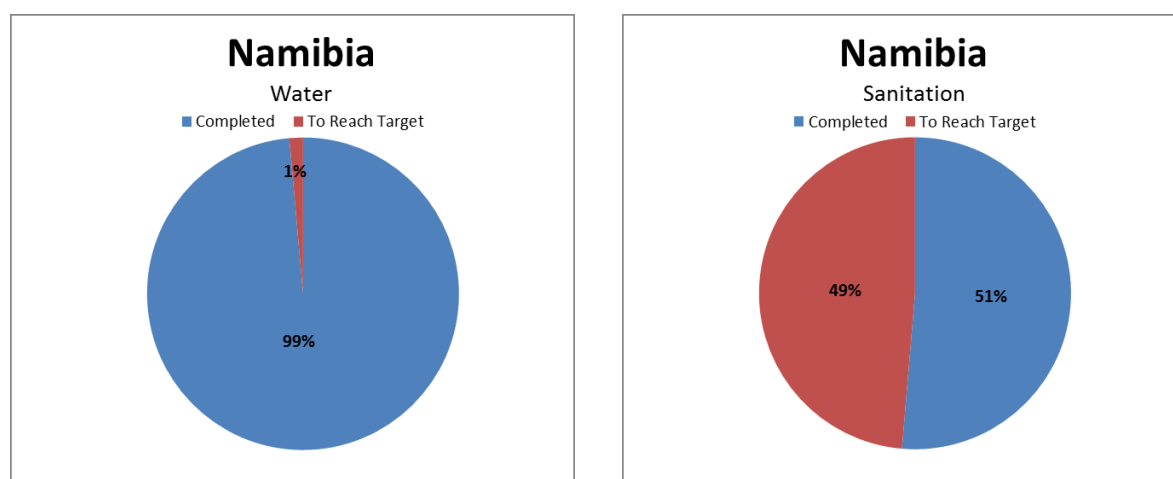


Figure 83: Percent completion of the water and sanitation targets - Namibia

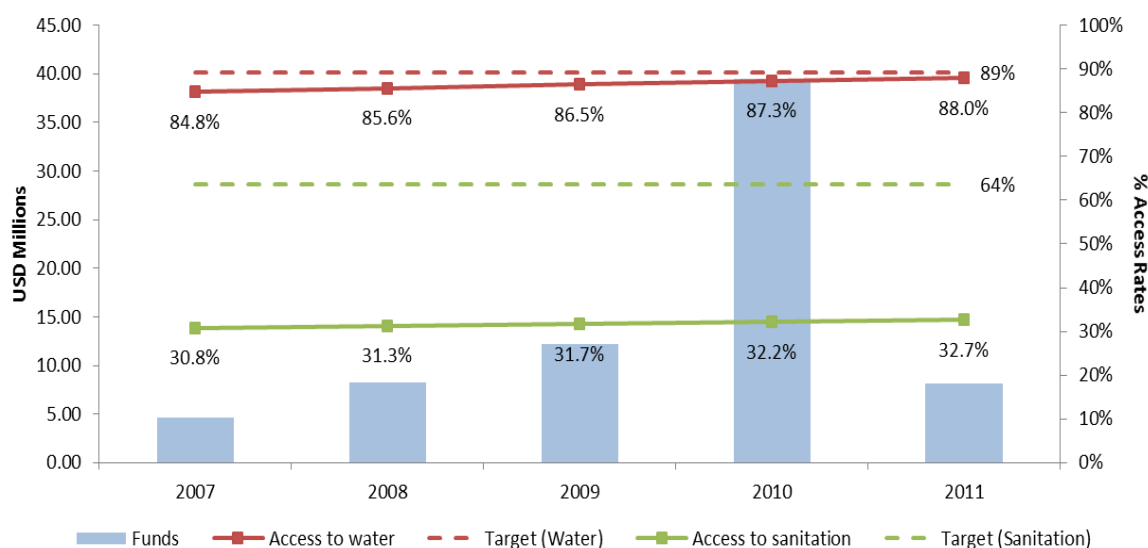


Figure 84: Evolution of access rates compared to funding from 2007 to 2011 - Namibia

Funds donated to Namibia from 2007 to 2011, focused mainly on 2 activities: basic drinking water supply and basic sanitation (46.6 million), and water resources policy/administrative management (20.6 million). Water supply and sanitation – large systems received 3.4 million USD over the 5 year period. Basic sanitation accounted for 4.4 million USD in 2011, the highest funding activity in that year, indicating the prioritisation of improving access to adequate sanitation in Namibia. All funds donated per activity in Namibia from 2007 to 2011 are summarised in table 53.

Despite the focus on basic sanitation, progress has been lacklustre, reaching a change of 1.9% and an access rate of 32.7%. The sanitation target for Namibia is 63.7%. A more substantial improvement is seen on the water side with an increase of 3.2%, to reach an access rate of 88%.

Namibia has a Corruption Perception Index score of 52, a rank of 53. Namibia is seen as an elevated strategic risk with an overall risk rating of 1.5 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 8 (Coleman, 2016n, IHS Global Inc., 2016j).

Table 53: Funds Donated per Activity in Namibia from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.7056	4.9897	4.2519	31.2987	0.1418
Educ./training: water supply & sanitation	0	0	0	0	0.0472
River development	0	0	0	0.0013	0.0012
Waste management/disposal	0	0	0	0.0066	0.0070
Water resources policy/admin. management	2.0989	3.0482	7.7916	6.6224	1.1016
Water resources protection	0.0670	0.1376	0.0575	1.4835	0
Water supply & sanit. - large systems	1.8094	0.0454	0.0862	0.0025	1.4876
Basic drinking water supply				0	0.8547
Basic sanitation				0	4.4494
Sanitation - large systems				0	0
Water supply - large systems				0.0683	0.0150

6.3.2.33 *Niger*

Access rates in Niger have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 85 illustrates the percentage left to complete the water and sanitation targets in Niger. Niger is closer to achieving the water target, yet remains enormously far from the required sanitation access rate.

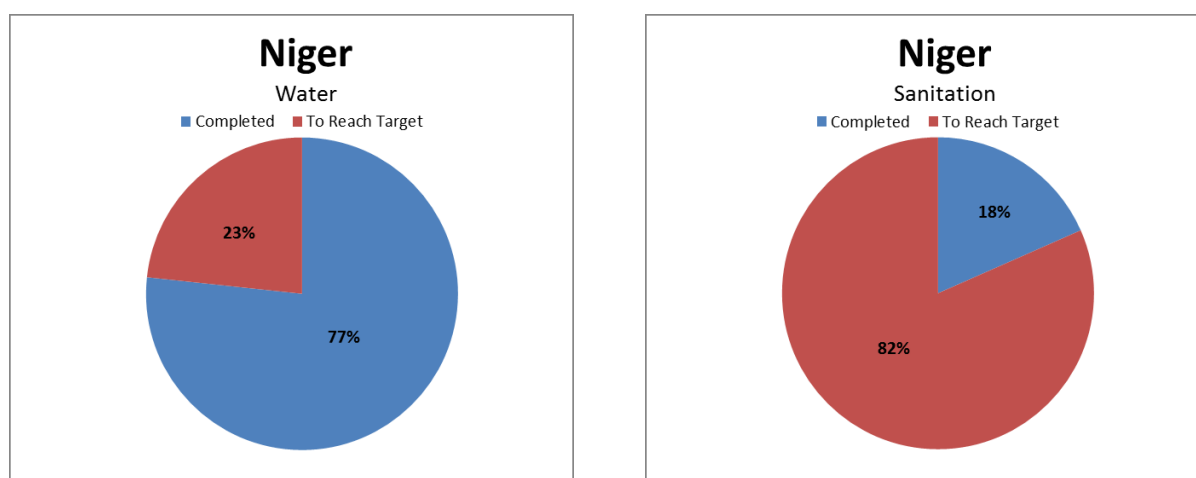


Figure 85: Percent completion of the water and sanitation targets - Niger

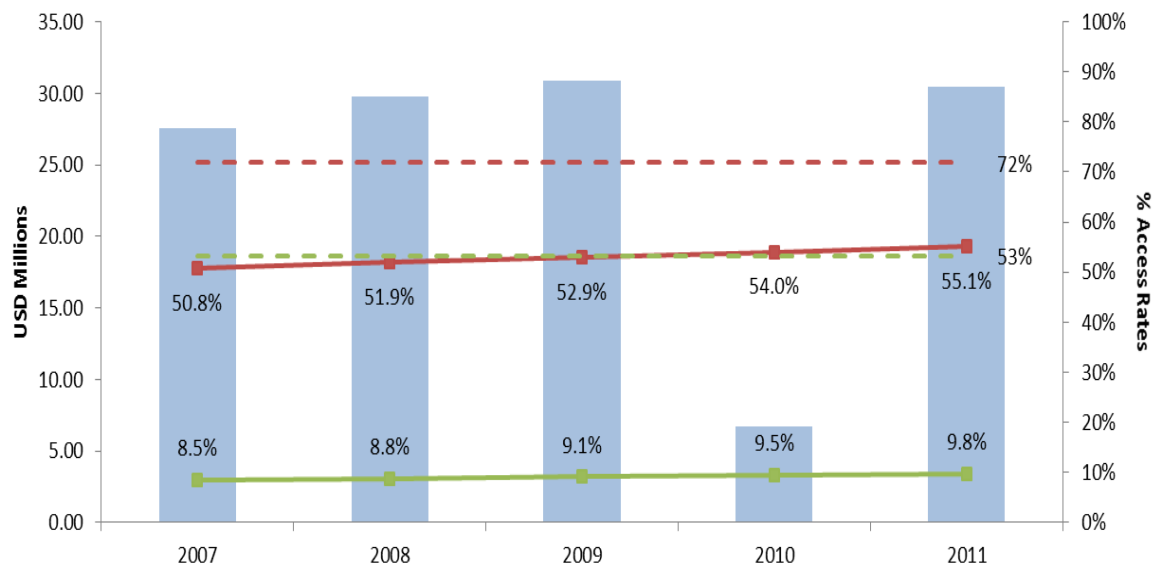


Figure 86: Evolution of access rates compared to funding from 2007 to 2011 - Niger

Niger is one of the few countries to have a single digit access rate percentage. In 2011, access to adequate sanitation stood at 9.8%, with a target of 53.3%. Access to safe drinking water was 55.1%, with a target of 71.85%. Despite extensive progress needed for sanitation, the data reveal a prominent bias towards water supply. In 2011, 68.6 million USD was directed towards water supply – large systems, while sanitation received 18 million USD. Basic drinking water supply was allotted 1.4 million in the same year. River development was allocated 24.8 million USD, water resources policy/administrative management 8.1, and 2.4 million for water resources protection over the 5 year period. All funds donated per activity in Niger from 2007 to 2011 are summarised in table 54.

Niger has a Corruption Perception Index score of 35, a rank of 101, and has a political risk index score of 4 (Coleman, 2015j).

Table 54: Funds Donated per Activity in Niger from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	5.6136	4.5652	15.6464	5.0876	30.4980
Educ./training: water supply & sanitation	0.0009	0.0594	0.9332	0.0607	0
River development	14.6953	0.0894	0	0.0521	10.0027
Waste management/disposal	0.0014	0.0537	0	0	0
Water resources policy/admin. management	0.9015	1.0831	1.6265	0.3164	4.2257
Water resources protection	0	0.2015	0.0054	1.0607	1.1519
Water supply & sanit. - large systems	6.3534	23.7239	12.6556	0	0
Basic drinking water supply				0.1781	1.2362
Basic sanitation				0	0.0096
Sanitation - large systems				0	18
Water supply - large systems				0	68.6012

6.3.2.34 Nigeria

Nigeria is a nation reporting a decrease in access rates to adequate sanitation and a significant increase in access to safe drinking water from 2007 to 2011. Figure 87 illustrates the percentage left to complete the water and sanitation targets in Nigeria. Nigeria is closer to achieving the water target, yet remains extremely far from the required sanitation access rate.

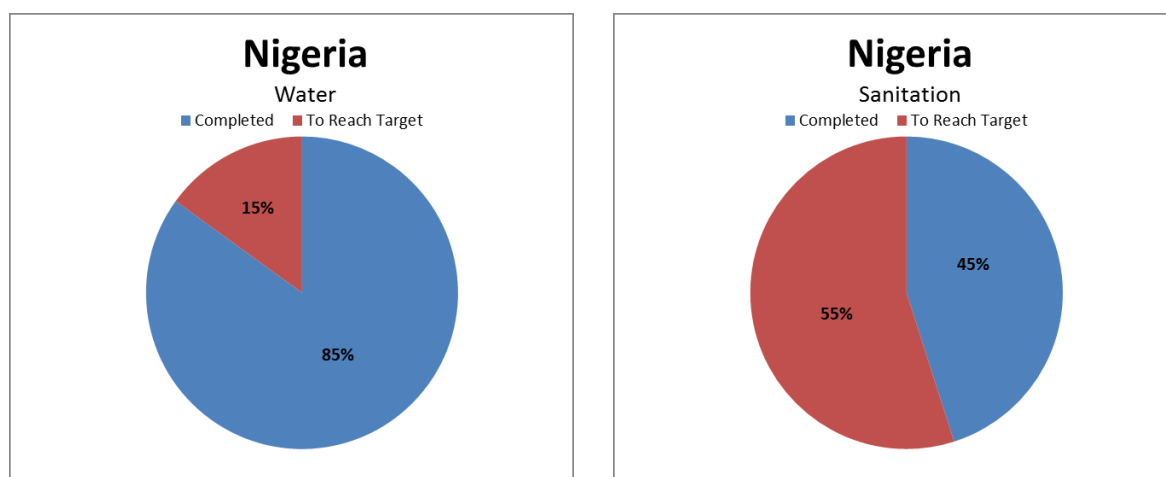


Figure 87: Percent completion of the water and sanitation targets - Nigeria

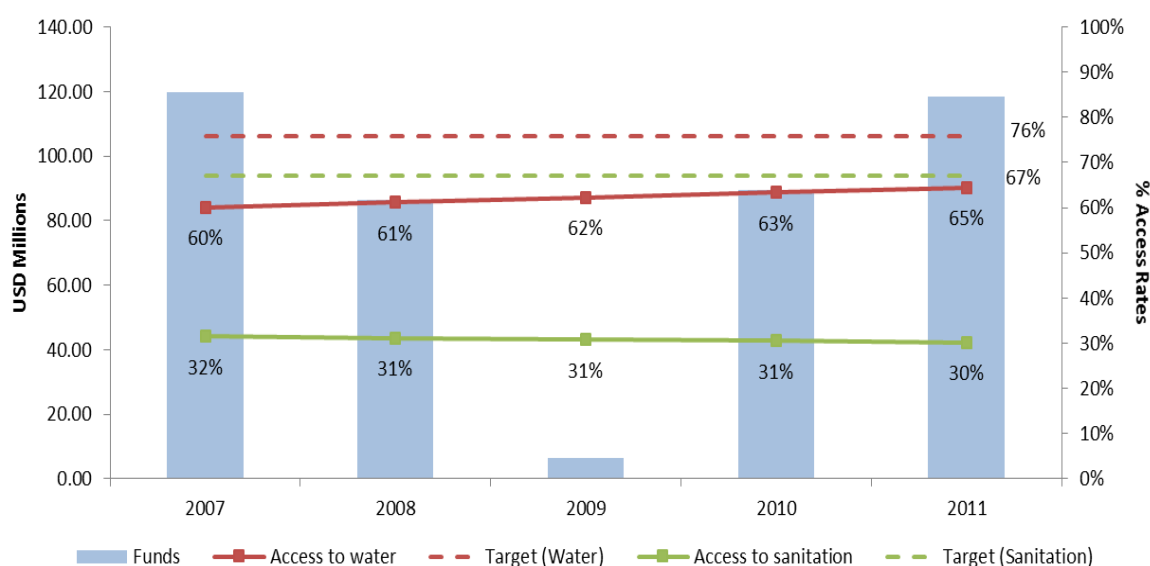


Figure 88: Evolution of access rates compared to funding from 2007 to 2011 - Nigeria

The funds donated per activity in Nigeria from 2007 to 2011 are described in table 55. 157 million USD were invested in large systems for water supply and sanitation over the 5 year period, 63.6 million specifically targeted to water supply. No figures were reported for funds dedicated to sanitation. River development accounted for 107.4 million USD donated and 25.5 million for basic drinking water supply and basic sanitation, 7 million aimed at basic drinking water supply. Basic

sanitation received an insignificant sum of 0.3 million in 2011. These figures explain the impressive improvement of 4.4% in access to safe drinking water, and a decrease of 1.3% in access to adequate sanitation in Nigeria. This calls for better investment and spending practices, prioritising actual needs and gaps, and efficient and effective allocation of resources.

Nigeria has a Corruption Perception Index score of 28, a rank of 136. Nigeria is seen as a very high strategic risk with an overall risk rating of 3.7 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 4 (IHS Global Inc., 2016k).

Table 55: Funds Donated per Activity in Nigeria from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	2.1923	2.8840	3.6140	8.6163	0.8672
Educ./training: water supply & sanitation	0.0887	0.2070	0.0059	0	0
River development	106.8274	0.0182	0.2234	0.2862	0.0963
Waste management/disposal	0	0.0144	0	0.0148	0.0214
Water resources policy/admin. management	8.1210	0.0322	0	8.8908	112.9320
Water resources protection	0	0	0	0	0
Water supply & sanit. - large systems	2.4267	83.3010	2.6792	3.2487	1.8376
Basic drinking water supply				6.1514	0.8844
Basic sanitation				0	0.3051
Sanitation - large systems				0	0
Water supply - large systems				62.252	1.3488

6.3.2.35 Rwanda

Access rates in Rwanda have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 89 illustrates the percentage left to complete the water and sanitation targets in Rwanda. Rwanda is closer to achieving the water target, yet the required sanitation access rate lags behind.

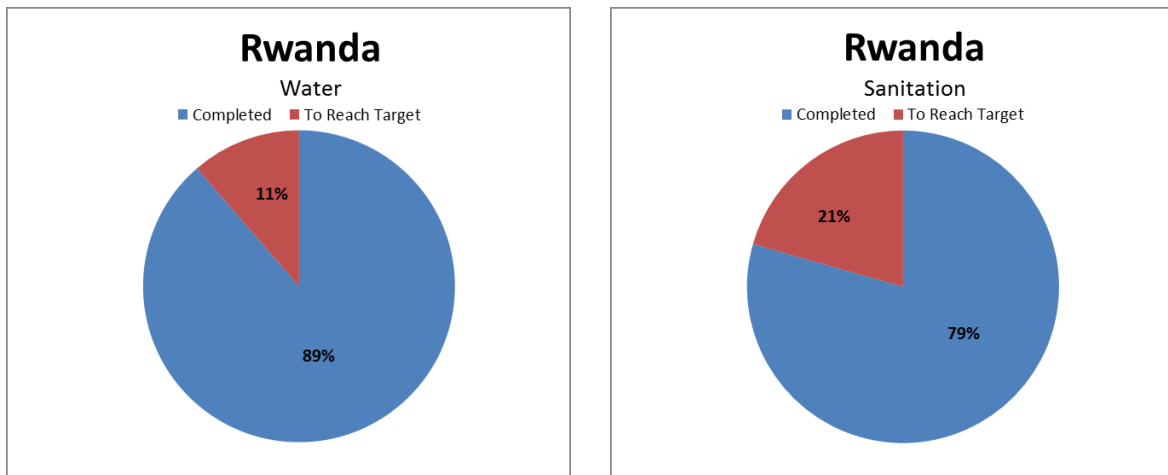


Figure 90: Percent completion of the water and sanitation targets - Rwanda

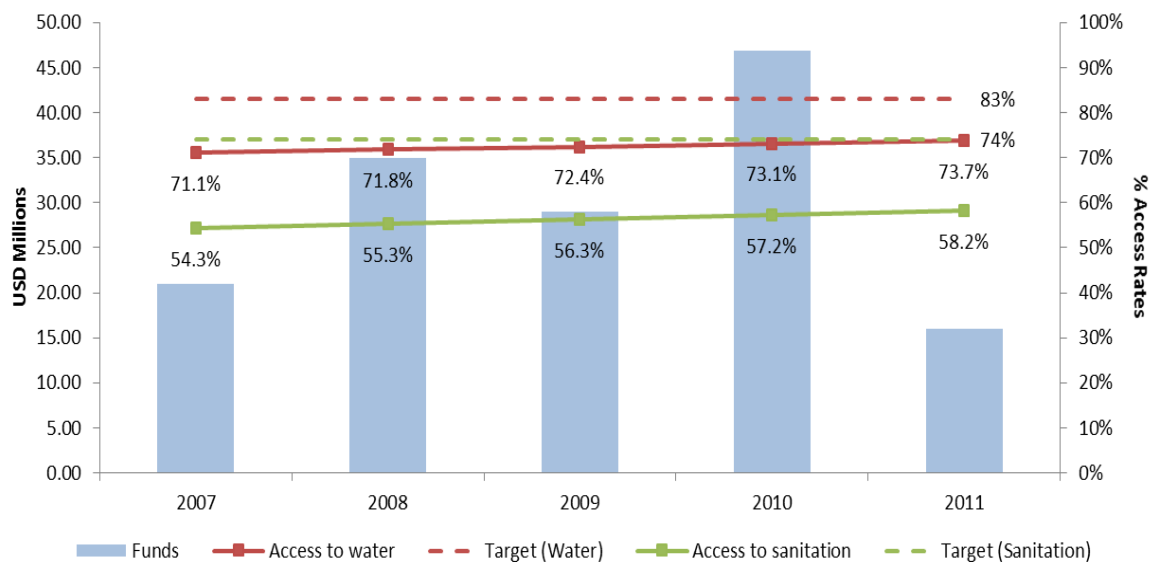


Figure 90: Evolution of access rates compared to funding from 2007 to 2011 - Rwanda

Funds donated per activity in Rwanda from 2007 to 2011 are included in table 56. Rwanda dedicated 75.2 million USD to water supply and sanitation – large systems, and 58.4 million USD to basic drinking water and basic sanitation over the 5 year period from 2007 to 2011. Water supply accounted for 12.9 million, and basic drinking water supply 16.7 million USD, revealing the prioritisation of water supply over sanitation in Rwanda. Water resources policy/administrative management also received 12.2 million from 2007 to 2011.

Despite the funding focused on water supply, Rwanda reported better improvement to access rates to adequate sanitation, an increase of 3.9%, than access rates to safe drinking water, an increase of 2.6%.

Rwanda has a Corruption Perception Index score of 54, a rank of 50, and has a political risk index score of 5 (Coleman, 2016o).

Table 56: Funds Donated per Activity in Rwanda from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	10.3634	28.0467	1.6996	0.5722	0.9781
Educ./training: water supply & sanitation	0.0380	0.0260	0.0251	0.0238	0.0359
River development	0	0.2349	0	0	0
Waste management/disposal	0	0	0.1244	0.3118	0.8766
Water resources policy/admin. management	0.1944	0.0004	0.0015	0.0478	12.0127
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	10.4363	6.6216	27.0872	16.4769	1.6534
Basic drinking water supply				16.5417	0.1693
Basic sanitation				0.0900	0.0119
Sanitation - large systems				0	0
Water supply - large systems				12.811	0.1379

6.3.2.36 *Sao Tome and Principe*

Access rates in Sao Tome and Principe have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 91 illustrates the percentage left to complete the water and sanitation targets in Sao Tome and Principe. Sao Tome and Principe has achieved the water target and continues to report improvements to access to safe drinking water. Yet Sao Tome and Principe remains enormously far from the required sanitation access rate.

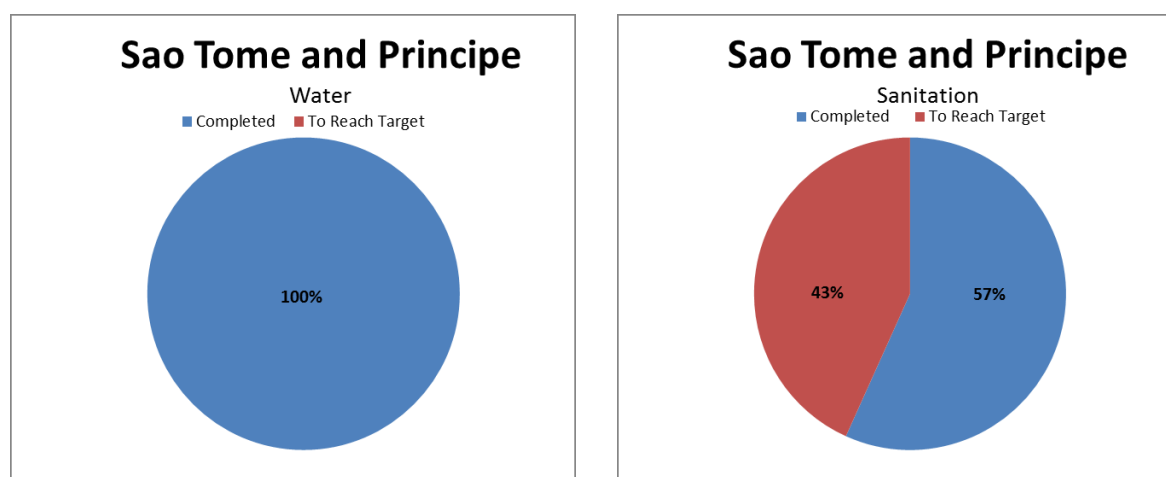


Figure 91: Percent completion of water and sanitation targets - Sao Tome and Principe

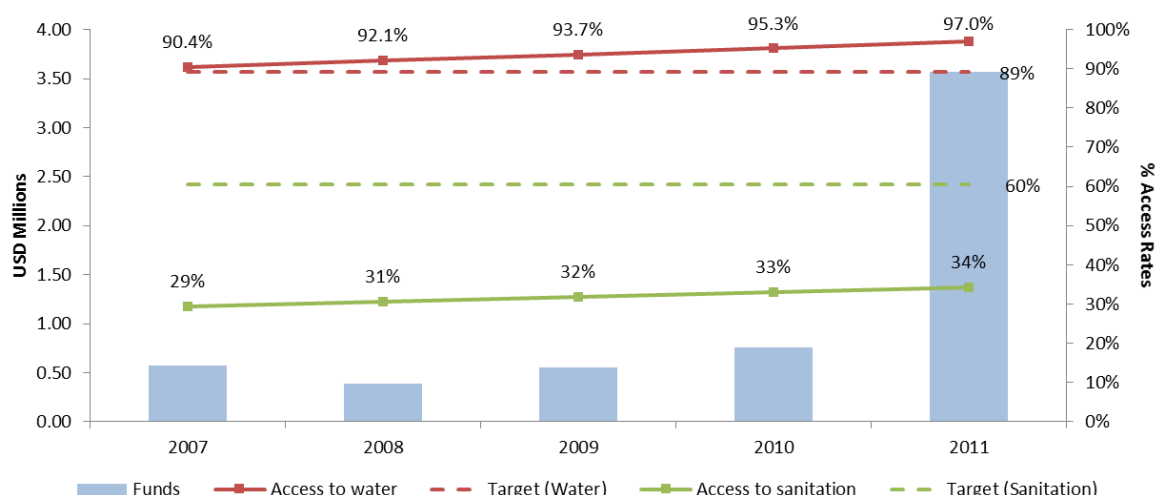


Figure 92: Evolution of access rates compared to funding from 2007 to 2011 - Sao Tome and Principe

Sao Tome and Principe received a total 5.8 million USD over the 5 year period from 2007 to 2011, of which 3.2 million were directed at basic drinking water supply. The remainder was distributed over the rest of the activities. A summary of the funds donated per activity in Sao Tome and Principe is in table 57. Sao Tome and Principe achieved the water target prior to 2007, yet still diverted the majority of funds towards water supply. In 2011, the access rate to safe drinking water in Sao Tome and Principe was 97%. Access to adequate sanitation was 34.3%, far from the target of 60.45%. Despite no real investment in sanitation, Sao Tome and Principe still reported an increase of 4.9% to access to adequate sanitation.

Sao Tome and Principe has a Corruption Perception Index score of 46, a rank of 62, and has a political risk index score of 5.5 (Coleman, 2015k).

Table 57: Funds Donated per Activity in Sao Tome and Principe from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.4917	0.0630	0.3281	0.5090	0
Educ./training: water supply & sanitation	0.0083	0.0465	0	0	0
River development	0	0	0	0	0
Waste management/disposal	0	0.1913	0.2056	0.2167	0.1164
Water resources policy/admin. management	0.0749	0.0762	0	0	0.1031
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	0	0.0075	0.0153	0	0
Basic drinking water supply				0	3.2
Basic sanitation				0	0
Sanitation - large systems				0.0162	0
Water supply - large systems				0.0168	0.0488

6.3.2.37 Senegal

Access rates in Senegal have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 93 illustrates the percentage left to complete the water and sanitation targets in Senegal. Senegal is very close to achieving the water target, yet remains far from the required sanitation access rate.

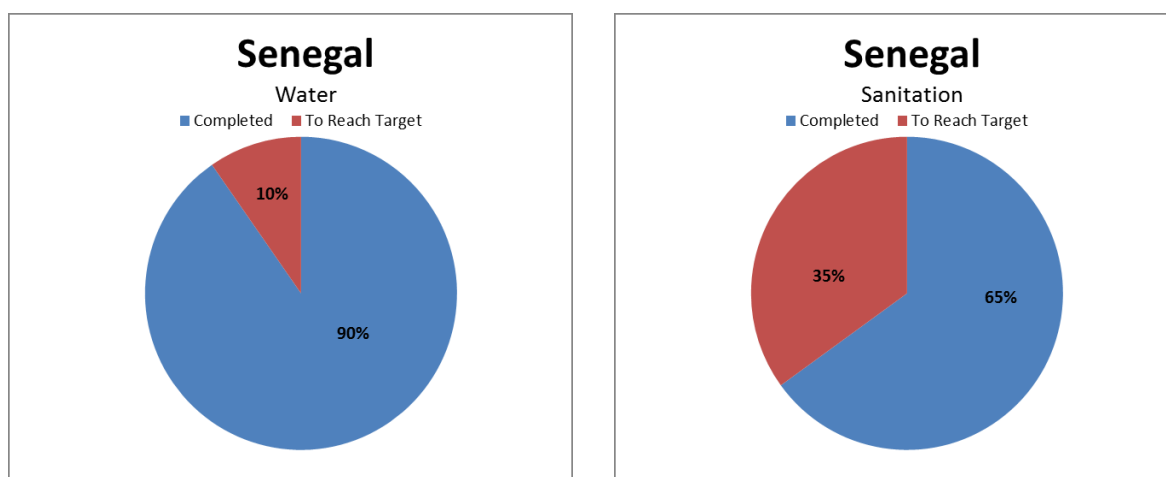


Figure 93: Percent completion of the water and sanitation targets - Senegal

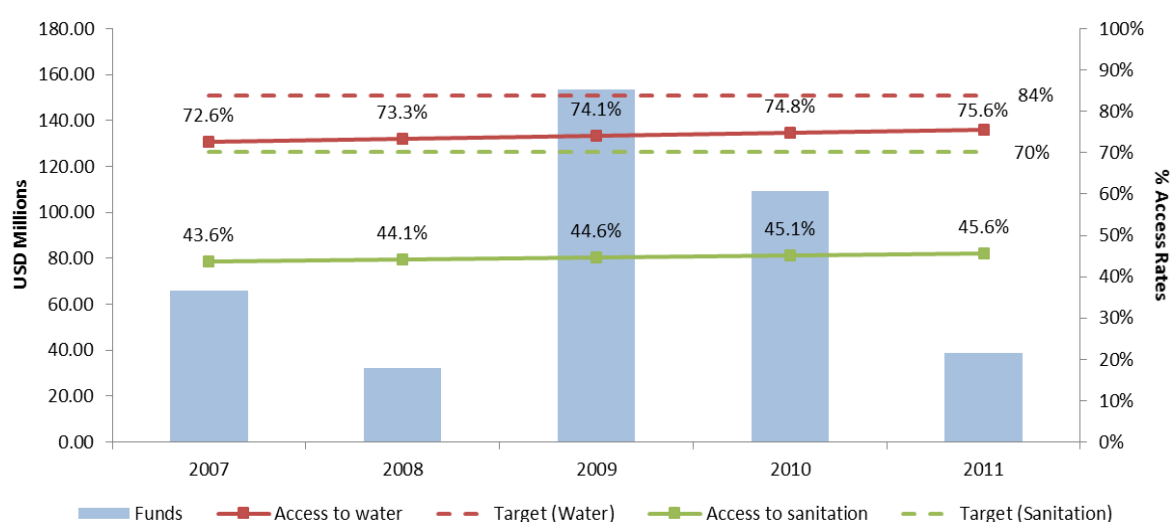


Figure 94: Evolution of access rates compared to funding from 2007 to 2011 - Senegal

The principal portion of funds donated in Senegal from 2007 to 2011 was centred on water supply and sanitation – large systems, representing 261.9 million USD of the 399.7 million received. Basic drinking water supply and basic sanitation was allocated 83.5 million USD of the 5 year period, river development 13 million, waste management/disposal 20.7 million, water resources policy/administrative management 17.6 million, and water resources protection obtained 2.2 million. There is a clear distinction between the amount of funds aimed at water supply and those for

sanitation. Water supply – large systems was allotted 33 million, and basic drinking water supply was apportioned 15.3 million in 2010 and 2011, while sanitation – large systems received 9.7 million, and basic sanitation obtained 7 million, over the same time period.

Senegal reported improvement in both access to water and sanitation, with an increase of 3% and 2% to access rates to safe drinking water and adequate sanitation respectively.

Senegal has a Corruption Perception Index score of 45, a rank of 64. Senegal is seen as a high strategic risk with an overall risk rating of 2.4 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 6 (IHS Global Inc., 2016I).

Table 58: Funds Donated per Activity in Senegal from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	17.3814	8.0037	20.1894	9.6684	5.8557
Educ./training: water supply & sanitation	0.0006	0	0.4003	0	0.1940
River development	0.1411	9.8355	1.4860	0.9593	0.5855
Waste management/disposal	0.9234	1.6945	0.4556	0	17.6709
Water resources policy/admin. management	0.0564	6.0141	1.6777	8.3077	1.5766
Water resources protection	1.0436	0.0998	0	0	1.1288
Water supply & sanit. - large systems	46.3367	6.5172	129.4301	30.6574	6.1967
Basic drinking water supply				15.3404	0.0181
Basic sanitation				5.5	1.5703
Sanitation - large systems				7.9647	1.7993
Water supply - large systems				30.8084	2.2355

6.3.2.38 Seychelles

The Seychelles reported no change in both access to safe drinking water and adequate sanitation over the 5 year period from 2007 to 2011. Access rates to safe drinking water and adequate sanitation remained 95.7 % and 98.4% respectively. Figure 95 illustrates the percentage left to complete the water and sanitation targets in the Seychelles.

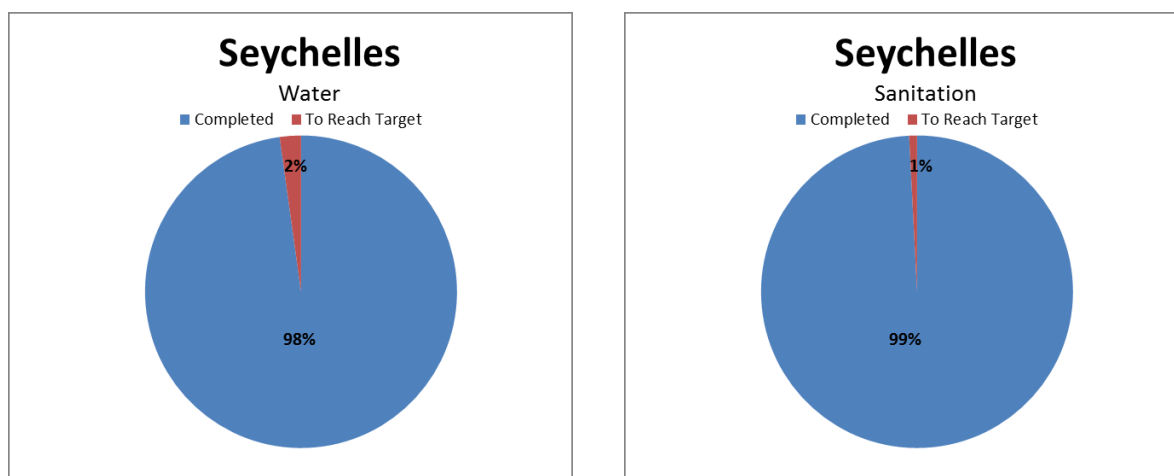


Figure 96: Percent completion of the water and sanitation targets - Seychelles



Figure 95: Evolution of access rates compared to funding from 2007 to 2011 - Seychelles

The Seychelles received an insignificant amount of aid during the time period. Funds donated per activity in the Seychelles from 2007 to 2011 are in table 59.

No Corruption Perception Index score or rank were reported for the Seychelles, but the Seychelles has a political risk index score of 7 (Coleman, 2015l).

Table 59: Funds Donated per Activity in Seychelles from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0	0	0	0	0
Educ./training: water supply & sanitation	0	0	0	0	0
River development	0	0	0	0.0005	0.0026
Waste management/disposal	0	0	0	0	0
Water resources policy/admin. management	0	0	0.2770	0.2455	0

Water resources protection	0	0	0	0	0
Water supply & sanit. - large systems	0	0.0060	0	0	0
Basic drinking water supply				0	0
Basic sanitation				0	0
Sanitation - large systems				0	0
Water supply - large systems				0	0

6.3.2.39 Sierra Leone

Access rates in Sierra Leone have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 97 illustrates the percentage left to complete the water and sanitation targets in Sierra Leone. Sierra Leone is closer to achieving the water target, yet remains substantially far from the required sanitation access rate.

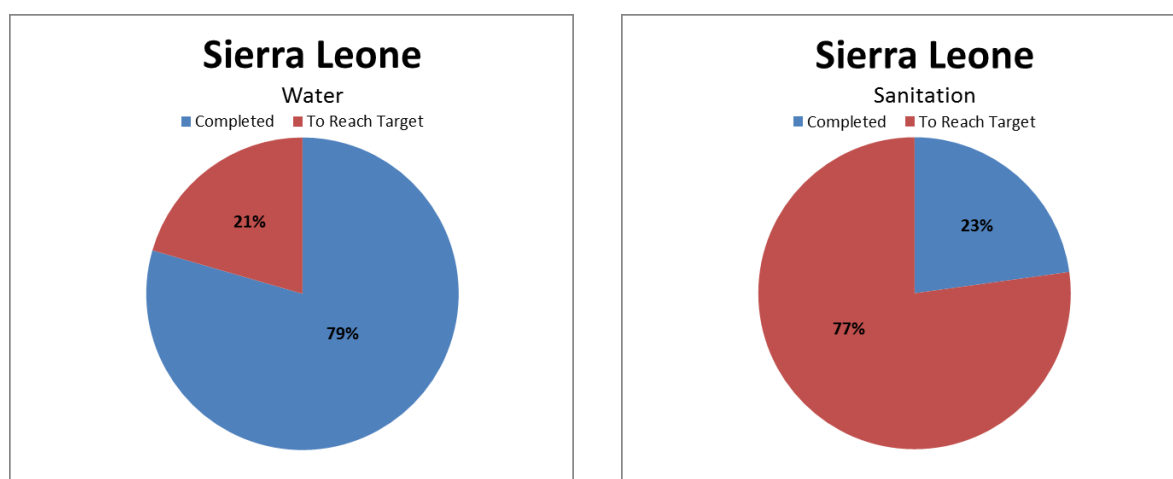


Figure 97: Percent completion of the water and sanitation targets - Sierra Leone

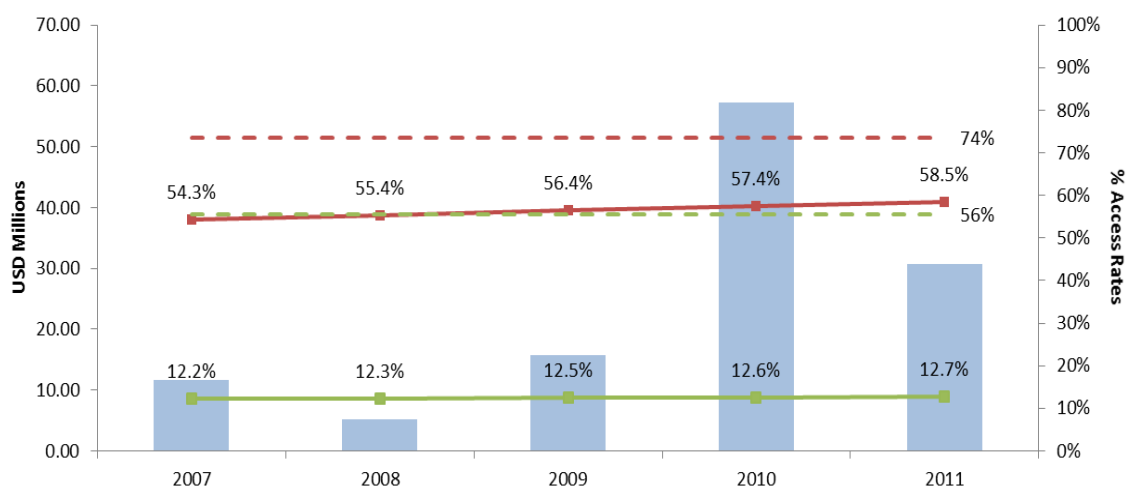


Figure 98: Evolution of access rates compared to funding from 2007 to 2011 - Sierra Leone

A total of 120.2 million USD were donated to Sierra Leone in the water and sanitation sector from 2007 to 2011. These funds were predominantly directed towards water supply, with large systems receiving 45.3 million in just 2 years from 2010 to 2011. Basic drinking water supply was allotted 14.7 million in the same years, while basic sanitation was apportioned 2.5 million USD. Prior to 2010, large systems received barely any funding, whereas basic drinking water supply and basic sanitation accumulated 30.1 million USD. Post 2010, water supply systems was allocated all the funds for large systems. A large sum of 20.6 million USD was directed to the combined category of basic drinking water supply and basic sanitation in 2010, but was reduced to 1.6 million in 2011, at the same time that 13.4 million was donated to basic drinking water supply. Other activities funded over the 5 year period were river development (1.6 million), and water resources policy/administrative management (2.5 million). Funds donated per activity in Sierra Leone from 2007 to 2011 are summarised in table 60.

This prioritisation of water over sanitation is reflected in the improvement to access. Sierra Leone reported a rise of 4.2% to access to safe drinking water, and 0.5% to access to adequate sanitation. An increase in investment in sanitation is required to raise access rates beyond the 12.7% noted in 2011.

Sierra Leone has a Corruption Perception Index score of 30, a rank of 123, and has a political risk index score of 4.5 (Coleman, 2015m).

Table 60: Funds Donated per Activity in Sierra Leone from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	10.9594	4.4193	14.8067	20.6691	1.6469
Educ./training: water supply & sanitation	0.0261	0.0145	0.0005	0.0370	0
River development	0.5747	0.6312	0.4040	0.0524	0
Waste management/disposal	0	0	0.1970	0.1474	0.0243
Water resources policy/admin. management	0	0	0.0750	0	2.5175
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	0	0.0298	0.1834	0	0
Basic drinking water supply				1.3355	13.4448
Basic sanitation				2.3327	0.2244
Sanitation - large systems				0	0
Water supply - large systems				32.6265	12.7269

6.3.2.40 Somalia

Access rates in Somalia have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 99 illustrates the percentage left to complete the water and sanitation targets in Somalia. Somalia is far from achieving either target, but is performing better in expanding access to safe drinking water.

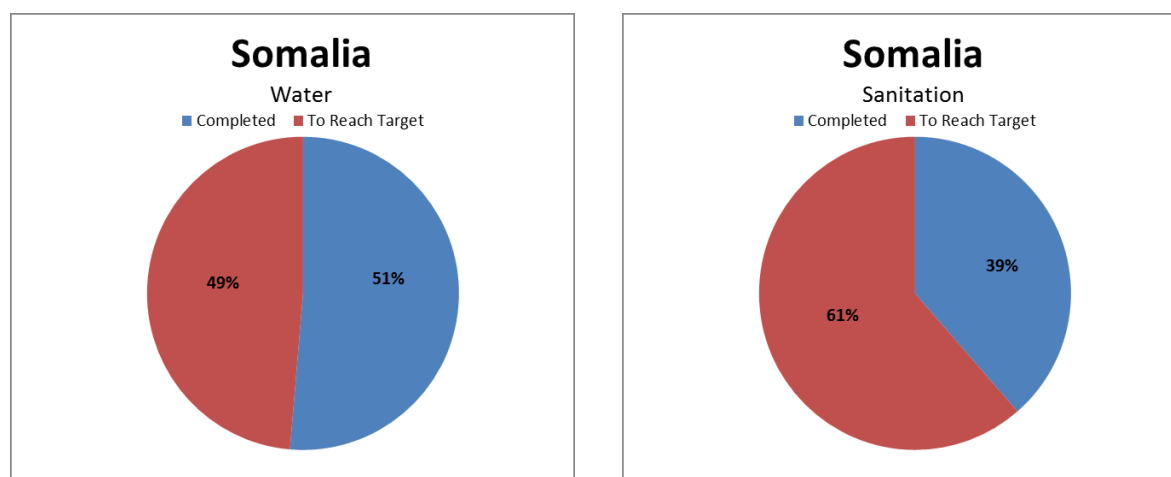


Figure 99: Percent completion of the water and sanitation targets - Somalia

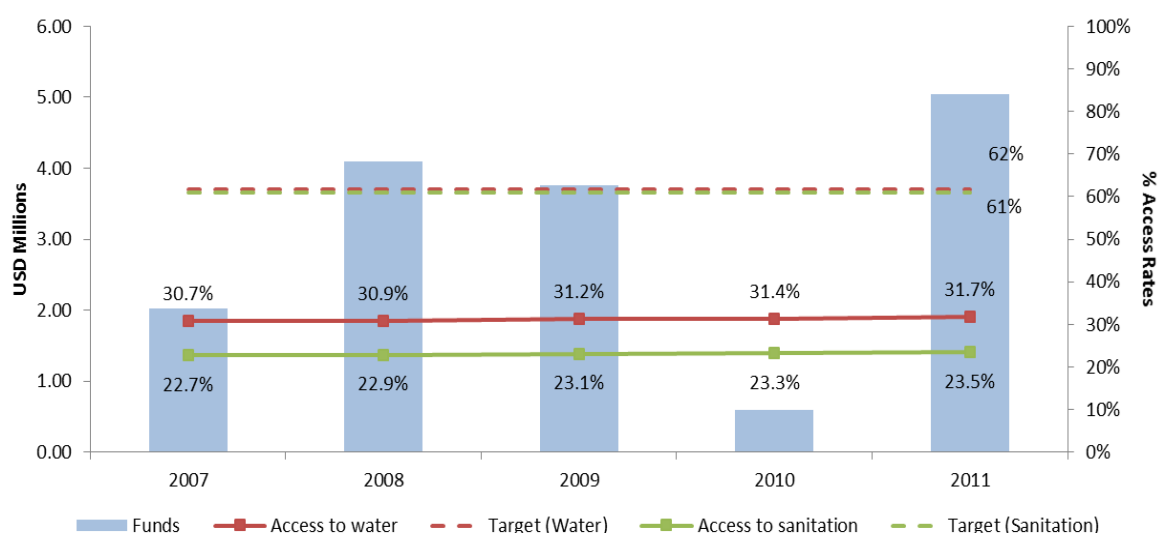


Figure 100: Evolution of access rates compared to funding from 2007 to 2011 - Somalia

Funds donated to Somalia from 2007 to 2011 were focused on basic drinking water supply and basic sanitation, and water supply and sanitation – large systems. While the resources attributed to large systems were reported in the combined category, 2.2 million USD was specifically earmark for basic drinking water supply in 2011. The bulk of funds received in Somalia was allocated to basic drinking water supply and basic sanitation, totalling 10 million USD. Large systems received 4.4 million USD over the 5 year period. Table 61 depicts the funds donated per activity in Somalia from 2007 to 2011.

Somalia improved consistently in both access to water and sanitation from 2007 to 2011. In 2011, access to safe drinking water stood at 31.7%, an increase of 1%, and access to adequate sanitation was 23.5%, a rise of 0.8%. The targets for Somalia are 61.75% for water and 60.9% for sanitation.

Somalia has a Corruption Perception Index score of 10, a rank of 176, and has a political risk index score of 2 (Coleman, 2016p).

Table 61: Funds Donated per Activity in Somalia from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	1.3696	1.7205	2.8849	0.5224	1.2029
Educ./training: water supply & sanitation	0.1515	0.0360	0	0	0.0285
River development	0	0	0	0	0
Waste management/disposal	0	0	0.0005	0.0005	0.4710
Water resources policy/admin. management	0	0	0.0498	0.0712	0.1281
Water resources protection	0	0	0	0	0.1031
Water supply & sanit. - large systems	0.5000	2.3455	0.8220	0	0.7714
Basic drinking water supply				0	2.2591
Basic sanitation				0	0.0637
Sanitation - large systems				0	0
Water supply - large systems			0	0.0214	

6.3.2.41 South Africa

Access rates in South Africa have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 101 illustrates the percentage left to complete the water and sanitation targets in South Africa. South Africa is extremely close to achieving the water target, but remains somewhat far from the completing the sanitation target.

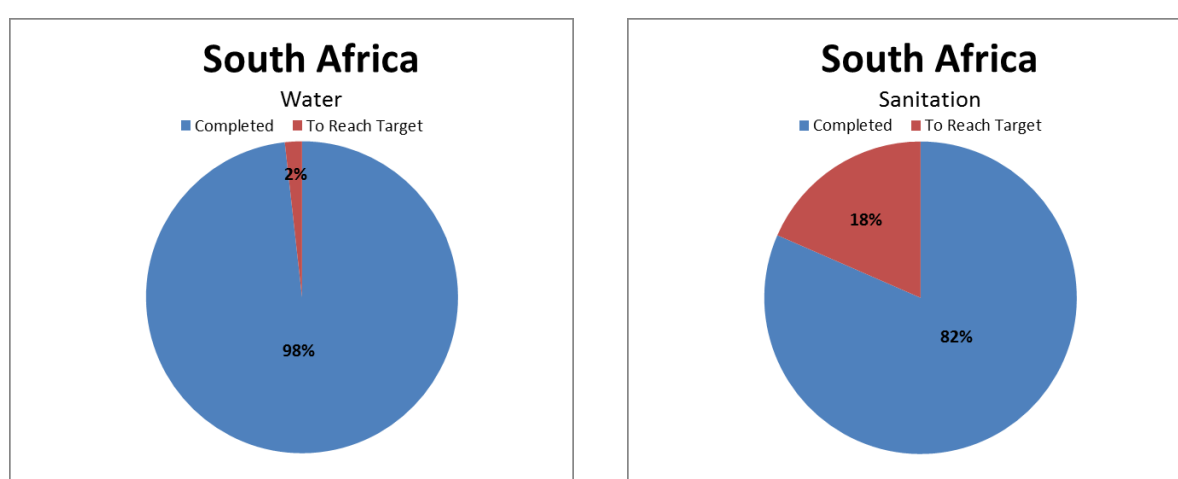


Figure 101: Percent completion of the water and sanitation targets - South Africa



Figure 102: Evolution of access rates compared to funding from 2007 to 2011 - South Africa

The highest funded activity in South Africa from 2007 to 2011 was water resources policy/administrative policy, receiving 150.2 million USD, more than all other activities combined. Funds donated per activity in South Africa from 2007 to 2011 are summarised in table 62. 78.1 million USD were directed to water supply and sanitation – large systems, the majority (75.8 million) of which was donated in 2011. Basic drinking water supply and sanitation received 18.4 million spread over three years from 2007 to 2009. No tangible distinction has been made in regards to funds aimed at water supply versus those for sanitation, leading to a similar increased in both access rates.

South Africa, on the cusp of reaching the water target of 93.25%, reported an improvement of 1.8%, to achieve access rates of 91.6% to safe drinking water. A similar advancement was made for sanitation, attaining access rates of 64.1% to adequate sanitation, an expansion of 2.4%.

South Africa has a Corruption Perception Index score of 45, a rank of 64. South Africa is seen as a high strategic risk with an overall risk rating of 2.4 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 8 (IHS Global Inc., 2016m).

Table 62: Funds Donated per Activity in South Africa from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	4.3819	6.2106	5.6276	0.4935	1.6866
Educ./training: water supply & sanitation	0	0.0010	0.0319	0.0459	0.1905
River development	0	0	0	0	0
Waste management/disposal	0.1302	0.7972	0.0881	0.0331	1.1618
Water resources policy/admin. management	147.1179	0.6820	0.8011	1.5437	0.1166
Water resources protection	0	0.0078	0	0.0900	0
Water supply & sanit. - large systems	1.0853	0.1004	0.8862	0.1621	75.8763
Basic drinking water supply				0.0777	0
Basic sanitation				0.0737	0.0175

Sanitation - large systems	0	0
Water supply - large systems	0.0927	0.6203

6.3.2.42 South Sudan

South Sudan is a new country, declaring independence from Sudan in 2011. As such there is very little data and information available specific to the nation prior to 2011. There are no recorded access rates to either water or sanitation, or calculated targets for South Sudan.

South Sudan has a Corruption Perception Index score of 11, a rank of 175. No other index score was available for South Sudan.

Table 63: Funds Donated per Activity in South Sudan from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0	0	0	0	1.7800
Educ./training: water supply & sanitation	0	0	0	0	0.0138
River development	0	0	0	0	0
Waste management/disposal	0	0	0	0	3.1250
Water resources policy/admin. management	0	0	0	0	0
Water resources protection	0	0	0	0	0
Water supply & sanit. - large systems	0	0	0	0	38.8034
Basic drinking water supply	0	0	0	0	0.4387
Basic sanitation	0	0	0	0	0.0768
Sanitation - large systems	0	0	0	0	0.0166
Water supply - large systems	0	0	0	0	2.3042

6.3.2.43 Sudan

Despite an investment of 187 million USD from 2007 to 2011, Sudan reported a decrease of 1.6% in access to safe drinking water and barely any improvement (0.1%) in access to adequate sanitation from 2007 to 2011. Figure 103 illustrates the percentage left to complete the water and sanitation targets in Sudan. Sudan is closer to achieving the water target, yet remains considerably far from the required sanitation access rate.

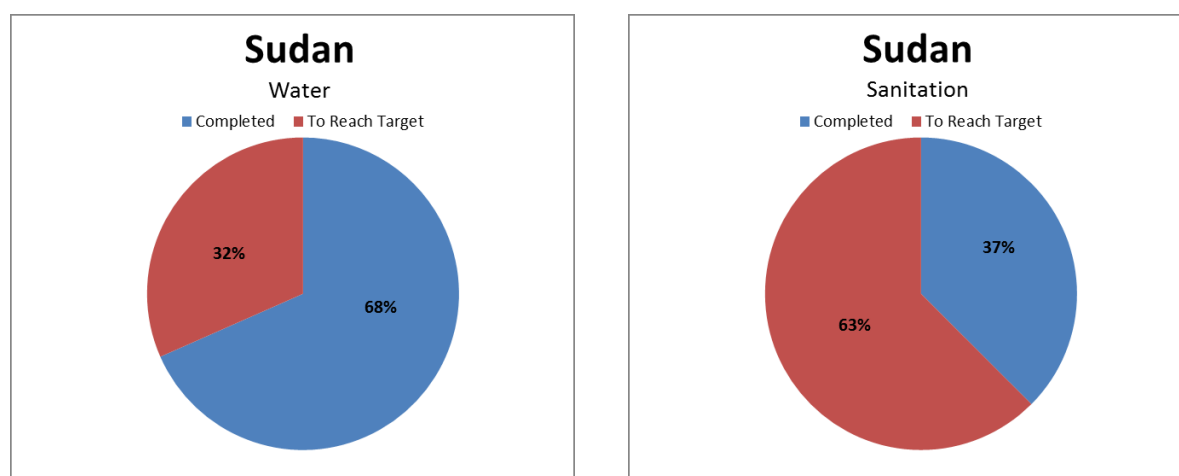


Figure 103: Percent completion of the water and sanitation targets - Sudan

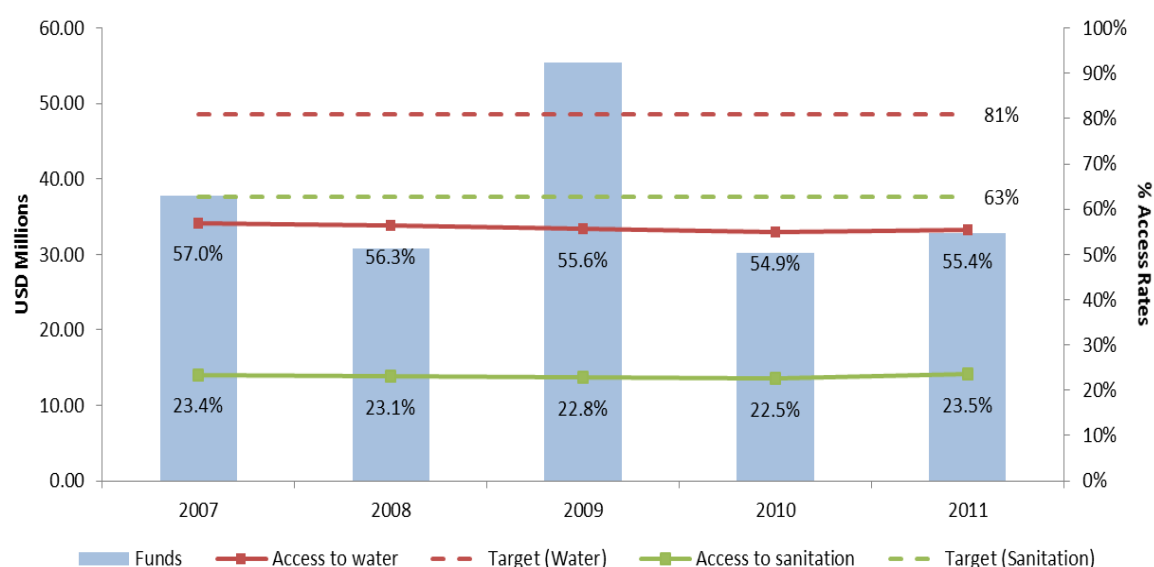


Figure 104: Evolution of access rates compared to funding from 2007 to 2011 - Sudan

Basic drinking water supply and basic sanitation received 87.2 million USD, with 15.6 million targeted to basic drinking water supply, and water supply and sanitation – large systems was attributed 73.5 million, with 6.5 million earmarked for water supply. All funds donated per activity in Sudan from 2007 to 2011 is found in table 64.

Sudan has a Corruption Perception Index score of 14, a rank of 170, and has a political risk index score of 3.5 (Coleman, 2016q).

Table 64: Funds Donated per Activity in Sudan from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	17.298	4.4400	33.300	5.2951	11.271
Educ./training: water supply & sanitation	0.0987	0.1144	0.0898	0.1042	0.0045
River development	12.737	0	0	2.3179	2.0230
Waste management/disposal	0	0	0	0.0786	0.5236
Water resources policy/admin. management	0.4480	4.0364	1.9400	0.0168	0.8078
Water resources protection	0	0	0.4041	0.2382	0.2639
Water supply & sanit. - large systems	7.1677	22.2377	19.7717	16.8232	1
Basic drinking water supply				0.6087	14.996
Basic sanitation				0	0
Sanitation - large systems				0.0147	0
Water supply - large systems				4.6567	1.8973

6.3.2.44 Swaziland

Access rates in Swaziland have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 105 illustrates the percentage left to complete the water and sanitation targets in Swaziland. Swaziland is very close to achieving the water target, but remains far from the required sanitation access rate.

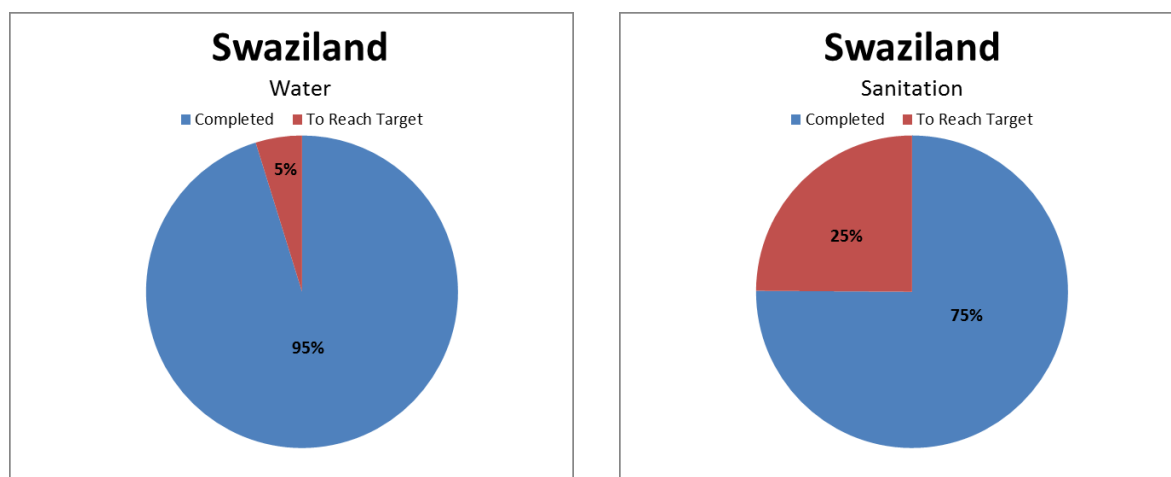


Figure 105: Percent completion of the water and sanitation targets - Swaziland

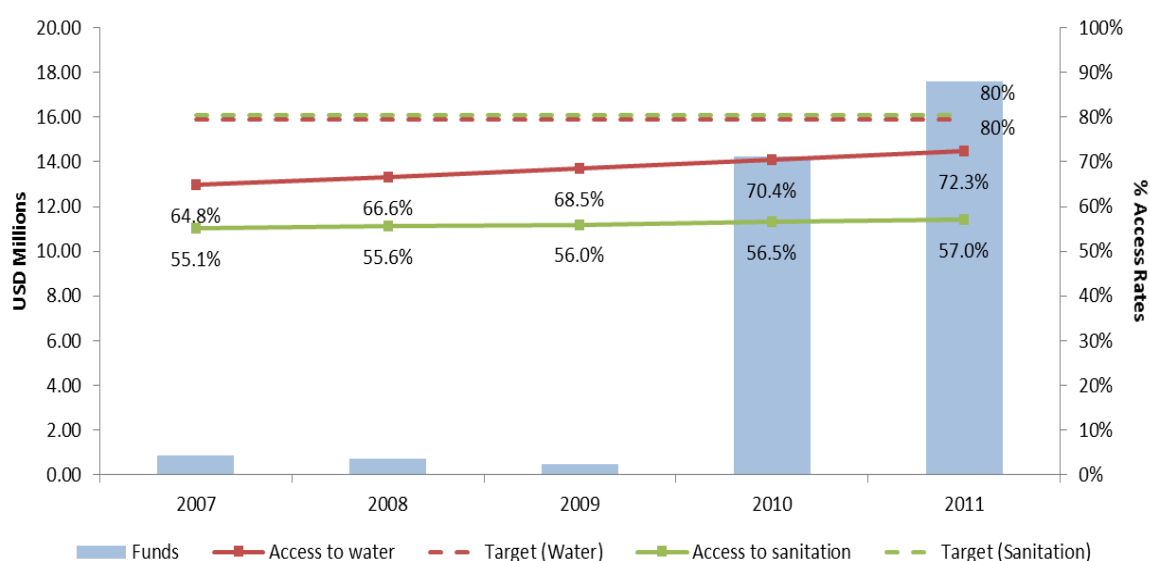


Figure 106: Evolution of access rates compared to funding from 2007 to 2011 - Swaziland

Swaziland invested a total of 33.8 million USD in 3 activities between 2007 and 2011: basic drinking water supply and basic sanitation (18.4 million), water resources protection (1.1 million), and water supply – large systems (14.1 million). All funds allocated to basic drinking water supply and basic sanitation was contributed to the combined category. The full list of funds donated per activity in Swaziland from 2007 to 2011 is found in table 65.

Swaziland marked an improvement of 7.5% in access rates to safe drinking water, a probable effect of the large investment in the sector. Access to adequate sanitation also progressed by 1.9%, but still lags behind access to water.

Swaziland is seen as a high strategic risk with an overall risk rating of 2.7 (0.1=minimal risk, 10.0=maximum risk) , with no reported Corruption Perception Index score or rank, and has a political risk index score of 5 (IHS Global Inc., 2016n).

Table 65: Funds Donated per Activity in Swaziland from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.3804	0.6917	0.4860	0.0153	16.8416
Educ./training: water supply & sanitation	0	0	0	0	0
River development	0	0	0	0	0
Waste management/disposal	0	0	0	0	0
Water resources policy/admin. management	0.0066	0.0076	0	0.0234	0.0416
Water resources protection	0.4592	0.0072	0	0.0009	0.6607
Water supply & sanit. - large systems	1.54E-02	0	0	0	0
Basic drinking water supply				0	0
Basic sanitation				0	0
Sanitation - large systems				0.0188	0.0166
Water supply - large systems				14.1600	0.0271

6.3.2.45 *Tanzania*

Access rates in Tanzania have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 107 illustrates the percentage left to complete the water and sanitation targets in Tanzania. Tanzania is closer to achieving the water target, yet remains extremely far from the required sanitation access rate.

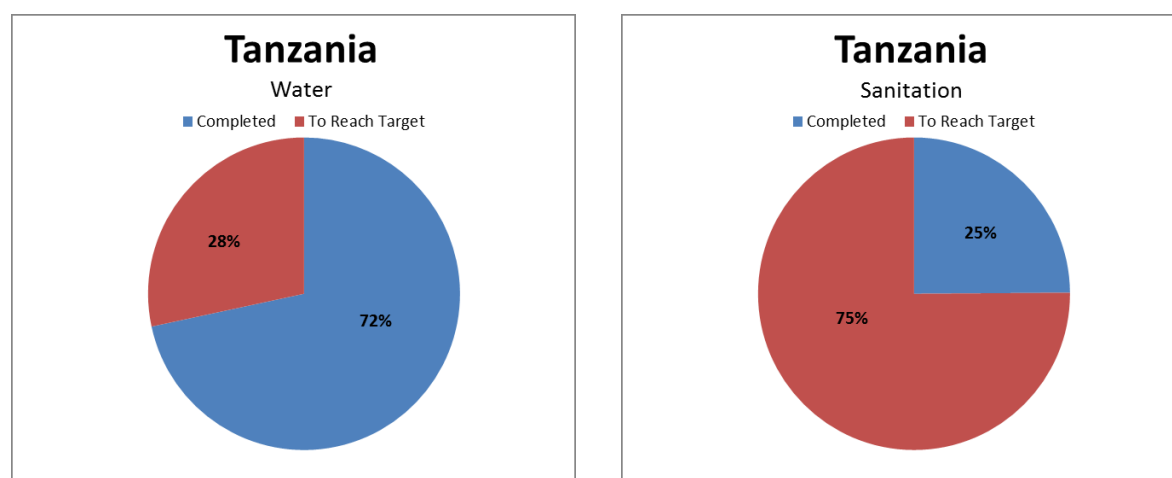


Figure 107: Percent completion of the water and sanitation targets - Tanzania

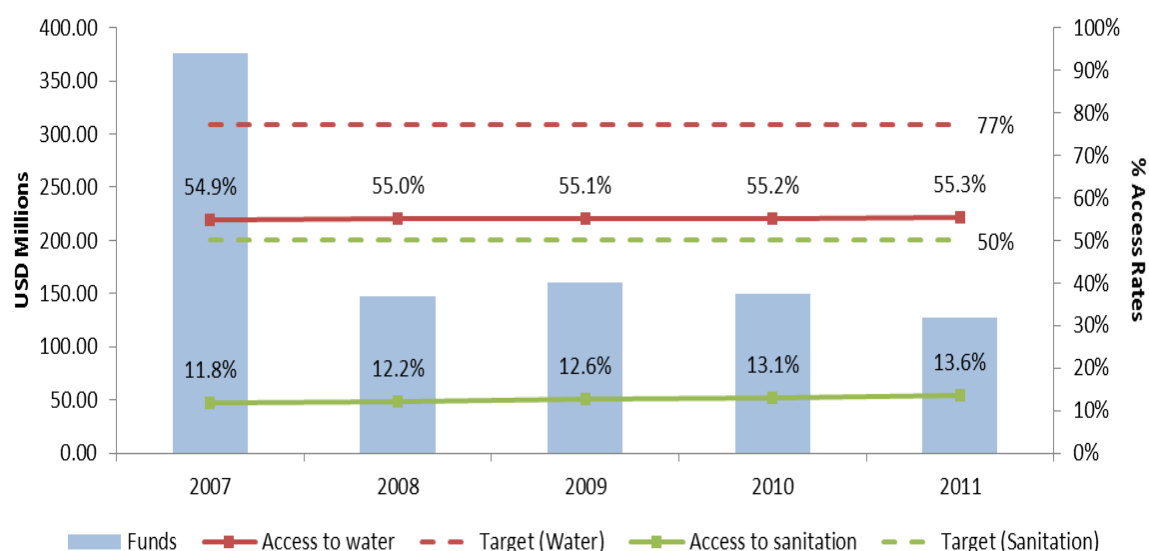


Figure 108: Evolution of access rates compared to funding from 2007 to 2011 - Tanzania

Tanzania received the most funding out of all 49 countries in Sub-Saharan African, accumulating 960.9 million USD from 2007 to 2011, spread over all activities. Water supply and sanitation – large systems obtained the largest part, 574.7 million USD, of which 103.4 million was diverted specifically for water supply, followed by water resources policy/administrative management, which got 204.5 million USD, and basic drinking water supply and basic sanitation accepting 165.3 million USD. All funds donated per activity in Tanzania from 2007 to 2011 can be found in table 66.

In spite of the considerable investments in the water and sanitation sector, Tanzania has made little progress, particularly in access to safe drinking water, reporting a change of 0.4%. Access to adequate sanitation fared better with an increase of 1.8%. In 2011, access rates to safe drinking water stood at 55.3% and access to adequate sanitation was 13.6%.

Tanzania has a Corruption Perception Index score of 32, a rank of 116. Tanzania is seen as a high strategic risk with an overall risk rating of 2.8 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 6 (IHS Global Inc., 2016o).

Table 66: Funds Donated per Activity in Tanzania from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	102.7632	11.4574	33.6097	4.3567	10.1779
Educ./training: water supply & sanitation	0.1850	0.6304	0.3378	0.2332	0.1257
River development	1.6463	1.3601	1.1726	2.1405	2.1724
Waste management/disposal	0.0298	0.0031	0.1407	0.3910	0.0425
Water resources policy/admin. management	103.7040	21.0573	56.1598	18.9225	4.7561

Water resources protection	0.3850	5.1484	0.0557	0.0105	0.1031
Water supply & sanit. - large systems	167.0911	107.6052	68.9759	122.2320	5.3161
Basic drinking water supply				0.6495	0.8270
Basic sanitation				0.0246	1.4572
Sanitation - large systems				0	0
Water supply - large systems				0.8905	102.6084

6.3.2.46 Togo

Access rates in Togo have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 109 illustrates the percentage left to complete the water and sanitation targets in Togo. Access rates to safe drinking water and adequate sanitation in Togo in 2011 were 60.5% and 11.5% respectively, an increase of 2.6% and 0.1% on the 2007 figures. Togo is closer to achieving the water target, yet remains extremely far from the required sanitation access rate.

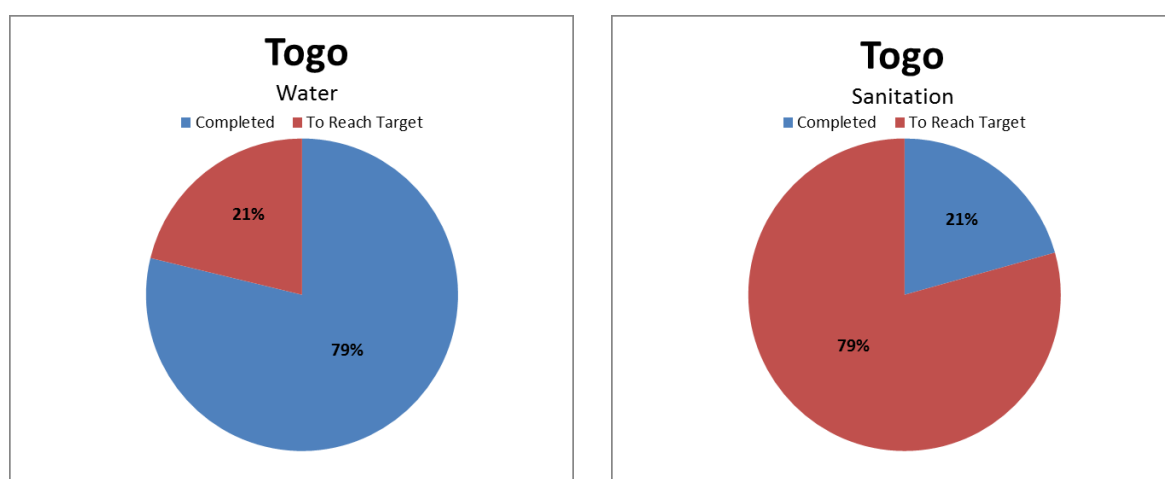


Figure 109: Percent completion of the water and sanitation targets - Togo

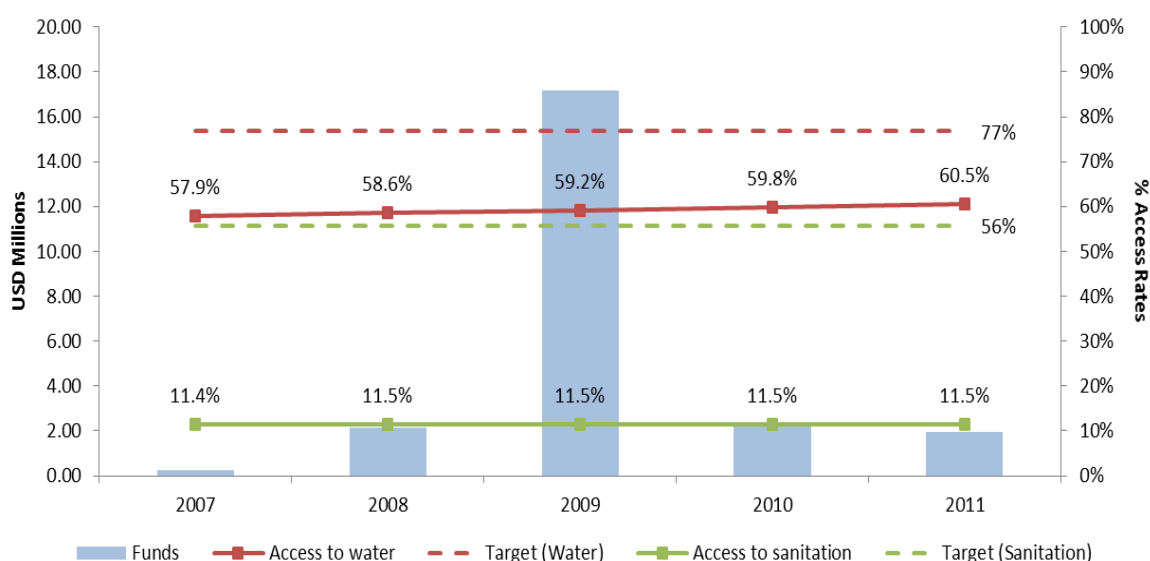


Figure 110: Evolution of access rates compared to funding from 2007 to 2011 - Togo

This is with 23.9 million USD donated over the 5 year period. Togo received 16.5 million USD for water supply and sanitation – large systems, and 4.6 million for basic drinking water supply and sanitation. While there was not a clear distinction in where the combined funds were directed, it is understandable to assume that water supply was the beneficiary with water access rates improving drastically compared to sanitation. This bias towards water in funding practices is one of the reasons access to adequate sanitation lags behind and the target remains unmet.

Togo has a Corruption Perception Index score of 32, a rank of 116, and has a political risk index score of 4.5 (Coleman, 2016r).

Table 67: Funds Donated per Activity in Togo from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.2270	0.5624	0.8841	1.2430	1.2992
Educ./training: water supply & sanitation	0.0005	0.0157	0	0	0
River development	0	0	0	0.0209	0.0250
Waste management/disposal	0	0.4039	0	0.0034	0
Water resources policy/admin. management	0	1.1736	0.8366	0.0807	0.1039
Water resources protection	0	0	0.0140	0	0.1031
Water supply & sanit. - large systems	0.0209	0.0108	15.4226	0	0
Basic drinking water supply				0.3919	0.0040
Basic sanitation				0.0056	0.0029
Sanitation - large systems				0	0
Water supply - large systems				0.6525	0.4158

6.3.2.47 Uganda

Access rates in Uganda have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 111 illustrates the percentage left to complete the water and sanitation targets in Uganda. Uganda is very close to achieving the water target, yet remains extremely far from the calculated sanitation access rate.

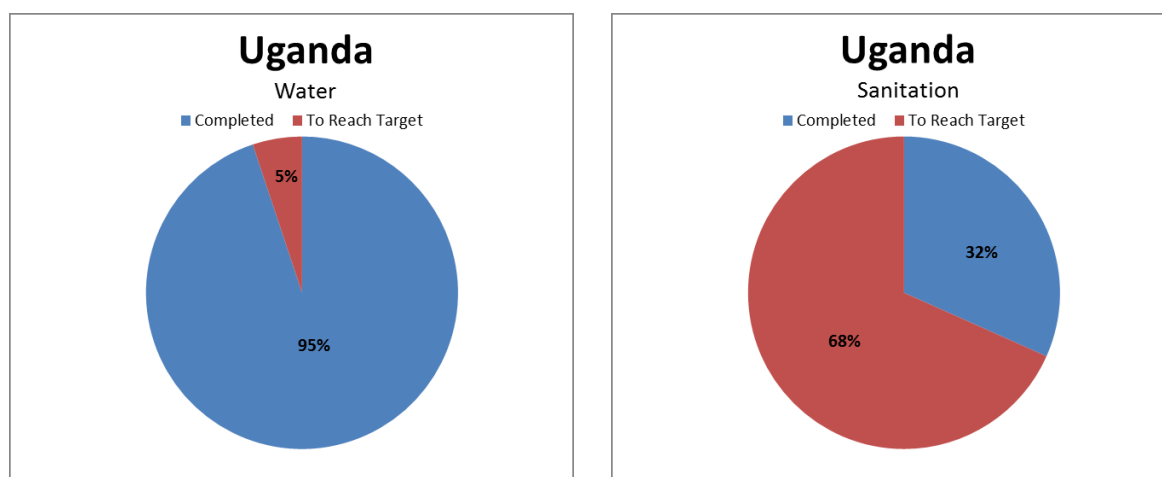


Figure 111: Percent completion of the water and sanitation targets - Uganda

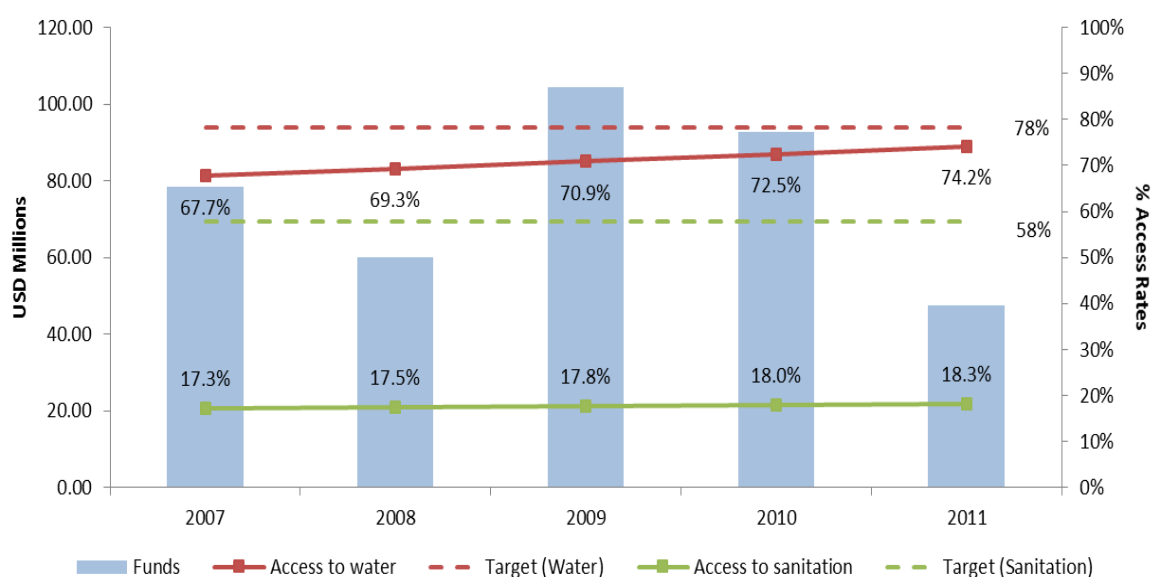


Figure 112: Evolution of access rates compared to funding from 2007 to 2011 - Uganda

Uganda heavily invested in the water and sanitation sector from 2007 to 2011, devoting 237.9 million USD to basic drinking water supply and basic sanitation, and water supply and sanitation – large systems collectively, with basic drinking water supply received 3.9 million, and water supply – large systems obtained 1.7 million in 2010 and 2011. Other activities funded were: education and training in water supply and sanitation (54.5 million USD), water resources policy/administrative management (59.9 million), and water resources protection (21.9 million). Funds donated per activity in Uganda from 2007 to 2011 are summarised in table 68. The focus on water supply translated to an increase of 6.5% in access to safe drinking water in Uganda over the 5 year period from 2007 to 2011, reaching

74.2%. Access to adequate sanitation improved as well, but at a far slower pace, with a change of 1%, attaining 18.3% in the same time frame. More work needs to be done to expand access rates to adequate sanitation in Uganda.

Uganda has a Corruption Perception Index score of 25, a rank of 151. Uganda is seen as a high strategic risk with an overall risk rating of 2.9 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 6 (IHS Global Inc., 2016p).

Table 68: Funds Donated per Activity in Uganda from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	26.5966	24.9180	7.4854	14.6994	29.3080
Educ./training: water supply & sanitation	0.1566	0.9236	0.3497	50.6956	2.3799
River development	0.1251	0.2809	0.0664	0	0.0013
Waste management/disposal	8.4	0	0	0.0413	0
Water resources policy/admin. management	18.5659	9.6284	5.1663	17.7842	8.8220
Water resources protection	20.8320	0.0216	0.8845	0.0427	0.1254
Water supply & sanit. - large systems	3.6422	24.1690	90.5332	7.5271	2.9817
Basic drinking water supply				1.6799	2.2297
Basic sanitation				0.1855	0.2213
Sanitation - large systems				0	0
Water supply - large systems				0.1843	1.5620

6.3.2.48 *Zambia*

Access rates in Zambia have steadily increased from 2007 to 2011, but more work is necessary to meet the MDG targets. Figure 113 illustrates the percentage left to complete the water and sanitation targets in Zambia. Zambia is closer to achieving the sanitation target, but access to safe drinking water remains far from the target.

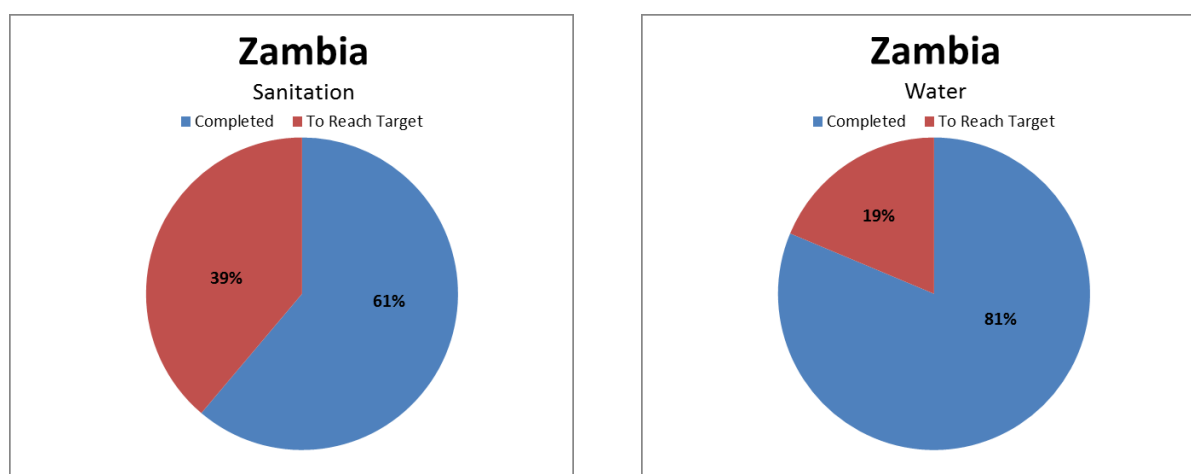


Figure 113: Percent completion of the water and sanitation targets - Zambia

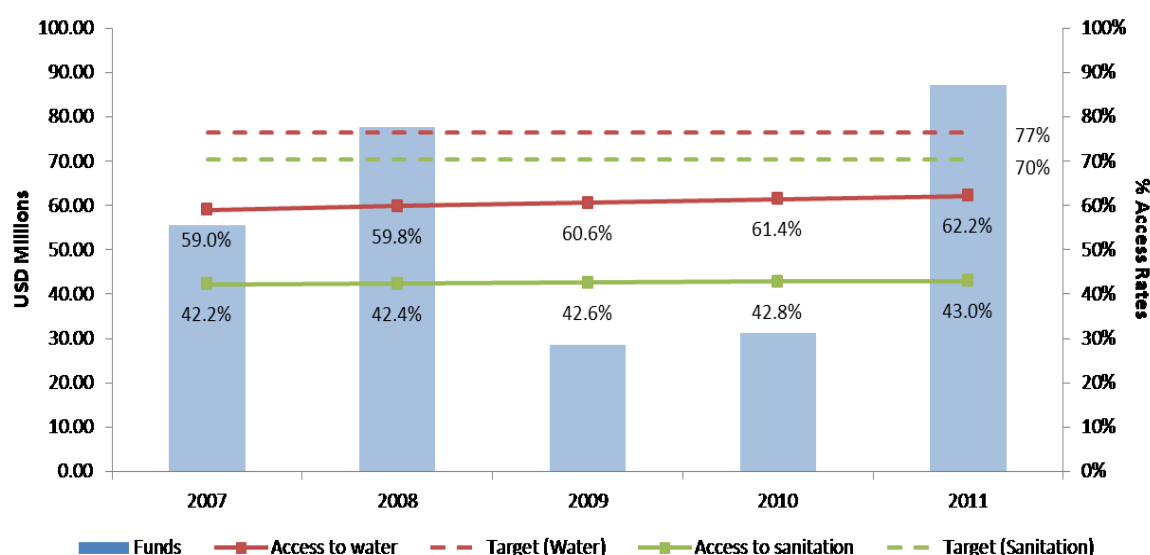


Figure 114: Evolution of access rates compared to funding from 2007 to 2011 - Zambia

Zambia received 280.1 million USD for the water and sanitation sector from 2007 to 2011. Water supply and sanitation – large systems was attributed 195.5 million USD, 37.8 million directed specifically to water supply. A smaller investment of 44.6 million was made to basic drinking water supply and sanitation, with 9.2 million earmarked for basic drinking water supply. Water resources policy/administrative management was allotted a considerable sum of 27.9 million USD over the 5 year period.

Zambia is among the nations that prioritised water supply over access to sanitation when allocating funding. This is reflected in access rates. Access rates to safe drinking water increased by 3.2% from 2007 to 2011. Access to adequate sanitation improved by a modest 0.8% over the same time period.

Zambia has a Corruption Perception Index score of 38, a rank of 87. Zambia is seen as a high strategic risk with an overall risk rating of 2.5 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 4.5 (IHS Global Inc., 2016q).

Table 69: Funds Donated per Activity in Zambia from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.7756	12.599	0.9895	14.520	6.0872
		1		8	
Educ./training: water supply & sanitation	0.1992	2.0576	0.4118	0.3008	1.0083
River development	0.4088	0.6219	0.7330	1.1940	1.5307
Waste management/disposal	0	0	0	0.0105	0
Water resources policy/admin. management	11.486	5.5711	1.9733	6.6436	2.2449
	2				
Water resources protection	0	0	0.0050	0.1066	3.4832
Water supply & sanit. - large systems	42.612	56.899	24.449	7.8501	25.840

	9	9	6	2
Basic drinking water supply				9.2744
Basic sanitation				0.3335
Sanitation - large systems				0
Water supply - large systems				37.366
				2

6.3.2.49 Zimbabwe

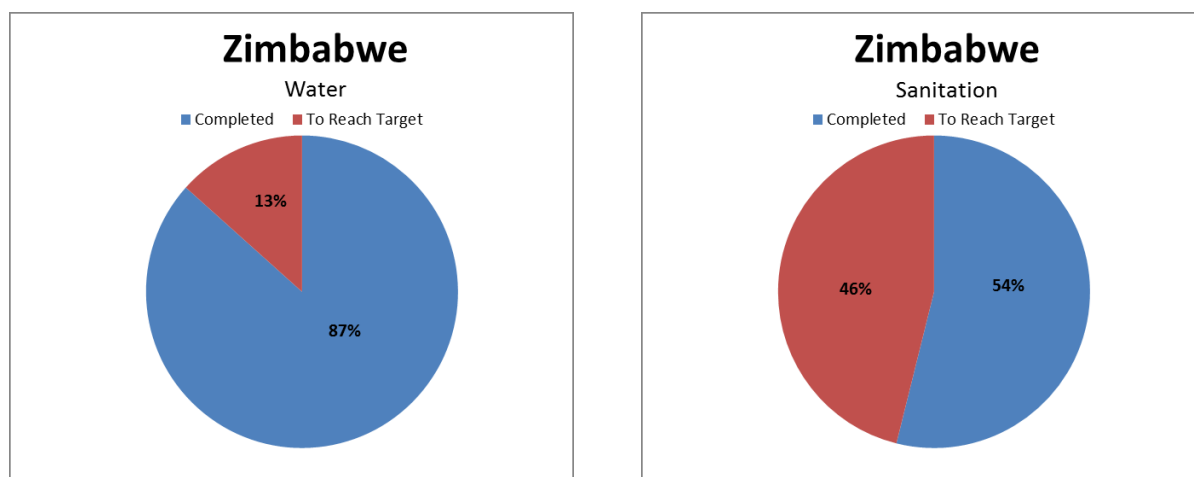


Figure 115: Percent completion of the water and sanitation targets - Zimbabwe



Figure 116: Evolution of access rates compared to funding from 2007 to 2011 - Zimbabwe

Access rates in Zimbabwe have steadily decreased from 2007 to 2011, indicating more work is necessary to meet the MDG targets. Figure 115 illustrates the percentage left to complete the water and sanitation targets in Zimbabwe. Zimbabwe appears closer to achieving the water target, yet

access to safe drinking water has diminished of the 5 year period. Access to adequate sanitation remains extremely far from the target and has been reduced as well.

Zimbabwe is the only nation to report an equal decrease of 0.7% in access to both safe drinking water and adequate sanitation. This is despite large investments in water supply and sanitation accounting for 145.6 million USD from 2007 to 2011. Funds donated per activity in Zimbabwe from 2007 to 2011 are listed in table 70.

Zimbabwe has a Corruption Perception Index score of 22, a rank of 154. Zimbabwe is seen as a severe strategic risk with an overall risk rating of 4.4 (0.1=minimal risk, 10.0=maximum risk) and has a political risk index score of 3 (IHS Global Inc., 2016r).

Table 70: Funds Donated per Activity in Zimbabwe from 2007 to 2011

	2007	2008	2009	2010	2011
Basic drinking water supply and basic sanitation	0.12	83.080	18.016	5.9466	26.135
Educ./training: water supply & sanitation	0.0050	0.0163	0	0	0.0516
River development	0.0165	0	0	0	0
Waste management/disposal	0.0545	0.0153	0.0152	0.0130	0.1745
Water resources policy/admin. management	1.5113	0.0152	0.0142	0.4339	0.0476
Water resources protection	0	0	0	0.0331	0.0519
Water supply & sanit. - large systems	0.0300	0.2164	1.9696	8.9671	0.0108
Basic drinking water supply				0.1664	0
Basic sanitation				0.9266	0
Sanitation - large systems				0.0387	0.0166
Water supply - large systems				0.0254	0.0077

6.4 Comparative performance of countries

Through the analysis of the financial data and access rates, it has become evident that fund allocation is not done according to need. This allowed for the determination of two new criteria: (1) Need and (2) Progress. Need is defined as the gap or distance between the current access rate and target and progress is the ground covered from 2007 to 2011. The need and progress is calculated for the countries in Sub-Saharan Africa.

The below tables rank the countries according to their performance in achieving target 7.C. Table 71 condenses the funds received in 2007, the percentage access to safe drinking water in 2007, the water target, and the calculated gap or need for each of the 48 countries in Sub-Saharan Africa. The gap/need represents how far countries are from meeting the relevant target. The countries are also divided into 3 groups according to their difference. Group 1 represents the 16 countries with the smallest gap of the region (ranging from -15% to 10%), group 2 the 18 countries with a moderate gap (ranging from 13% to 25%), and group 3 the 14 countries with the largest gap in the region (ranging

from 26% to 50%). South Sudan is included at the end of the table and is not ranked due to the lack of data available for the studied period.

The ranking parameter for water were as follows:

Group 1: 0% to 10% Group 2: 11% to 25% Group 3: 26% to 50%

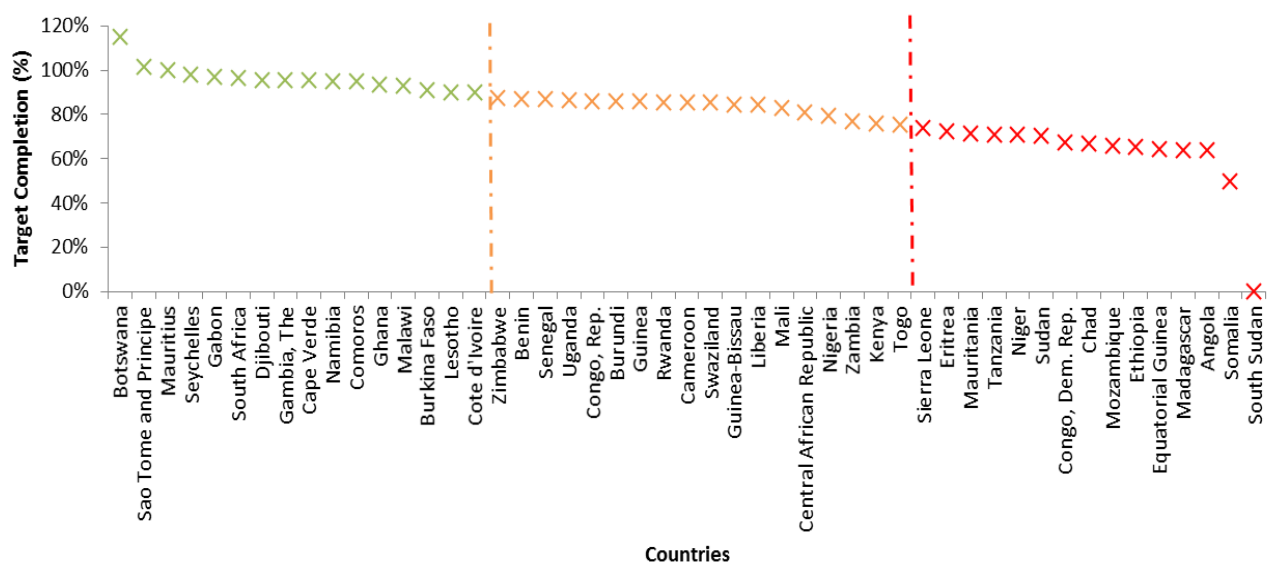


Figure 117: Target completion per country in 2007 - Water

The ranking parameters for sanitation:

Group 1: 0% to 28% Group 2: 29% to 59% Group 3: 60% to 85%

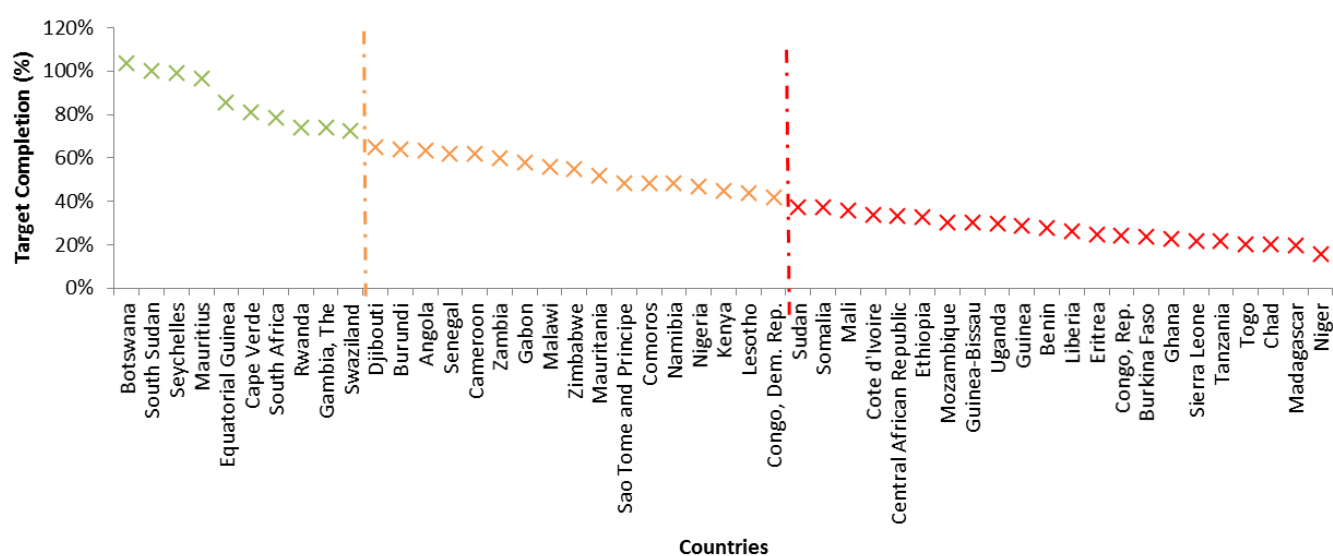


Figure 118: Target completion per country in 2007 - Sanitation

The ranking parameters for progress:

Water: Group 1: < -5% Group 2: -5% < x < -1% Group 3: > -1%

Sanitation: Group 1: < -5% Group 2: -5% < x < 0% Group 3: > 0%

Total: Group 1: < -5% Group 2: -5% < x < -1 Group 3: > -1

Table 71: Ranking of countries according to their performance - Water 2007

Country Name	Funds	Target	% Access to Water in 2007	Gap/Need
Group 1				
Botswana	0.11	83	95.5	-15%
Sao Tome and Principe	0.57	89.1	90.4	-1%
Mauritius	0.00	99.6	99.6	0%
Seychelles	0.00	97.85	95.7	2%
Gabon	52.02	91.9	89.3	3%
South Africa	152.72	93.25	89.8	4%
Djibouti	24.79	91.15	87.1	4%
Gambia, The	10.23	91.35	87.1	5%
Cape Verde	8.57	91.2	86.9	5%
Namibia	4.68	89.25	84.8	5%
Comoros	0.00	95.05	90.1	5%
Ghana	89.46	85.25	79.5	7%
Malawi	54.54	81.25	75.5	7%
Burkina Faso	61.56	79.95	72.8	9%
Lesotho	8.46	89.5	80.3	10%
Cote d'Ivoire	2.12	88.95	79.8	10%
Group 2				
Zimbabwe	1.74	89.7	78.4	13%
Benin	39.90	83	72.0	13%
Senegal	65.88	83.7	72.6	13%
Uganda	78.32	78.2	67.7	13%
Congo, Rep.	0.00	84.6	72.8	14%
Burundi	0.78	85.9	73.8	14%
Guinea	24.34	81.35	69.8	14%
Rwanda	21.03	83.15	71.1	14%
Cameroon	39.53	80.85	69.0	15%
Swaziland	0.86	75.95	64.8	15%
Guinea-Bissau	1.20	76.05	64.3	15%
Liberia	6.44	81.2	68.5	16%
Mali	39.74	73.3	60.8	17%
Central African Republic	11.51	81.25	65.7	19%
Nigeria	119.66	75.9	60.1	21%
Zambia	55.48	76.5	59.0	23%
Kenya	302.20	75.9	57.7	24%
Togo	0.25	76.8	57.9	25%

Group 3				
Sierra Leone	11.56	73.6	54.3	26%
Eritrea	13.75	75.5	54.8	27%
Mauritania	16.45	71	50.7	29%
Tanzania	375.80	77.2	54.9	29%
Niger	27.57	71.85	50.8	29%
Sudan	37.75	81	57.0	30%
Congo, Dem. Rep.	178.98	73.55	49.7	32%
Chad	0.87	72.35	48.2	33%
Mozambique	108.05	70.55	46.3	34%
Ethiopia	167.71	64.45	42.0	35%
Equatorial Guinea	0.52	73.65	47.4	36%
Madagascar	5.57	69	44.0	36%
Angola	50.68	72.85	46.4	36%
Somalia	2.02	61.75	30.7	50%
South Sudan	0.00	0	0	

Table 72 condenses the funds received in 2011, the percentage access to safe drinking water in 2011, the water target, and the calculated gap/need for each of the 48 countries in Sub-Saharan Africa. The countries are also divided into 3 groups according to size of their need. Group 1 represents the 24 countries with the smallest gap of the region (ranging from -16% to 10%), group 2 the 15 countries with a moderate gap (ranging from 11% to 25%), and group 3 the 9 countries with the largest gap in the region (ranging from 28% to 49%). South Sudan is included at the end of the table and is not ranked due to the lack of data available for the studies period.

Table 72: Ranking of countries according to their performance - Water 2011

Country Name	Funds	Target	% Access to Water in 2011	Gap/Need
Group 1				
Botswana	0.80	83	96	-16%
Sao Tome and Principe	3.57	89.1	97.0	-9%
Malawi	131.63	81.25	82.9	-2%
Mauritius	0.80	99.6	99.8	0%
Burkina Faso	0.80	79.95	80.0	0%
Gabon	16.78	91.9	91.6	0%
Ghana	11.09	85.25	84.3	1%
Djibouti	9.68	91.15	89.9	1%
Namibia	8.11	89.25	88.0	1%
Cape Verde	5.67	91.2	89.6	2%
South Africa	79.67	93.25	91.6	2%
Gambia, The	0.92	91.35	89.5	2%
Seychelles	0.00	97.85	95.7	2%
Swaziland	17.59	75.95	72.3	5%

Uganda	47.63	78.2	74.2	5%
Comoros	6.07	95.05	90.1	5%
Guinea-Bissau	1.72	76.05	71.7	6%
Mali	53.27	73.3	68.9	6%
Cote d'Ivoire	36.46	88.95	80.9	9%
Benin	58.53	83	75.3	9%
Guinea	1.09	81.35	73.8	9%
Lesotho	23.67	89.5	81.0	9%
Cameroon	103.84	80.85	73.1	10%
Senegal	38.83	83.7	75.6	10%
Group 2				
Liberia	12.33	81.2	72.0	11%
Rwanda	15.98	83.15	73.7	11%
Congo, Rep.	0.12	84.6	74.8	12%
Burundi	18.24	85.9	75.0	13%
Zimbabwe	26.50	89.7	77.7	13%
Nigeria	118.29	75.9	64.5	15%
Central African Republic	5.67	81.25	67.7	17%
Zambia	87.17	76.5	62.2	19%
Kenya	173.11	75.9	60.8	20%
Sierra Leone	30.69	73.6	58.5	21%
Togo	1.95	76.8	60.5	21%
Mauritania	56.11	71	55.5	22%
Ethiopia	71.93	64.45	49.7	23%
Niger	30.50	71.85	55.1	23%
Eritrea	0.81	75.5	57.0	25%
Group 3				
Tanzania	127.59	77.2	55.3	28%
Mozambique	125.22	70.55	49.3	30%
Congo, Dem. Rep.	81.28	73.55	51.1	31%
Chad	6.79	72.35	50.2	31%
Madagascar	8.09	69	47.8	31%
Sudan	32.79	81	55.4	32%
Angola	120.71	72.85	47.5	35%
Equatorial Guinea	0.23	73.65	47.6	35%
Somalia	5.05	61.75	31.7	49%
South Sudan	0.00	0	0	0.0

Table 73 abridges the total funds received from 2007 to 2011, the gap/need in 2007 and 2011, and the progress achieved from 2007 to 2011 for the 48 countries in Sub-Saharan Africa. The progress represents the reduction in the gap for each country. The countries are divided into 3 groups according to their progress in access to safe drinking water. Group 1 consists of the 14 countries in the region with the greatest progress (ranging from 6% to 12%), group 2 the 23 countries showing moderate progress (ranging from 2% to 5%) and group 3 the 11 countries reporting the least amount

of progress in increasing access rates (ranging from a decrease of 2% to an increase of 1%). South Sudan is included at the end of the table and is not ranked due to the lack of data available for the studies period.

Table 73: Ranking of countries according to their performance - Water

Country Name	Total Funds	Gap/Need in 2007	Gap/Need in 2011	Progress
Group 1				
Ethiopia	696.66	35%	23%	-12%
Mali	352.35	17%	6%	-11%
Swaziland	33.86	15%	5%	-10%
Guinea-Bissau	11.69	15%	6%	-10%
Malawi	255.71	7%	-2%	-9%
Burkina Faso	473.55	9%	0%	-9%
Uganda	383.22	13%	5%	-8%
Sao Tome and Principe	5.84	-1%	-9%	-7%
Mauritania	162.09	29%	22%	-7%
Niger	125.46	29%	23%	-6%
Nigeria	420.39	21%	15%	-6%
Sierra Leone	120.21	26%	21%	-6%
Ghana	340.50	7%	1%	-6%
Madagascar	38.44	36%	31%	-6%
Group 2				
Cameroon	323.48	15%	10%	-5%
Guinea	45.93	14%	9%	-5%
Liberia	86.76	16%	11%	-4%
Mozambique	709.83	34%	30%	-4%
Zambia	280.20	23%	19%	-4%
Kenya	877.55	24%	20%	-4%
Benin	179.16	13%	9%	-4%
Namibia	72.68	5%	1%	-4%
Senegal	399.72	13%	10%	-4%
Togo	23.92	25%	21%	-3%
Rwanda	147.75	14%	11%	-3%
Djibouti	73.90	4%	1%	-3%
Cape Verde	54.60	5%	2%	-3%
Eritrea	27.80	27%	25%	-3%
Chad	58.37	33%	31%	-3%
Gambia, The	26.98	5%	2%	-3%
Gabon	146.79	3%	0%	-3%
Central African Republic	43.24	19%	17%	-2%
Congo, Rep.	28.97	14%	12%	-2%
South Africa	250.23	4%	2%	-2%

Congo, Dem. Rep.	599.89	32%	31%	-2%
Somalia	15.52	50%	49%	-2%
Angola	285.05	36%	35%	-2%
Group 3				
Burundi	85.22	14%	13%	-1%
Cote d'Ivoire	145.05	10%	9%	-1%
Lesotho	270.19	10%	9%	-1%
Botswana	1.10	-15%	-16%	-1%
Tanzania	960.96	29%	28%	-1%
Equatorial Guinea	0.78	36%	35%	0%
Mauritius	172.94	0%	0%	0%
Comoros	13.23	5%	5%	0%
Seychelles	0.53	2%	2%	0%
Zimbabwe	148.15	13%	13%	1%
Sudan	187.03	30%	32%	2%
South Sudan				

Table 74 condenses the funds received in 2007, the percentage access to adequate sanitation in 2007, the sanitation target, and the calculated gap/need for each of the 48 countries in Sub-Saharan Africa. The countries are also divided into 3 groups according to size of their gap/need. Group 1 represents the 9 countries with the smallest gap of the region (ranging from -3.7% to 27.4%), group 2 the 17 countries with a moderate gap (ranging from 35.2% to 58.3%), and group 3 the 22 countries with the greatest gap in the region (ranging from 62.7% to 84.1%). South Sudan is included at the end of the table and is not ranked due to the lack of data available for the studies period.

Table 74: Ranking of countries according to their performance - Sanitation 2007

Country Name	Funds	Target	% Access to Sanitation in 2007	Gap/Need
Group 1				
Botswana	0.11	55.95	58.0	-3.7%
Seychelles	0.00	99.2	98.4	0.8%
Mauritius	0.00	95.7	92.3	3.6%
Equatorial Guinea	0.52	90.1	77.1	14.4%
Cape Verde	8.57	71.8	58.1	19.1%
South Africa	152.72	78.6	61.7	21.5%
Rwanda	21.03	73.3	54.3	25.9%
Gambia, The	10.23	79.85	59.0	26.1%
Swaziland	0.86	75.9	55.1	27.4%
Group 2				
Djibouti	24.79	79.75	51.7	35.2%
Burundi	0.78	72.15	46.1	36.1%
Angola	50.68	66.05	41.8	36.7%
Senegal	65.88	70.15	43.6	37.8%

Cameroon	39.53	71.1	43.9	38.3%
Zambia	55.48	70.3	42.2	40.0%
Gabon	52.02	69.4	40.3	41.9%
Malawi	54.54	67.15	37.4	44.3%
Zimbabwe	1.74	69.6	38.2	45.1%
Mauritania	16.45	61.85	32.0	48.3%
Sao Tome and Principe	0.57	60.45	29.4	51.4%
Comoros	0.00	62.55	30.4	51.4%
Namibia	4.68	63.7	30.8	51.6%
Nigeria	119.66	67	31.5	53.0%
Kenya	302.20	63.45	28.5	55.1%
Lesotho	8.46	61.95	27.1	56.3%
Congo, Dem. Rep.	178.98	61.35	25.6	58.3%
Group 3				
Sudan	37.75	62.7	23.4	62.7%
Somalia	2.02	60.9	22.7	62.7%
Mali	39.74	59	21.1	64.2%
Cote d'Ivoire	2.12	58.8	19.9	66.2%
Central African Republic	11.51	58.6	19.6	66.6%
Ethiopia	167.71	54.3	17.8	67.2%
Mozambique	108.05	57.05	17.4	69.5%
Guinea-Bissau	1.20	56.2	16.9	69.9%
Uganda	78.32	57.8	17.3	70.1%
Guinea	24.34	56.45	16.3	71.1%
Benin	39.90	55.95	15.6	72.1%
Liberia	6.44	56.55	14.8	73.8%
Eritrea	13.75	55.7	13.7	75.4%
Congo, Rep.	0.00	56.35	13.7	75.7%
Burkina Faso	61.56	66.05	15.6	76.4%
Ghana	89.46	55.15	12.6	77.2%
Sierra Leone	11.56	55.65	12.2	78.1%
Tanzania	375.80	54.65	11.8	78.4%
Togo	0.25	55.7	11.4	79.5%
Chad	0.87	54.85	11.0	79.9%
Madagascar	5.57	55.15	11.0	80.1%
Niger	27.57	53.3	8.5	84.1%
South Sudan	0.00	0	0	0.0

Table 75 condenses the funds received in 2011, the percentage access to adequate sanitation in 2011, the sanitation target, and the calculated gap/need for each of the 48 countries in Sub-Saharan Africa. The countries are also divided into 3 groups according to size of their gap. Group 1 represents the 10 countries with the smallest gap/need of the region (ranging from -9.9% to 27.9%), group 2 the 17 countries with a moderate gap/need (ranging from 34.6% to 57.6%), and group 3 the 21 countries

with the largest gap in the region (ranging from 61.2% to 81.6%). South Sudan is included at the end of the table and is not ranked due to the lack of data available for the studies period.

Table 75: Ranking of countries according to their performance - Sanitation 2011

Country Name	Funds	Target	% Access to Sanitation in 2011	Gap/Need
Group 1				
Botswana	0.80	55.95	61.5	-9.9%
Seychelles	0.00	99.2	98.4	0.8%
Mauritius	0.80	95.7	92.9	2.9%
Cape Verde	5.67	71.8	66.2	7.8%
Equatorial Guinea	0.23	90.1	75.4	16.3%
South Africa	79.67	78.6	64.1	18.4%
Rwanda	15.98	73.3	58.2	20.6%
Swaziland	17.59	75.9	57.0	24.9%
Gambia, The	0.92	79.85	58.8	26.4%
Angola	120.71	66.05	47.6	27.9%
Group 2				
Burundi	18.24	72.15	47.2	34.6%
Senegal	38.83	70.15	45.6	35.0%
Cameroon	103.84	71.1	44.9	36.8%
Zambia	87.17	70.3	43.0	38.8%
Mauritania	56.11	61.85	36.9	40.3%
Gabon	16.78	69.4	41.2	40.6%
Djibouti	9.68	79.75	47.3	40.7%
Malawi	131.63	67.15	39.2	41.6%
Sao Tome and Principe	3.57	60.45	34.3	43.3%
Zimbabwe	26.50	69.6	37.5	46.1%
Comoros	6.07	62.55	33.5	46.4%
Namibia	8.11	63.7	32.7	48.7%
Lesotho	23.67	61.95	28.9	53.3%
Kenya	173.11	63.45	29.4	53.7%
Nigeria	118.29	67	30.2	54.9%
Congo, Dem. Rep.	81.28	61.35	27.2	55.7%
Ethiopia	71.93	54.3	23.0	57.6%
Group 3				
Mali	53.27	59	22.9	61.2%
Somalia	5.05	60.9	23.5	61.4%
Sudan	32.79	62.7	23.5	62.5%
Cote d'Ivoire	36.46	58.8	21.3	63.8%
Central African Republic	5.67	58.6	21.1	64.0%
Guinea-Bissau	1.72	56.2	19.6	65.1%
Mozambique	125.22	57.05	19.3	66.2%

Guinea	1.09	56.45	18.4	67.4%
Benin	58.53	55.95	17.8	68.2%
Uganda	47.63	57.8	18.3	68.3%
Liberia	12.33	56.55	15.8	72.1%
Burkina Faso	0.80	66.05	18.0	72.7%
Eritrea	0.81	55.7	14.9	73.2%
Congo, Rep.	0.12	56.35	14.4	74.4%
Ghana	11.09	55.15	14.0	74.6%
Tanzania	127.59	54.65	13.6	75.1%
Sierra Leone	30.69	55.65	12.7	77.2%
Chad	6.79	54.85	11.8	78.5%
Madagascar	8.09	55.15	11.5	79.1%
Togo	1.95	55.7	11.5	79.4%
Niger	30.50	53.3	9.8	81.6%
South Sudan	0.00	0	0	0.0

Table 76 abridges the total funds received from 2007 to 2011, the gap/need in 2007 and 2011, and the total progress made from 2007 to 2011 for the 48 countries in Sub-Saharan Africa. The countries are divided into 3 groups according to their progress in access to adequate sanitation. Group 1 consists of the 9 countries in the region with the greatest progress (ranging from 11% to 5%), group 2 the 31 countries showing moderate progress (ranging from 4% to 1%) and group 3 the 8 countries reporting the least amount of progress in increasing access rates (ranging for a decrease of 6% to no change of 0%). South Sudan is included at the end of the table and is not ranked due to the lack of data available for the studies period.

Table 76: Ranking of countries according to their performance - Sanitation

Country Name	Total Funds	Gap/Need in 2007	Gap/Need in 2011	Progress
Group 1				
Cape Verde	54.60	19.1%	7.8%	-11%
Ethiopia	696.66	67.2%	57.6%	-10%
Angola	285.05	36.7%	27.9%	-9%
Sao Tome and Principe	5.84	51.4%	43.3%	-8%
Mauritania	162.09	48.3%	40.3%	-8%
Botswana	1.10	-3.7%	-9.9%	-6%
Rwanda	147.75	25.9%	20.6%	-5%
Comoros	13.23	51.4%	46.4%	-5%
Guinea-Bissau	11.69	69.9%	65.1%	-5%
Group 2				
Benin	179.16	72.1%	68.2%	-4%
Guinea	45.93	71.1%	67.4%	-4%
Burkina Faso	473.55	76.4%	72.7%	-4%
Mozambique	709.83	69.5%	66.2%	-3%

Tanzania	960.96	78.4%	75.1%	-3%
South Africa	250.23	21.5%	18.4%	-3%
Mali	352.35	64.2%	61.2%	-3%
Namibia	72.68	51.6%	48.7%	-3%
Lesotho	270.19	56.3%	53.3%	-3%
Senegal	399.72	37.8%	35.0%	-3%
Malawi	255.71	44.3%	41.6%	-3%
Congo, Dem. Rep.	599.89	58.3%	55.7%	-3%
Central African Republic	43.24	66.6%	64.0%	-3%
Ghana	340.50	77.2%	74.6%	-3%
Swaziland	33.86	27.4%	24.9%	-3%
Niger	125.46	84.1%	81.6%	-2%
Cote d'Ivoire	145.05	66.2%	63.8%	-2%
Eritrea	27.80	75.4%	73.2%	-2%
Liberia	86.76	73.8%	72.1%	-2%
Uganda	383.22	70.1%	68.3%	-2%
Burundi	85.22	36.1%	34.6%	-2%
Chad	58.37	79.9%	78.5%	-1%
Kenya	877.55	55.1%	53.7%	-1%
Cameroon	323.48	38.3%	36.8%	-1%
Somalia	15.52	62.7%	61.4%	-1%
Gabon	146.79	41.9%	40.6%	-1%
Congo, Rep.	28.97	75.7%	74.4%	-1%
Zambia	280.20	40.0%	38.8%	-1%
Madagascar	38.44	80.1%	79.1%	-1%
Sierra Leone	120.21	78.1%	77.2%	-1%
Mauritius	172.94	3.6%	2.9%	-1%
Group 3				
Togo	23.92	79.5%	79.4%	0%
Sudan	187.03	62.7%	62.5%	0%
Seychelles	0.53	0.8%	0.8%	0%
Gambia, The	26.98	26.1%	26.4%	0%
Zimbabwe	148.15	45.1%	46.1%	1%
Equatorial Guinea	0.78	14.4%	16.3%	2%
Nigeria	420.39	53.0%	54.9%	2%
Djibouti	73.90	35.2%	40.7%	6%
South Sudan	0.00	0.0	0.0	

Table 77 encapsulates the total funds received from 2007 to 2011, the progress made for water from 2007 and 2011, the progress made for sanitation from 2007 to 2011 and the combined total Progress made in both water and sanitation from 2007 to 2011 for the 48 countries in Sub-Saharan Africa. The countries are divided into 3 groups according to their combined total progress. Group 1 consists of the 25 countries in the region with the greatest progress (ranging from 6% to 22%), group 2 the 18 countries showing moderate progress (ranging from 1% to 5%) and group 3 the 5 countries reporting

the least amount of progress in increasing access rates (ranging for a decrease of 2% to no change). South Sudan is included at the end of the table and is not ranked due to the lack of data available for the studies period.

Table 77: Ranking of countries according to their performance - Water and Sanitation

Country Name	Total funds	Progress Water	Progress Sanitation	Total Progress (water + sanitation)
Group 1				
Ethiopia	696.66	-12%	-10%	-22%
Sao Tome and Principe	5.84	-7%	-8%	-16%
Mauritania	162.09	-7%	-8%	-15%
Guinea-Bissau	11.69	-10%	-5%	-15%
Cape Verde	54.60	-3%	-11%	-14%
Mali	352.35	-11%	-3%	-14%
Burkina Faso	473.55	-9%	-4%	-13%
Swaziland	33.86	-10%	-3%	-12%
Malawi	255.71	-9%	-3%	-12%
Angola	285.05	-2%	-9%	-10%
Uganda	383.22	-8%	-2%	-10%
Guinea	45.93	-5%	-4%	-9%
Rwanda	147.75	-3%	-5%	-8%
Niger	125.46	-6%	-2%	-8%
Ghana	340.50	-6%	-3%	-8%
Benin	179.16	-4%	-4%	-8%
Mozambique	709.83	-4%	-3%	-8%
Botswana	1.10	-1%	-6%	-7%
Sierra Leone	120.21	-6%	-1%	-7%
Namibia	72.68	-4%	-3%	-7%
Cameroon	323.48	-5%	-1%	-6%
Senegal	399.72	-4%	-3%	-6%
Madagascar	38.44	-6%	-1%	-6%
Liberia	86.76	-4%	-2%	-6%
Kenya	877.55	-4%	-1%	-6%
Group 2				
Zambia	280.20	-4%	-1%	-5%
Eritrea	27.80	-3%	-2%	-5%
Central African Republic	43.24	-2%	-3%	-5%
South Africa	250.23	-2%	-3%	-5%
Comoros	13.23	0%	-5%	-5%
Congo, Dem. Rep.	599.89	-2%	-3%	-5%
Chad	58.37	-3%	-1%	-4%
Nigeria	420.39	-6%	2%	-4%
Tanzania	960.96	-1%	-3%	-4%

Gabon	146.79	-3%	-1%	-4%
Lesotho	270.19	-1%	-3%	-4%
Cote d'Ivoire	145.05	-1%	-2%	-4%
Congo, Rep.	28.97	-2%	-1%	-4%
Togo	23.92	-3%	0%	-4%
Somalia	15.52	-2%	-1%	-3%
Burundi	85.22	-1%	-2%	-3%
Gambia, The	26.98	-3%	0%	-2%
Mauritius	172.94	0%	-1%	-1%
Group 3				
Seychelles	0.53	0%	0%	0%
Equatorial Guinea	0.78	0%	2%	2%
Zimbabwe	148.15	1%	1%	2%
Sudan	187.03	2%	0%	2%
Djibouti	73.90	-3%	6%	2%
South Sudan				

6.5 Conclusions

The breakdown of the financial data of individual countries confirms the conclusions drawn previously:

- The majority of countries prioritise water supply and large systems, over sanitation and basic provision of services.
- The majority of countries dedicate large sums to the provision of water and sanitation facilities.
- The majority of countries are substantially closer to achieving the water target than the sanitation target, with a few nations reporting a decrease in access to adequate sanitation.
- When given the opportunity, projects and resources will be reported in ambiguous and unclear categories. The combined sub-categories for basic supply and large systems continued to be used after the distinction was made and despite guidance notes explicitly stating they are to be used only when components cannot be identified or not known.
- It is also increasingly difficult to quantify the improvement versus the aid received. Has enough progress been achieved for the amount of investment.

The analysis of the financial breakdown for the 48 countries in Sub-Saharan Africa reveals a series of findings considered root causes for the delay in the completion of the water and sanitation MDG. It demonstrates the poor funding practices of many nations who are working towards achieving the targets. A large number of countries allocated considerable sums to areas outside of water supply and sanitation or to areas with large success rates, despite little improvement where it matters. Other nations devote substantial funding to the water supply and sanitation category, but do not report improvements to access rates. This can be explained by the lag effect of progress made. Investment doesn't bring about immediate change, but rather requires time to take effect (investment in

infrastructure, expanding networks). Or is due to poor spending in the sector. The exploration also revealed that countries directed funds towards areas closer to being achieved, rather than attempting to close access gaps. This has been identified as a weakness and criticism of the MDGs. The target nature of the goals pushes nations to focus on areas already close to the target, rather than on areas most in need. A considerable number of countries report a disproportionate improvement to access to safe drinking water compared to access to adequate sanitation. This is mostly due to prioritising water supply, and therefore investing more funds to water sources. The main outcome from the examination of the data is the misalignment of the financing and the MDGs, and the resources and the motivation behind aid funding.

Chapter 7: Potential Needs Based Assessment framework for water and sanitation

7.1 Introduction

Based on the areas of concern highlighted in the previous chapters and the identification of the common parameters in the funding practices of the countries in Sub-Saharan Africa, a better understanding of the current system and its issues has been achieved. This allows for the proposal of a solution that addresses all the recognised gaps in the system and the development of a coherent frame that aims to reduce the water and sanitation needs of countries in the developing world.

7.2 Funding the aid sector

Humanitarian aid funding has more than doubled since 1975 and is estimated to exceed 18 billion USD per year (Development Initiatives, 2006). However this has not been reflected in the demand for aid, which continues to increase, or in access rates to both safe drinking water and adequate sanitation. This begs the question, where are the funds being spent and what for? With a rise in competing stresses, it has never been more important to minimise misuse and improve efficient resource allocation. Studies reveal that the geopolitical interest of donor countries, the presence of reputable international humanitarian organisations, and media coverage directly influence the amount of aid and where it is directed (Olsen et al., 2003, Smillie and Minear, 2003, Loewenberg, 2005). Donor behaviour plays an important role in shaping, not only the current situation, but likewise the financing system of aid. At present, the current practise consists of an assortment of policies and activities undertaken by individual governments (Smillie and Minear, 2003). These policies are heavily influenced by external factors and priorities outside the aid sector.

The purpose behind imparting aid funding is to provide assistance and support to populations, communities, and individuals that are in need. Based on this assertion, the underlying understanding is that all assistance is bestowed based on impartial, fair, and unbiased principles. It should also be proportionate to the recognised necessity, and independent from donor stipulations. However the reality is very different from the theory. It is widely acknowledged that aid in the water and sanitation sector is not allocated according to need, but rather donor priorities, as well as recipients levels of preparedness, influence funding flows (Bain et al., 2013). This is in agreement with findings and analyses of social sector aid that were found not to favour poorer countries (Baulch and Le, 2015). Aid action is largely hindered by inconsistent domestic and foreign policy, as well as by the effect of the media, and personal and institutional leadership (Smillie and Minear, 2003). Aid has been linked to historical ties, where nations feel a sense of responsibility towards previously colonised or mandated countries, and invest in said regions. This isn't limited to governments, but also officials. Some aid projects have been criticised for reflecting senior officials 'pet project', and less actual need (Bain et al., 2013).

Regional interests and geographical proximity also wield substantial influence over the allocation of funds. Countries band together to secure the stability and security of a region or to compensate for a lack of investment from farther nations. Another way that aid has echoed foreign interest and policy is its use as a bargaining chip to impose political will, as was the case with North Korea and the provision of US food aid (Smillie and Minear, 2003). While political concerns can expedite and help secure funding, e.g. stabilisation of the situation in East Timor, it can also deflect from resources and attention from those most in need. It is the primary contributor to the phenomenon of 'forgotten emergencies', where situations receive weak donor response because they are of little interest to anybody, and possess no other reason for action besides need. This causes them to be ignored in the increasing competitive environment of aid funding (Smillie and Minear, 2003).

Another creator of 'forgotten emergencies' is the media. Through its coverage or lack thereof, the media plays a role in bringing humanitarian situations to the forefront, and can be the difference between a generous and continued response and one that is significantly less so. Media coverage can initiate mass public support, as seen in Biafra in 1967 and Ethiopia in 1984, action initiated by Frederick Forsythe and Michael Buerk, respectively (Smillie and Minear, 2003). It was also made evident by the overwhelming generosity and solidarity displayed by the global community in the aftermath of the 2004 Tsunami (de Ville de Goyet and Moriniere, 2012). In the same way, the media can pressure and influence governments to act, it can be used to justify disproportionate spending in politically motivated areas. 'Humanitarian policy is neither self-starting nor self-correcting' (Smillie and Minear, 2003), leadership can play a formidable role in aid allocation. The influence of a strong head of state or minister can impact the quality and volume of resources allocated to relief efforts. This has been made evident by numerous cabinet members and ministers paying special attention to crises, e.g. David Andrews' visit to East Timor in 1999, or Clare Short's leadership in Rwanda and Sierra Leone (Smillie and Minear, 2003). In the absence of media attention and political pressures, the influence of leadership is bestowed upon officials within government aid agencies. They essentially become the bridge between political will and human needs, and protectors of aid policies and vision (Smillie and Minear, 2003).

The effectiveness of needs based assessments are similarly obstructed and compromised by unrequited pledges and late funding, donor earmarking, tying assistance to donor's nationals, NGO, and contractors, as well as political interests (Smillie and Minear, 2003). With all the aforementioned pressures, the allocation of resources is very much skewed and no longer reflects the required action.

While water and sanitation is included in emergency relief, this thesis focuses on the long term and non-emergency aspects of the water and sanitation sector. With limited resources, it is very important that all funds are effectively and efficiently used. Unlike the case of humanitarian aid for emergencies, aid projects for the provision of water and sanitation services have the benefit of time and forward planning in their decision-making. All humanitarian aid is time sensitive, but ODA or disaster related projects can stand to be more thorough in the application process. This extra time allows the conduction and inclusion of needs based assessments in any funding application.

Needs based assessment is the systematic analysis and evaluation of the current situation of affected populations with the aim to recommend and provide informed and appropriate responses (de Ville de Goyet and Moriniere, 2012). It is important to note that according to two studies conducted in Sweden on the use of needs assessments in aid funding decisions, however, needs assessments were not found to be used efficiently, or effectively (Olin and von Schreeb, 2014, von Schreeb et al., 2008). These studies concluded that the information available was too poor, and that it can be difficult to gain access to required areas and information in order to develop comprehensive needs assessments. Personal opinions and biases can also heavily influence the funding process (Olin and von Schreeb, 2014), and a lack of understanding or comprehensive agreed upon criteria to conduct needs assessments also hinders the application of needs assessments (von Schreeb et al., 2008).

Despite these stated difficulties, a later study suggests a positive move towards using needs based assessments in the application process for grants and funding (Olin and von Schreeb, 2014).

As previously mentioned, the funding process can be heavily influenced by personal opinions and biases and this is particularly exacerbated when applied to the aid sector and international governments. Aid financing is driven, not by humanitarian principles, but a subset of donor's domestic and foreign politics and policies, media coverage, and personal and institutional leadership. Therefore, donor behaviour can come with certain strings attached. Late funding or unrequited pledges affect the work of NGOs and relief agencies on the ground, often causing the abrupt termination of projects because of a lack of funds. Donor earmarking, tying assistance to donor's nationals, NGOs, and contractors also limit the where and how much relief is being provided.

High profile regions are often given aid to fund the same activities several times over. This would be beneficial if the money could be used elsewhere. But, due to, donor earmarking, funds are tied up for specific activities making it harder for agencies to provide universal services, leaving other crucial needs unmet. This problem is further extended by limiting assets to subsets of the population or for a limited number of contractors (Smillie and Minear, 2003). It becomes clear that, when given the freedom to allocate aid, too many pressures unrelated to the aid sector interfere with the funding process. The international community, and specifically political bodies, are not sound financial decision makers working in the best interests of the most vulnerable. There have also been calls for intervention projects to recognise the uniqueness of approaches necessary to optimise benefits from water and sanitation programs (Botting et al., 2010), and increase aid targeted at water and sanitation, as it can be an important tool for accelerating human development (Ndikumana and Pickbourn, 2017).

Needs based assessment has proven to be a useful and effective method to increase project success in many different fields of research. There has been an resurgence of studies demonstrating the benefits of maximising the use and distribution of minimal resources following a needs based approach in public health, medicine, and to varying degrees or success, in emergency aid funding. As demonstrated in the literature, many medical programs have found it fruitful to tailor further education

and training programs for staff according to identified gaps in required expertise (Boet et al., 2016, Shah et al., 2016, Sockalingam et al., 2015).

Other areas in the medical and public health fields benefiting from a needs based approach are the designation of patient treatment, and education. Patients were seen to respond well to treatment regimens attuned to their specific needs. Rheumatoid arthritis sufferers reported perceived relief from the disease when educated about disease progression and coping mechanisms relevant to their priorities (Ndosi and Adebajo, 2015). With custom-built psychoeducation programs, schizophrenic patients noted an improvement to quality of life, and familial relationships, as well as a reduction in the severity of relapse episodes (Kheirabadi et al., 2014). Patient centric programs based on needs assessments were stated in the literature to have improved patient care and treatment results. This is indicative of the potential for needs based assessments to extend its benefits to the non-emergency aid sector.

As the systematic analysis of the current situation with the aim to bring about appropriate change, needs based assessment has immense potential to improve the method by which aid projects for water and sanitation are conducted. Increasing access rates to adequate drinking water and appropriate sanitation can be achieved in a multitude of ways, eliminating the possibility of a 'one size fits all' solution. The adoption of a needs based approach to funding water and sanitation projects pushes the assessor to explore and understand the specific and unique situation of the community being assessed. This identifies the particular, present gaps, thereby determining and justifying the appropriate action needed. In general terms, applying a needs based assessment to allocating funding for water and sanitation projects identifies the most efficient and effective intervention to be taken, through analysing and understanding the problems and gaps in the area. This benefit makes a needs based approach an invaluable asset to aid funding bodies.

The universal adoption of this systematic approach will help guide decision making, facilitate the prioritisation of needs, as well as homogenise the funding process, making it an asset for all projects and funding agencies alike. This provides more transparency, and enlists mutual trust and confidence between funders and recipients (Smillie and Minear, 2003). With added trust and confidence, the overall aid enterprise benefits from greater efficiency and effectiveness.

One step contributing to transparency and standardisation is the calculation of cost/benefit. The concept of cost/benefit analysis is the systematic approach of identifying and estimating the strengths and weaknesses of an action that leads to the desired result. The benefits of proposed feat are summed and the costs associated are subtracted, providing a clear picture of the outcomes of the given situation (Misuraca, 2014). In the case of the aid sector, this is represented by the calculation and comparison of the cost and benefits of aid projects. Applied specifically to the water and sanitation sector, it would manifest itself as the total cost of a project and the projected increase in access rates to safe drinking water and adequate sanitation. With the previously mentioned exponential increase in ODA, this step provides added clarity and understanding of the necessary efforts to meet expected goals.

Cost/benefit calculations are useful for projects with relatively similar and standardised activities e.g. rural development needs, and should be included in the decision making process. But it should also be noted that there are vast differences in cost/benefit for projects that distribute goods compared with those aimed at local capacity building and infrastructure (von Schreeb et al., 2008). This is particularly evident when comparing plans to build and expand networks or treatment plants, to digging wells. One provides immediate, but temporary, short term, and local, benefit. While the other has the potential to last a lifetime and expand its reach further, albeit with a lag in tangible benefits. The struggle between short and long term, immediate or potential benefit, is nothing new in the water and sanitation sector, but when combined with the intricacies of the aid sector, it is only further amplified. The demands by donors for palpable and quick results, adds to an already very strained relationship with recipients (Smillie and Minear, 2003).

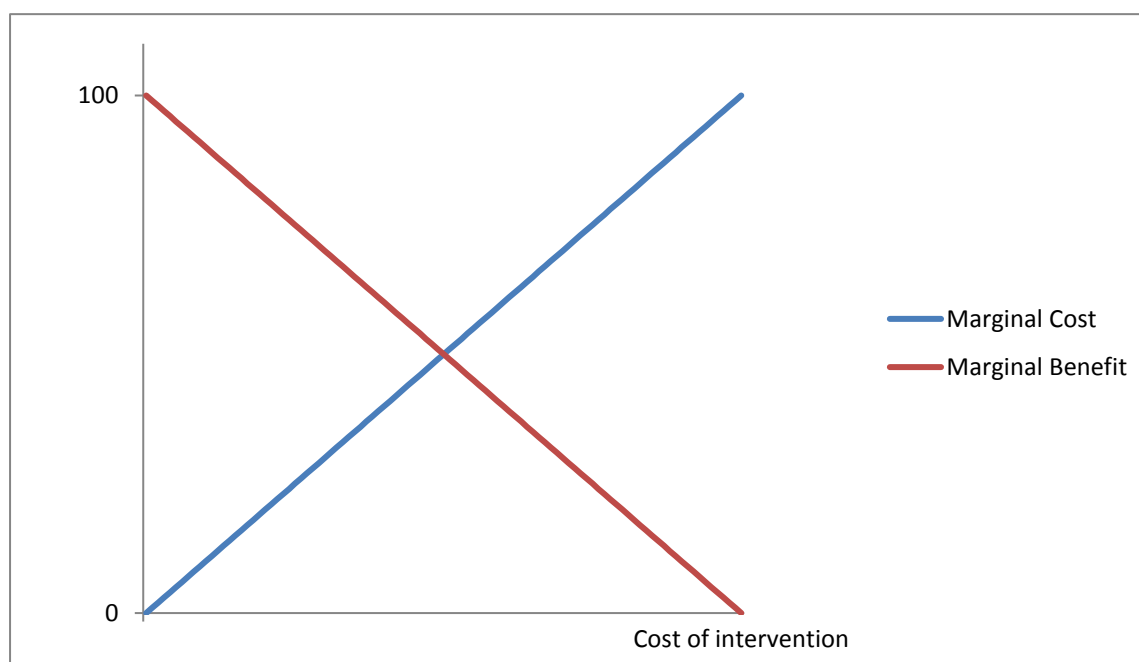


Figure 119: Marginal benefit vs. Marginal cost

7.3 Needs based assessment (NBA)

A needs assessment can be summed up as the gathering of information to bring about beneficial change (Stevens and Gillam, 1998). This can be elaborated to describe a needs based approach or assessment as the process of identifying the nature of a group's needs to define which type of intervention or assistance to provide (Englert et al., 2014). In the case of the water and sanitation sector, this would mean collecting and evaluating data on the available facilities and networks, reviewing access rates, and identifying the priority needs with the aim to bring about the most beneficial change, e.g. increased access rates. The practical purpose of a needs based assessment is the special allocation of resources to ensure the geographical equity of regions, districts, and localities, as well as social equalities (Stevens and Gillam, 1998). In other terms, it helps spread the allotment of resources to minimise regional and social inequality. This is an asset, particularly when considering urban and rural water and sanitation interventions. Assembling and compiling data in the water and sanitation sector offers the opportunity for community involvement, particularly in rural areas, where little information is known. Also, a needs based approach encourages cooperation between donors and recipients in determining and prioritising needs. This fits in well with the principles of shared decision-making, which encourages the success of projects by encouraging engagement and improving management towards shared decision-making, (Ndosi and Adebajo, 2015). By collecting information and input, both the prospects and hindrances of the situation are pinpointed, which is instrumental to the process. This allows the assessors to accurately manage risk, and exploit opportunities. As defined in the literature, the purpose of a needs based assessment is to bring about effective and beneficial change. The key to achieving such change is an understanding of the opportunities that may facilitate and the obstacles that may obstruct what is being attempted (Stevens and Gillam, 1998).

In more practical terms, a needs based assessment is the systematic method of reviewing issues facing a particular group, leading to agreed-upon priorities, and resource allocation that will improve the situation and reduce inequality (Ndosi and Adebajo, 2015). It can be seen as the evaluation and analysis of data to identify and determine the 'needs' of a subset to create targeted solutions to fulfil those 'needs'. This approach incorporates a comprehensive risk assessment, structures the assessment process, and provides a framework of feedback (Englert et al., 2014).

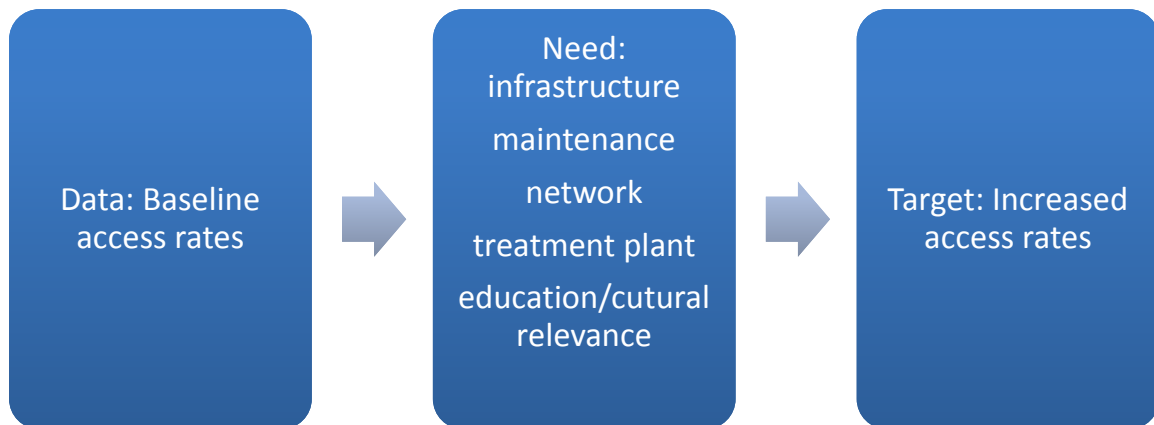


Figure 120: Needs based assessment in the water and sanitation sector

As previously discussed, needs assessment is an interactive process that may serve several different purposes. Most importantly, it helps develop a consensus among planners, managers, and recipients regarding priorities for service development (Stevens and Gillam, 1998). It can also, however, present complications during its application. Two issues arise when attempting to apply a needs assessment:

- The inability to agree on a formula to assess needs; the assessment and prioritisation of needs is inherently subjective (Midwinter, 2002), making the decision sensitive to outside influence. This can be evident when attempting to determine need related to policy. The normative standpoint of adjudging needs solicits questions about which needs are legitimate rather than a result of policy, and what indicators should be used to measure them (King and Eiser, 2016).
- The capacity of needs assessment to handle differences in priorities (King and Eiser, 2016). Some have expressed their doubts regarding whether a needs assessment can withstand divergences in priorities by different stakeholders relating to the same activity. An example of this was the exploration into applying a needs based assessment for governmental resource allocation in the UK. While all the countries had agreed on the needs, each one had prioritised them differently. This meant that application of the same assessment would yield different results depending on the prioritisation, and could not be applied to all nations (King and Eiser, 2016).

The main components of a needs assessment are:

- The determination of the baseline: what is already available and in existence
- The prevalence of the 'need': how widespread and extensive it is

- The effectiveness of interventions: how well can the 'need' be met (Stevens and Gillam, 1998).

But no matter the formulae, be it bottom-up or top-down, all needs based assessments require agreement about which needs indicators are to be used and how they may be weighted. This is viewed by many authors as being the most challenging part (King and Eiser, 2016). It is also essential to ensure that the needs assessment is not only effective, but efficient and cost-effective as well. This is achieved by properly understanding how a needs assessment is related to the rest of the planning and decision-making process (Stevens and Gillam, 1998).

The appropriateness and usefulness of a needs based approach can be evaluated following these criteria: (Stevens and Gillam, 1998)

- Is the need assessment about individuals, populations, or communities? This helps clarify the extent and intensity of the needs to be arbitrated.
- Are the needs assessed in the framework setting priorities among competing need? Is there a clear context of allocating scarce resources? These questions aim to determine whether the reason for a needs assessment is to identify needs or prioritise existing needs already recognised. This is important in guiding the direction of the appraisal.
- Is the needs assessment definitive or exploratory: is the objective to clarify what action should be taken or just to highlight problems without offering solutions? This step establishes the scope and aim of the assessment.
- Is the determination of priority needs based on expert knowledge or participatory methods? The collection and collation of data for a needs assessment can be carried out in various ways, e.g. from NGOs or government agencies. As can be the prioritisation of the acknowledged needs. Elucidating whether this has been done purely based on expertise or with the participation of the community helps to justify any proposed further action.

Answering the above questions clarifies and lays out the scope and purpose of the needs assessment. It forces assessors to agree and systematically outline the parameters before commencing the work, placing all participatory parties on the same page from the beginning.

7.4 Implementation of NBA for water and sanitation funding

For the purpose of this thesis:

- The determined baseline is the access percentage rate to safe drinking water and adequate sanitation set in 1990 by the United Nations and reflects the current state of affairs.
- The prevalence of the 'need' is widespread and encompasses entire populations without access to safe drinking water and adequate sanitation. While this is not a global study of the current state of affairs, it is established that any needs based assessment to be conducted would be either at a national or regional level. This makes any assessment expansive and prevalent.

- The effectiveness of interventions is the projected efficiency and effectiveness of the established and appropriate intervention for the specific population studied: the capacity of any action taken to increase access rates to both safe drinking water and adequate sanitation. Each potential plan will help to reach the target, but not with the same effectiveness or efficiency. This step serves to determine the best and most fitting action.

To gauge the utility and suitability of a needs based approach in the water and sanitation sector, the above posed criteria are answered below:

- The need assessment is about an entire population. It is to appraise the needs of a nation or region as a whole and includes all individuals living within its borders.
- The needs assessed will favour increasing access rates to both safe drinking water and adequate sanitation. It is identifying needs that will achieve the target. However, it could also prioritise the recognised needs when several possibilities are known.
- The needs assessment will be both exploratory to identify 'needs', and definitive to determine appropriate interventions. The aim of the aid sector is to provide assistance, e.g. propose interventions. To improve the effectiveness of the advised action, the requirements of recipients can be considered, e.g. needs. In the case of this thesis, both aspects are merged. The needs of the population are established to achieve better action. The role of the needs assessment will be to ascertain the needs, and propose apt interventions.
- The determination of priorities is primarily based on expert knowledge, but participatory approaches can be used where applicable to supplement information. Determining the perceived needs of a community is greatly helped by participatory approaches, such as community based assessments. This is particularly useful in areas where cultural sensitivities are prevalent.

Following the defined criteria, the potential value of a needs based assessment in the water and sanitation sector has been highlighted.

7.5 Benefits of using a needs based assessment

The main driver behind the necessity for needs based assessments is the potential benefits it offers. These benefits have been well documented in the literature, and made the methodology extremely useful and successful in several different fields of study. It has also shown promise when applied to funding emergency relief, as seen in several reports and studies (Smillie and Minear, 2003, de Ville de Goyet and Moriniere, 2012, von Schreeb et al., 2008, Gerdin et al., 2014), and it is believed that this capacity can extend to non-emergency aid.

When defining a needs based assessment, three main benefits of the approach are distinguished:

- The systematic review of issues facing a particular group. Determining the baseline presents the opportunity to better understand the problems at hand, and pinpoint prospects and obstacles.

- Leading to agreed-upon priorities. Bringing consensus among all participants and decision makers, which increases the success rates of projects.
- Resource allocation that will improve the situation and reduce inequality (Ndosi and Adebajo, 2015). Levelling the playing field, ensuring equity of assets distribution, and leading to better change.

A central component of needs based assessments is the identification of a 'need' to determine and define the type of intervention necessary (Englert et al., 2014). This is a very important step, particularly when considering aid. In a sector driven by results and perceived change, enabling donors and recipients to work together to concede opportunities for assistance is key. Both parties are satisfied with such agreements, whereby all sides achieve their aim of improving areas in actual need. This links to previous discussions concerning the type of intervention taken, e.g. treatment plants vs. wells. Well informed contributors see the benefits of funding requested and necessary projects versus funding solutions to non-existent problems. By conducting a needs based assessment, problems and deficiencies are exposed, thereby facilitating the development of targeted solutions. This is an inherent benefit of the process, highlighting both its definitive and exploratory nature. It also clearly defines the current status by establishing a baseline against which improvement and change is measured (Stevens and Gillam, 1998). The establishment of a baseline emphasises what is important and aids in prioritising issues, as well as, offering a long term target to reach. This encourages much needed action and commitment to meet the set goal.

One of the most important functions of a needs based assessment is its help in developing unanimity among planners, managers, and recipients concerning priorities and needs. In the aid sector, where each party has its own priorities and all action is necessary, this approach brings consensus and clarity on what steps should be taken and when. This facilitates the application of projects and increases efficiency and effectiveness. All needs based assessments require accord regarding the indicators to be used and how they are weighted. This is a crucial component and a necessity for an efficacious assessment, as well as a successful intervention.

Its practical purpose is to improve the allocation of resources to reduce 'needs' and ensure equity and equalities (Stevens and Gillam, 1998). This is a major benefit with limited and dwindling resources available, which is particularly evident in the aid sector for water and sanitation. As aforementioned, the aid sector is extremely competitive with all relief a priority, even more so in the water and sanitation sector, where water needs compete with sanitation, as well as all other areas.

Another indirect benefit of a needs based approach is its capacity to increase the likelihood of engagement, shared-decision making, and improved management (Ndosi and Adebajo, 2015). This can be a key asset for water and sanitation projects. Local culture and sensitivity play a big part in the success of water and sanitation projects, particularly in rural and isolated regions. As seen in the literature, many interventions failed or stagnated due to a lack of local capacity and awareness. With the increased possibility of public engagement and participation extended by a needs based assessment, such oversights can be avoided.

Above all, the most significant benefit of a needs based assessment or approach is that, by defining a need, the capacity to benefit is identified. The “capacity to benefit” being the amount of change that is necessary or that can be made in order to improve on the current situation.

In the case of aid, needs based approach/assessment has been identified as a principle of good humanitarian donorship. The principles on good humanitarian donorship (GHD 2003), outlined during an international meeting of major donor agencies, state that the allocation of funds should be in proportion to needs and on the basis of needs assessments (von Schreeb et al., 2008). With the water and sanitation sector falling well into this category, both as emergency and non-emergency relief components, the application of needs based assessments is made even more necessary. The theoretically sound model of a needs assessment is the basis for targeted intervention that will effectively decrease the ‘need’ (Englert et al., 2014), the ultimate goal of any aid mission. This calls for the inclusion of needs based assessment reports in aid applications (Olin and von Schreeb, 2014).

As delineated, the adoption of a needs based approach organises and outlines the decision-making process. Its completion and provision of data regarding affected population size, as well as character and size of vital needs are the primary steps in said process for fund allocation (Bradt and Drummond, 2003, Guha-Sapir, 1991, Redmond, 2005). Implementing a needs based assessment in the sector has the potential to increase the effectiveness and efficiency of intervention projects, which should be a priority for aid organisations. While needs assessment data and needs based decision making are critical as an operational tool for implementing agencies, its role needs clarification for donor agencies (von Schreeb et al., 2008).

7.6 Definition of a need

A need in a needs based approach or assessment can be defined as ‘a capacity to benefit’. This definition leads to four points of clarification of benefit and need (Stevens and Gillam, 1998):

- A population’s ability to benefit equates the aggregate of individual’s ability to benefit,
- Ability to benefit implies a potential to benefit, which on average is effective, and does not guarantee a positive outcome
- Benefit is not limited to direct change and extends to indirect and collateral change
- Benefit is not just action but includes pre-emptive and continuous intervention

Need can also be defined as the difference between the current state of affairs and the targeted improvement or state. In this definition, need refers to how much improvement or change needs to be achieved to arrive to the target or required standard (Eschenfelder, 2010). This is the definition that will be used for the purpose of this thesis.

Need is identified as the gap between the current state or baseline (current access percentage rates to safe drinking water and adequate sanitation), and the target or goal (target access percentage rates to safe drinking water and adequate sanitation). This is illustrated in figure 121.

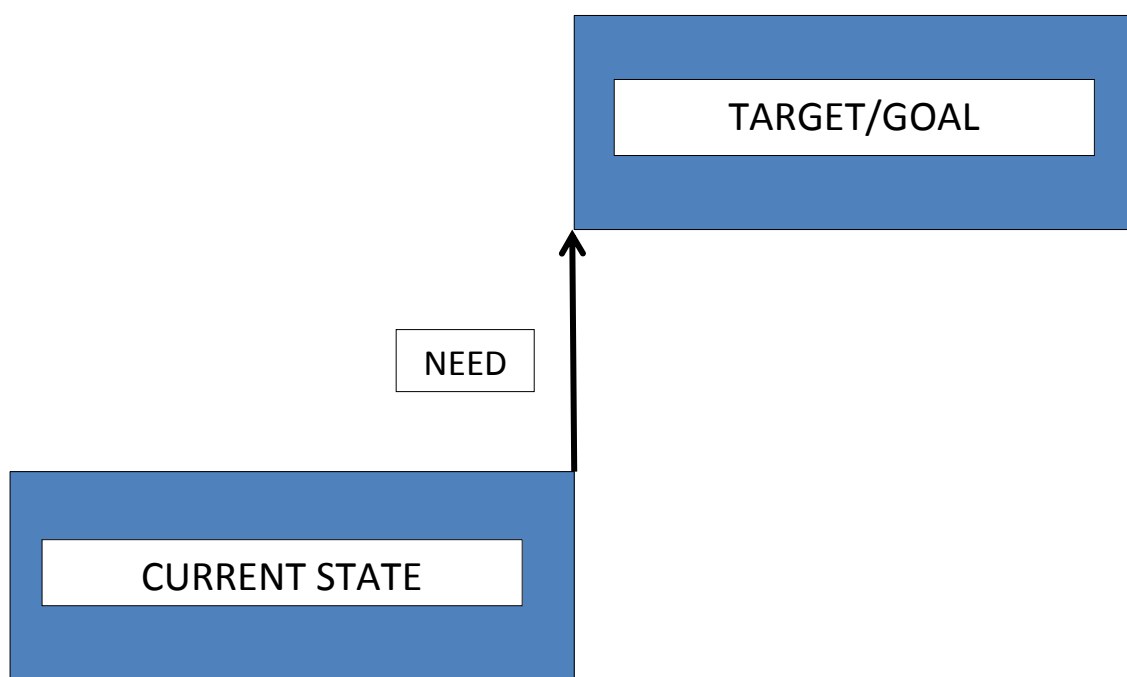


Figure 121: Definition of 'need'

7.7 The determination and calculation of 'need'

As previously discussed, the definition and determination of a 'need' is somewhat ambiguous. Therefore defining the term remains a central problem for the aid sector as a whole (Olin and von Schreeb, 2014). Nonetheless, measured needs only take on meaning when referencing an existing baseline; it is necessary to know not only what to change to, but also what is being changed from. The decision of what to measure determines the change to be made (Stevens and Gillam, 1998).

There are several ways to determine a baseline, all of which aim to obtain the required information to summarise existing levels as succinctly as possible.

- The 'corporate approach' to needs determination involves the systematic collection of knowledge and opinions. This can blur the distinction between need and demand, between vested interest and science. It also allows sensitivity to local circumstances, and local experience and involvement, which makes needs assessment easier to defend (Stevens and Gillam, 1998). While sensitivity to local circumstances, experiences and involvement are important in the water and sanitation aid sector, this method allows for the influence of outside factors, e.g. domestic and foreign policy. Such pressures are not ideal when ensuring equity.
- The 'comparative approach' contrasts services received in one area with those given in other areas. This approach is useful if the optimum service to be provided is not known. If the levels of service differ significantly, it gives cause to investigate. Sensitive interpretation and

comparative processes are required for this method. Outcome indicators may help identify deficiencies in the provision of services (Stevens and Gillam, 1998). While the advantages of this approach fit in with the priorities of the water and sanitation aid sector, its comparative nature is not in line with the goal of increasing access rates. There is no uniform solution to all water and sanitation problems, discounting the potential for an optimum resolution. However a sensitive interpretation and the identification of deficiencies are necessary.

- The 'epidemiological and cost effectiveness approach' is based on understanding what is effective and for whom. This is done following critical measures: (Stevens and Gillam, 1998)
 - A clear and concise statement of the population to be assessed
 - Identification of subsets of the population with particular needs
 - Determination of the incidence and prevalence of the subsets
 - Set the baseline
 - Identification of the effectiveness and cost effectiveness of interventions (generally the most important step)
 - Set out a model of care that allocates relative priorities (generally the most challenging step)

This methodology conforms best with the objective of aid in the water and sanitation sector. However, it is not a perfect fit.

The ideal tactic to determine the baseline would be to combine the strengths of all three described methods. However this proves to be challenging. The establishment of a baseline that best describes the current situation in the water and sanitation sector requires:

- The collection of data and information about access rates in the concerned area. The epidemiological and cost effective, and corporate approach. In most regions, access rates are calculated based on information collected by experts or local authorities.
- The evaluation and analysis of current water and sanitation facilities. The epidemiological and cost effective, and corporate approach. The availability of facilities is not always enough to guarantee access. As reported in the literature, local culture and sensitivity can hinder the uptake of facilities and activities.
- The identification of populations with access to one or none of the facilities. The epidemiological and cost effective, and comparative approach. Determining the access of populations relies heavily on collected data and information provided by local authorities, but can also be aided by contrasting access rates in similar areas. This allows pinpointing of shortages in the uptake of projects or funding.

Ascertaining the baseline for water and sanitation needs assessments is a complex and sensitive practice. It depends profoundly on data collected in the field by experts or local agencies and governments. It is also based on a mutual trust between local communities and said experts. Access rates can be over-exaggerated or underestimated depending on the honesty and reliability of the data

collected. Despite its sensitivity, it is an essential stage in the process and justifies the necessity of a needs assessment, and eventually intervention.

7.8 Current applications of a needs based approach in the field

The adoption of needs based approaches has become increasingly popular in different research fields attempting to maximise the use of minimal resources. A review of the literature finds a plethora of papers recognising the benefits and outcomes of implementing a needs based assessment in various disciplines. The medical field has seen a surge in the number of studies outlining the adaptation of needs focused approaches to the different facets of the field. Some have reported that catering treatment methods to the specific needs of patients has proven to improve efficiency and effectiveness of results.

One such example tailors the psychoeducation of patients with schizophrenia to their specific needs. It was shown that modifying their treatment to meet their needs improved their quality of life, their relationships with family, and decreased the severity of relapse episodes (Kheirabadi et al., 2014). While all patients were given the same diagnosis, customising their therapy to tackle their specific issues led to better results. This can be extrapolated to the water and sanitation area. Entire populations lack access to safe drinking water and/or adequate sanitation, yet the severity differs from region to region. The problem is the same, but the solutions are not necessarily identical.

Another such success is echoed in a study done of people living with rheumatoid arthritis where education was found to be essential. Patient education is extremely important as it empowers suffers to cope and adapt to the effects of the disease and treatment options. Research has recognised the benefits of education, such as improved disease knowledge and self-efficacy. However, it is not a one-size fits all treatment protocol. Depending on the stage of disease progression or treatment process, patients identify different needs and priorities. This is where a patient centric education program is necessary and beneficial (Ndosi and Adebajo, 2015).

The same can be said for communities. When approached about why access to adequate sanitation is important, a variety of reasons and priority levels were reported. They also brought up issues of cultural importance that have the potential to impede or enhance the success of projects. The identification of these perspectives on the same need is an opportunity to heighten the effectiveness of interventions.

Needs assessment has also been used to determine the education and training of healthcare professionals (Shah et al., 2016, Boet et al., 2016, Sockalingam et al., 2015), and the workforce gap (Bruckner et al., 2011). It has been utilised to identify gaps and provide modes to fill them. This is an important strength to possess, particularly in areas where access rates to water and adequate sanitation are high. The adoption of a needs assessment isolates shortcomings in the system and provides prospects to rectify them.

With the rise of healthcare expenditure, limited resource availability, and the increasing expectations of the public, the assessment of patients' needs has become an integral part of healthcare research. Public health research has also implemented needs assessment as a systematic method for reviewing health issues facing a population. With studies conducted on diabetes and post-partum depression, rheumatoid arthritis, physical activity and fitness, all leading to the identification of agreed priorities and resource allocation to improve health and reduce inequality (Hooper et al., 2002, Gates et al., 2016, Ndosi and Adebajo, 2015, Friedman et al., 2016, Green et al., 2014, Power et al., 2013, Gasana et al., 2016). It has been proven to enhance patients' engagement, increase decision-making, and improve patient self-management (Ndosi and Adebajo, 2015). The aid sector suffers from the same scarcity of resources and increased expectations. Many donors emphasise results when pledging funding. This extra pressure to deliver only adds to the requisite for clear and established adequacies.

Attempts have been made to implement needs based assessments in funding aid with varying levels of success. The most notable current endeavour in aid, tackled the international decision making process for disaster and emergency relief. While there have been calls for better inclusion of needs assessments in the decision making process for emergency relief, many limitations have been found. The urgent nature of emergency aid and necessity for immediate action are the main obstacles to the implementation of needs assessments (de Ville de Goyet and Moriniere, 2012). In the case of the 2004 tsunami that devastated countries in South East Asia, the impact and desolation of the disaster shocked the world and called for immediate intervention. Many aid agencies, including the United Nations and Red Cross, swung into action and later produced needs assessment justifying their actions. Despite the fact that needs assessments are part of the GHD and Code of Conduct of the Red Cross, they were either conducted in retrospect or did not influence decision making in the rescue efforts. This is due to the urgency of the situations, organisations could not wait for assessments to be produced before taking action (de Ville de Goyet and Moriniere, 2012). Principle 2 of the Code of Conduct of the Red Cross states: 'Aid priorities are calculated on the basis of need alone. Wherever possible, we will base the provision of relief aid upon a thorough assessment of the needs of the disaster victims and the local capacities already in place to meet those needs' (ICRC, 2012). This would not be the case for non-emergency water and sanitation projects. Without the sense of urgency and need for pressing action, it is hypothesised that similar benefits such as those previously mentioned, could be seen in the aid sector.

7.9 Lack of use in the aid sector

Aid to the water and sanitation sector has been decreasing over the years, in comparison with aid for population services, health, civil societies, and humanitarian aid. This trend has been evident since 1980. It averages around 5% of the total aid directed to sub-Saharan Africa from 1990 to 2010 (Ndikumana and Pickbourn, 2017, Botting et al., 2010, Thiele et al., 2007, Bain et al., 2013, Salami et al., 2014). Thiele found that the proportion of aid designated for water and sanitation dropped from 4.9% to 3.9% for water, and 1.1% to 0.8% for sanitation from 2002 to 2004 (Thiele et al., 2007,

Botting et al., 2010). While a needs based approach is widely used in other fields, it remains seldom present in the decision making process of aid fund allocation. To date, a limited application of needs based assessments have been documented in the literature. Among those, many discuss fluctuating degrees of success. Many reasons for this are postulated. De Ville de Goyet stipulated in a study on the use of needs assessments following the 2004 tsunami, that this could be due to the lack of resources and know-how of humanitarian agencies to conduct needs assessments in the field. It suggests a gap between the conceptual endeavours of experts in headquarters and the reality on the ground (de Ville de Goyet and Moriniere, 2012).

As previously mentioned, needs based assessments in the aid sector, and particularly with regards to water and sanitation, rely heavily on information and data collected by local organisations or humanitarian agencies. If De Ville de Goyet is correct in his explanation of a lack of know-how, the determination of a baseline would be compromised and this would essentially put an end to the assessment. It is very plausible that his conjecture is true. With the exception of a few training grants, NGOs are rarely given funding to increase capacity or contextual awareness (Smillie and Minear, 2003). This should be taken into consideration when investigating. A simple solution, local capacity building, can remedy this issue; with appropriate training, data consolidation would be simplified, with the added benefit of having locally trained personnel capable of passing on their knowledge. This would be a onetime investment of resources to educate a lifetime of local assets.

Although the advantages of the approach have been greatly highlighted, the inherent obstacles in determining and agreeing on indicators specific to the aid sector may have caused a lag in its application. The difficulty lies in finding factors that reflect necessities and their interpretation. The crucial first step in moving towards realistic needs-based funding in the aid sector, is the determination, specification, and acceptance of defined indicators that capture human needs, followed by the establishment of a donor-led framework interpreting the severity of the indicators (Olin and von Schreeb, 2014). Whilst there have been attempts at adopting needs assessments, it is fundamental that the parameters used in the assessment and their interpretation coincide with both donors and recipients. The development of distinct frameworks for fund allocation and distribution based on needs assessment, along with clear definitions, measurements and interpretations of needs, are critical to improving the allocation of funds based on needs assessment data (Olin and von Schreeb, 2014). This requires consensus, cooperation, and commitment by the international community. The complications of a needs based approach may explain and be the cause of a scarcity in the use of needs assessments in the aid sector. However, as outlined throughout, the benefits of the approach outweigh any potential impediment. It is a missed opportunity when considering the advantages of the approach in the aid sector.

7.10 Drawbacks of the approach

While the previous sections have set out to define and outline the benefits of a needs based approach, it is also important to acknowledge the weaknesses of the system. As with any other methodology, needs based approach has its critics, drawbacks, and difficulties.

Barriers to the method can be isolated at every stage of the process beginning with establishing a baseline. As previously stated, this is profoundly reliant on facts and figures provided, by local or regional authorities in the aid sector. It has been reported that a lack of information and data to conduct assessments is a major issue. Salami et al. (2014) identified inadequate capacity, poor-quality data, poor resources, and weak financial and technical skills, as main barriers to the success of any intervention in the water and sanitation sector (Salami et al., 2014). Without cooperation and understanding from those responsible and from populations, gathering information is extremely difficult and in some cases impossible (Olin and von Schreeb, 2014). Nevertheless this can be combatted with increased trust, understanding, and cooperation between assessors and informants.

The next stage is the determination of 'need'. The inability to agree on the definition and identification of a need is a key complication. The analysis and assessment of needs is inherently subjective, leading to conflicting views (Midwinter, 2002). It is extremely important to have a consensus when recognising necessities and the extent to which they affect change. As stated, it is necessary to understand what to change, as well as what is being changed from.

Once needs have been agreed, their prioritisation is the following sources of conflict. Many contradictory factors influence this part of the decision-making process. Domestic and foreign policy, the media, and personal agendas have documented impacts on prioritisation of needs (Smillie and Minear, 2003). With the specification of defined indicators and the establishment of a framework interpreting their severity by the international community, any conflict of interest is bypassed.

Another point of contention, particularly in the aid sector, lies with the party responsible for deciding the needs of a population. Will this be determined by expertise or through community engagement, or both? As discussed earlier, a combination of expert knowledge and community involvement is ideal to increase the success rates of projects. As each intervention fits in with the larger community; the local culture, as well as, the appropriate action need to be taken into consideration.

The implementation of a needs based assessment can also be challenging. A lack of knowledge and understanding in how to carry out an assessment in the field or simply a lack of man-power, are the main hindrances (de Ville de Goyet and Moriniere, 2012, Salami et al., 2014). This is easily remedied by an investment in local capacity building. While not relevant for this thesis, it is important to note that increased urgency for action and shortage of time in emergency relief situations does not permit the performance of a needs based assessment. Despite its limitations, a needs based approach is still a viable method of equitable resource allocation.

7.11 Barriers to the implementation of a NBA in the ODA sector for water and sanitation in Sub-Saharan Africa

The previous sections of this chapter have defined and discussed the benefits and drawbacks of implementing a NBA to the aid sector for water and sanitation. The socio-political, economic, cultural, and geographic factors of the region were not considered. However, as the literature indicates, these

aspects greatly influence both aid allocation and effectiveness in expanding water and sanitation services (Botting et al., 2010, Gopalan and Rajan, 2016). Multiple considerations are recognised to influence donor priorities. A survey of external support agencies revealed that the majority cited the relevance and significance of contributions, and an established in-country presence, as being key factors in the decision making process (WHO and UN-Water, 2012). This suggests that, in general, larger countries are less likely to receive substantial amounts of aid, as donors view their contributions being lost in the vast problem. Bain et al. (2013) substantiated this supposition in their study of the role of aid in universal access to drinking water. The aid data collected revealed that 20 countries with populations of less than 1 million in 2000, received 1.1% of ODA from 2000 to 2010, despite representing less than 0.2% of unserved populations. The media can play a part in combatting this fear. Through its coverage, the media brings the need for aid in regions to the forefront (Smillie and Minear, 2003). It also found that having received high levels of aid with successful investment increases the chances of obtaining high levels of aid in the following years (Bain et al., 2013).

Many studies on the allocation of aid funding have made evident that geographical interests of donor countries play an important part in funding allocation. Aid action is largely hindered by inconsistent domestic and foreign policy, and personal and institutional leadership (Smillie and Minear, 2003). Aid has been linked to historical ties, where nations feel a sense of responsibility towards previously colonised or mandated countries, and invest in said regions. This isn't limited to governments, but also officials. Some aid projects have been criticised for reflecting senior officials' 'pet project', and less actual need (Bain et al., 2013).

Regional interests and geographical proximity also wield substantial influence over the allocation of funds. Countries band together to secure the stability and security of a region or to compensate for a lack of investment from farther nations. Another way that aid has echoed foreign interest and policy is its use as a bargaining chip to impose political will (Smillie and Minear, 2003). Sub-Saharan Africa is particularly vulnerable to this influence. While political concerns can expedite and help secure funding, it can also deflect from resources and attention from those most in need. It is the primary contributor to the phenomenon of 'forgotten emergencies', where situations receive weak donor response because they are of little interest to anybody, and possess no other reason for action besides need. This causes them to be ignored in the increasingly competitive environment of aid funding (Smillie and Minear, 2003). Not only foreign policy, but also leadership can play a formidable role in aid allocation. The influence of a strong head of state or minister can impact the quality and volume of resources allocated to efforts. This has been made evident by numerous cabinet members and ministers paying special attention to crises, e.g. David Andrews' visit to East Timor in 1999, or Clare Short's leadership in Rwanda and Sierra Leone (Smillie and Minear, 2003).

The effectiveness of needs based assessments are similarly obstructed and compromised by unrequited pledges and late funding, donor earmarking, tying assistance to donor's nationals, NGO, and contractors, as well as political interests (Smillie and Minear, 2003). With all the aforementioned pressures, the allocation of resources is very much skewed and no longer reflects the required action.

Other factors influencing the effectiveness of aid in improving access are the stability and security of nations, cultural similarities between donors and recipients, and the true cost of interventions in the region. Countries that experience conflict and periods of instability, report lower increases or even regressions in access (Salami et al., 2014), and some, with international presence, also receive larger per capita disbursements (Bain et al., 2013). This can be explained by the media coverage associated with the conflict, publicising aid effort by nations, and the presence of donor country organisations and personnel on the ground. Cultural similarities between donor nations and recipients, also contributed to higher levels of funding. a common official language, and religious affiliation were shown to be important determinants for aid allocation (Bain et al., 2013). Studies have attempted to determine the cost of water infrastructure to build and maintain. This comprises the capital expenditure of building new facilities and the rehabilitation of existing infrastructure, the operations and maintenance, and programme costs (Bain et al., 2013, Hutton and Varughese, 2016). The identified interventions include piped supply with household connection, boreholes, and standpipes. Piped supply was determined to be the most expensive, accounting for 3 to 4 times the per capita cost of other improved sources, followed by boreholes, at around half of the capital cost. There are large variations between regions of per capita costs (Bain et al., 2013).The World Bank calculated the estimated capital costs of extending water, sanitation, and hygiene services in the different countries to achieve universal access by 2030. This revealed discrepancies on national levels, as well as sub-national levels. As an example, the capital cost per capita for a pipe on-plot in urban Angola is 216.3 USD, compared to 60.9 USD in Benin, and 546.8 USD in Djibouti. The rural cost in the same countries are 398.8 USD, 17.8 USD, and 121.6 USD respectively (Hutton and Varughese, 2016). Capital costs for sanitation also vary greatly across nations. Urban sewerage with treatment in Gabon is 898.3 USD/capita, with 654.7 USD/capita for piped water. Rural sanitation is 1034 USD/capita accompanied by 191.9 USD/capita for water supply. In Mauritania, urban capital costs are 516.6 USD/capita, and rural are 526.7 USD/capita. With such variations across the region, the cost-benefit and efficiency considerations involved with aid funding, may clash with pro-equity and moral obligations related to human rights to access to safe drinking water and adequate sanitation (Bain et al., 2013). The study also covered the capital cost for the provision of basic water, sanitation, and hygiene services. These costs are more reasonable but still differ through the regions and nations. Basic water supply in Zimbabwe varies from 6.1 USD/capita to 63.8 USD/capita, while sanitation ranges from 6.8 USD/capita to 68.8USD/capita. In South Africa, water supply spans from 44.6 USD/capita to 186.1USD/capita, and sanitation extends from 90.6USD/capita to 201.1USD/capita. While in Mauritius, the range is larger, with water supply between 32 USD/capita and 256.1 USD/capita, and sanitation 26.9 USD/capita and 469.6 USD/capita (Hutton and Varughese, 2016). In a region plagued by a history of war, years of colonialism and neglect, the exploitation of human and natural resources, and high levels of corruption, and the current political climate globally, the application of a NBA can be challenging.

There is consensus that the levels of ODA available for the sector and in the region are only a small fraction of the total necessary to significantly increase access (Salami et al., 2014, Botting et al., 2010). However, a recent study by the World Bank has stated that the current levels of ODA 'can

achieve universal basic services for drinking water, sanitation, and hygiene by 2030, provided resources are targeted to the needs' (Hutton and Varughese, 2016). Despite the obstacles to applying a NBA in the aid sector for water and sanitation in sub-Saharan Africa, it best maximises the effectiveness of the minimal resources available. It also includes the participation and involvement of targeted communities throughout the decision making process, as issue identified by Sullivan and Stampini (2011) in their review of stakeholders viewpoints (Sullivan and Stampini, 2011). The many benefits of a NBA combat the concerns highlighted in the literature, such as lack of skills, transparency, community involvement, monitoring and maintenance, and weak technical capacities.

7.12 Conclusion

Based on the areas of concern highlighted in the previous chapters and the identification of the common parameters in the funding practices of the countries in Sub-Saharan Africa, a better understanding of the current system and its issues has been achieved. This allows for the proposal of a solution that addresses all the recognised gaps in the system and the development of a coherent frame that aims to reduce the water and sanitation needs of countries in the developing world. Needs based approach (NBA) is suggested as a resolution as it answers all the acknowledged points of failures. A NBA is the systematic review of information gathered on an issue facing a particular group, leading to the determination of priorities and the allocation of resources accordingly. This is done to bring about beneficial change. The practical purpose of a NBA is the special allocation of resources to ensure the geographical equity of regions, districts, and localities, as well as social equalities.

The application of needs based assessments in the water and sanitation sector has the potential to greatly improve the effectiveness and efficiency of intervention projects. It remains a constructive and practical system for the impartial allocation of resources. It instils trust and confidence in donors and recipients, and offers transparency to the funding process. These are all particularly important attributes for the water and sanitation aid sector.

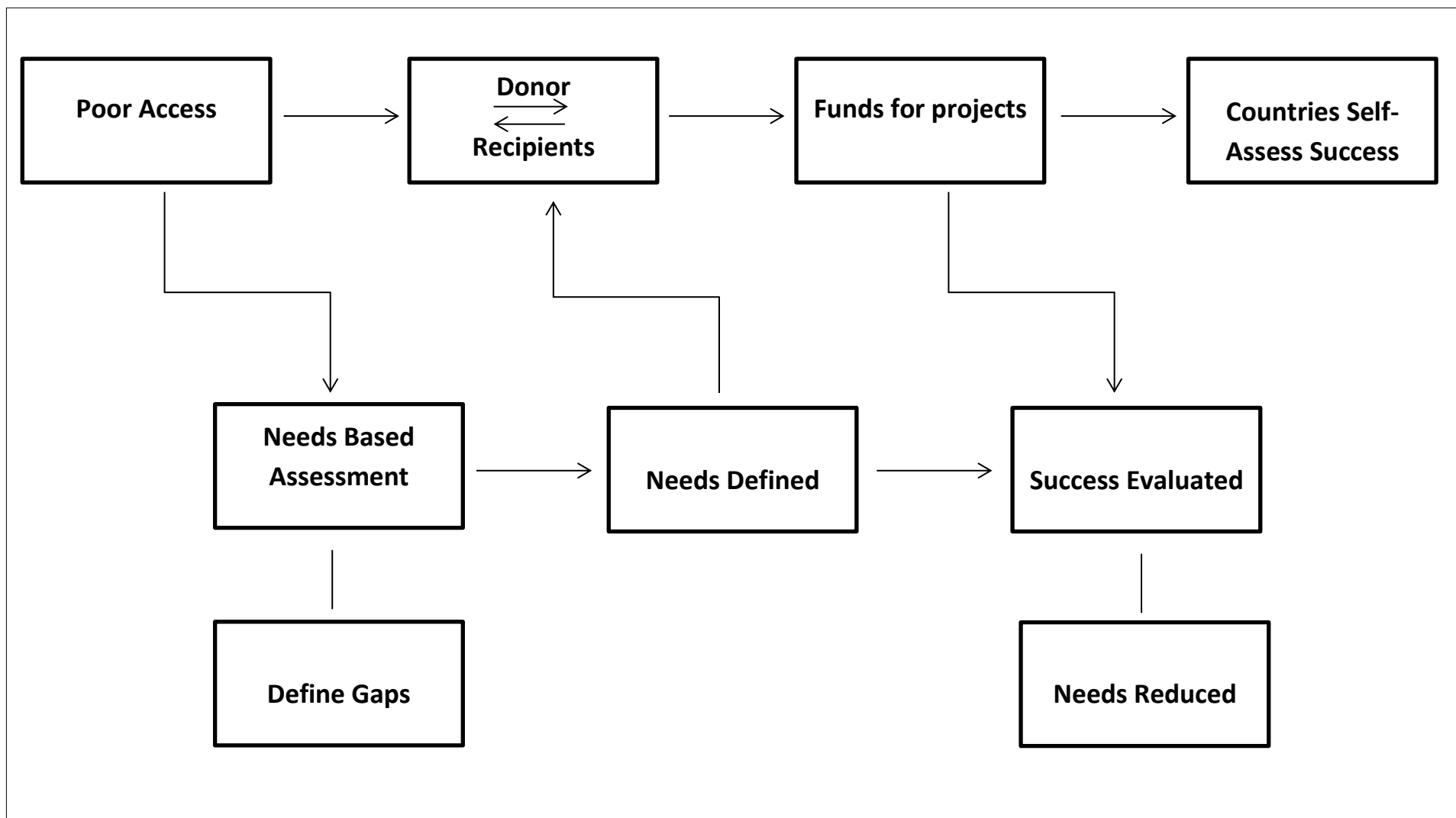


Figure 122: Comparison of funding pathways: the current funding process and new systems based approach

Chapter 8: Discussion

8.1 Introduction

This thesis aimed to evaluate the role of ODA in the delivery of water and sanitation related MDGs from a systems perspective, in order to deliver a more coherent framework that aims to reduce developing countries' water and sanitation needs. To achieve this, an assessment of the delivery of water and sanitation related MDGs was conducted and the main causes of concern were identified. From these, funding was isolated for further exploration, as it underpins and influences the other issues. The role and extent to which funding drives the delay in the completion of the water and sanitation MDGs was investigated on a regional level from a systems perspective, looking at the funding mechanisms as a whole. A set of hypotheses accounting for the hindrance of the MDG was determined. To test said hypothesis, the part and degree to which funding mechanisms drive the delay in completing the water and sanitation MDG on a national scale was explored using the countries in Sub-Saharan Africa as a case study. The evaluation pinpointed a series of findings recognized as root causes for the lag in the achievement of the water and sanitation MDG. Once the root causes and main areas of concern were identified and the current system was understood, a solution that answers the issues was proposed and a coherent framework that aims to reduce developing countries' water and sanitation needs was developed. Based on better funding practices, a Needs Based Approach was recognized as a resolution that addresses all the problems.

The access rates in this thesis represent the percentage of the population with access to safe drinking water and/or adequate sanitation. They were used as indicators to evaluate the progress made towards achieving target 7.C.

In this thesis, the term baseline refers to the original proportion of the population with access to an improved water source and an improved sanitation facility. It is described in terms of a percentage of the population with reported access to safe drinking water and adequate sanitation in the particular year referenced. With the exception of the calculation of the MDG targets, the proportion used to establish the baseline was the percent access rate in 2007. For the calculation of the MDG targets, the reported percent access rate in 2000 was used to determine a baseline, as it was the most complete relevant dataset available.

The desired state, as applied in this thesis, signifies the target access rate calculated for a region or individual country. It is the percentage of the population with access to safe drinking water and sanitation required to complete target 7.C of MDG 7. The formulas used to calculate the target are:

$$\text{EXPANSION}_i = 0.5 * (100 - p_i)$$

where p_i is the estimated proportion of the population with access to water or sanitation in 2000 and EXPANSION_i is the calculated percentage increase

required to halve the population without access to safe drinking water and adequate sanitation.

$MDG_{target_i} = ACCESS2000_i + EXPANSION_i$ where $ACCESS2000$ is the proportion of the population with access to water or sanitation in 2000.

The term need is used to describe the amount of improvement necessary to reach the desired state, the target here. In this thesis, it is represented by a percentage calculated by subtracting the baseline, the access rate in 2007, from the target percentage:

$$NEED = TARGET - BASELINE \text{ (access in 2007)}$$

8.2 Identification of the main causes for concern in the delivery of MDG 7

A better understanding of the current frameworks and mechanism of financing the achievement of target 7.C of MDG 7 was accomplished through the assessment of the delivery of water and sanitation related MDGs and the identification of the main causes of concern.

The MDGs are a series of 8 time-bound goals identified and adopted by world leaders at the Millennium Summit in 2000. They represent the most important global issues determined by the international community in the fight to reduce extreme poverty. The MDGs cover a wide range of topics including environmental sustainability. MDG 7, to ensure environmental sustainability, tackles 4 environmental issues, one of which being access to safe drinking water and adequate sanitation. Target 7.C states to 'halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation' (UN, 2015). The progress made towards the completion of target 7.C was measured using 2 indicators set by the IAEG: (1) the proportion of population with access to an improved water source, and (2) the proportion of population with access to an improved sanitation facility.

This thesis focused on target 7.C of MDG 7 as it has a far-reaching influence on global health and is considered a prerequisite to the success of other MDGs. Access to safe drinking water and adequate sanitation has a ripple effect on areas such as health, education, and has been linked to increased development, a decrease in the burden of disease, malnutrition, and improved maternal health. Water-related disease are the most common form of illness affecting the poor in the developing world, with an estimated annual mortality rate of 2.2 million in 2000. The majority of recorded deaths from water and hygiene related illnesses are children under the age of 5. Unsafe sanitation, water, and hygiene cause almost 90% of the diarrhoeal burden of disease (Fewtrell et al., 2005). Ensuring access to safe drinking water and adequate sanitation underpins several development goals included in the MDGs, and indirectly protects vulnerable populations from poverty and disease.

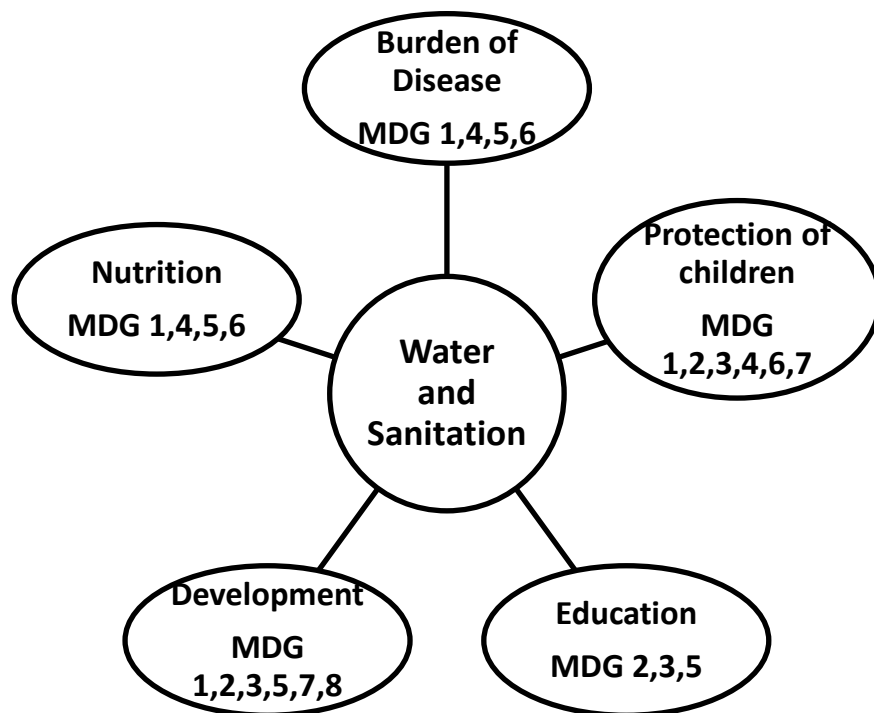


Figure 123: Areas affected by access to safe drinking water and adequate sanitation

The MDGs have challenged the general perception of poverty as a lack of income and view it as a multidimensional phenomenon. Poverty is no longer defined and limited to income poverty; but rather, it has been divided into 2 definitions, absolute poverty, a severe deprivation of basic human needs (Gordon, 2005), and overall poverty: lack of income and productive resources, hunger and malnutrition, ill health, limited or lack of access to education and other basic services, increased morbidity and mortality, inadequate housing, and unsafe environments and social discrimination and exclusion (UN, 1995). Many international donor nations and governments have failed to take into account the social, cultural, and political aspect of poverty in their approach to eradicate extreme poverty. Despite decades of developmental aid, intervention projects have not had a significant impact on water and sanitation issues, leading to the conclusion that the provision of funds is not enough to increase access (Jones and Silva, 2009).

Another identified barrier to attaining target 7.C is the separation of water from sanitation, and tackling them as 2 separate issues rather than one. Target 7.C declares to halve the proportion of the population without access to both safe drinking water and adequate sanitation as a whole. The distinction was made due to differences in the proportions of the population with access to safe drinking water and those with access to adequate sanitation at the baseline level in 1990. With the exception of a minority of countries, a larger percentage of the global population had access to safe drinking water, than those with access to adequate sanitation. However water and sanitation remain irrevocably intertwined, because poor sanitation leads to water contamination. The MDG indicators define improved drinking water sources as those that, by nature of their construction, are protected

from outside contamination, particularly faecal matter (UNICEF and WHO, 2016), and improved sanitation facilities as those that hygienically separate human excreta from human, animal and insect contact (UNICEF and WHO, 2016). Both definitions are based on eliminating the contact of humans with faecal matter, and adverse health impacts, such as diarrhoea. The protection of human health requires both access to safe drinking water and basic sanitation. Yet, worryingly, the provision of sanitation has barely kept pace with population growth, while water supply and other social services have outpaced increasing populations (Mara et al., 2010). The lack of progress in sanitation can be attributed to its low priority among stakeholders, insufficient or inappropriate funding, and the implementation of unsustainable and inadequate technologies, among other things (Isunju et al., 2011).

The MDGs have received a lot of criticism since their inception. Many object to the wording and terminology used in the targets and indicators, particularly with the words 'safe' and 'improved' in the water and sanitation indicators. The difficulty of summarising a complex issue such as access to water and sanitation facilities in terms approved by the international community is evident. However the necessity of a universal measure to provide comparable data makes the use of criticised indicators inevitable. This causes overestimation of both baseline values and improvement towards the targets. The implementation of the MDGs has also been scrutinised, with some believing it to be technocratic and donor-centric, taking little account of the needs of the population and encouraging one-size fits all solutions. Unfortunately, many interventions in developing nations do not have a long lifespan or benefit a small proportion of the population. The literature documents an extensive list of failed intervention projects undertaken with little knowledge of the local environment (socio-economic, cultural, and physical) and poor government effectiveness. It is important to note that despite the overestimation of coverage rates, MDG 7 target was not met by the 2015 deadline.

Regardless of the continued efforts and contributions by the international community, a large portion of the global population remains without access to safe drinking water and adequate sanitation. Investment in the water and sanitation sector has increased by 14 billion USD over the 5 year period from 2011 to 2015 and has been attributed to the slow progress in expanding access to adequate sanitation. The increase of funds and lack of significant advancement in access rates indicated that a lack of funds is not the main issue delaying improvement in the completion of target 7.C, but rather resources being spent in the wrong places, on unnecessarily expensive or unsustainable technologies, or being lost in complex and lengthy bureaucratic procedures. The situation is only made worse by countries' inability to appropriately assess progress and improve performance, due to poor government effectiveness. These are symptomatic points of failure and gaps in the funding mechanism and suggested the necessity of better funding practices.

8.3 Sub-Saharan Africa as a case study

This thesis focused on Sub-Saharan Africa. Nearly 80% of the population lacking access to safe drinking water and adequate sanitation are concentrated within three regions: Southern Asia, Eastern Asia, and Sub-Saharan Africa (Hutton et al., 2007). Due to a large and dense population, years of

colonialism and neglect, a history of war, the exploitation of human and natural resources, and an increased risk to global health (as demonstrated with the recent Ebola outbreak), Sub-Saharan Africa is of particular significance. The area is viewed as one of the poorest regions globally and this is reflected in its access to water and sanitation. The latest figures available in World DataBank, the World Bank Database, reveal 67.6% of the population have access to an improved water source, while only 29.7% of the population have access to improved sanitation facilities (World DataBank, found at: <http://databank.worldbank.org/data/reports.aspx?source=millennium-development-goals>). While the water target has been achieved on a global level, the regional targets for Sub-Saharan Africa have yet to be met. 67.6% of the population have access to safe drinking water missing the target of 77.35%. Similarly, only 29.7% of the population have access to adequate sanitation, with the target of 62.7%. This is confirmed by reports that the majority of countries lagging behind on meeting the targets are located in Sub-Saharan Africa (UNICEF and WHO, 2012, Waage et al., 2010). Another concerning figure relates to open defecation. In 2010, 25% of Sub-Saharan Africa practiced open defecation, while only 28% of the population had access to adequate sanitation (World DataBank, (UNICEF and WHO, 2012)). Comparably, 3% of the global population use untreated surface water as a primary source of water, 94% of those are concentrated in Sub-Saharan Africa (UNICEF and WHO, 2012). For these reasons, the countries in Sub-Saharan Africa offered good case studies for consideration of inadequacies in funding and access rates, as the region encompasses a wide range of development scenarios and levels of target completion ranging from 47.9 % of the population with access to an improved water source in Equatorial Guinea to 99.9% of the population with access to an improved water source in Mauritius, or 6.7% of the population with access to improved sanitation facilities in South Sudan to 98.4% of the population with access to improved sanitation facilities in the Seychelles in 2015 (Word DataBank).

8.4 The role of funding mechanisms in the delay of the completion of MDG 7

Although there have been substantial improvements in access rates to improved water sources and adequate sanitation facilities on a global scale, many of the most vulnerable regions are lagging behind. Access rates in Sub-Saharan Africa reached 61% for improved water sources and 31% for adequate sanitation, whilst access rates in the LDC were reported as 63% for improved water sources and 36% for adequate sanitation. However, the majority of aid funding is directed to the regions most in need. Sub-Saharan Africa and South Central Asia received 2.2 billion USD and 2 billion USD respectively out of the 7.8 billion USD donated in 2011. Despite the majority of funds aimed at vulnerable regions, the lack of significant improvement is indicative of underlying issues other than lack of funding. This warrants a closer look at funding practices.

An analysis of financial data taken from the OECD revealed a correlation between funding and access rates, with countries farther from reaching the target access rates for either improved water sources or adequate sanitation, or both received a larger proportion of funds. No link was recognised between GDP and funding, or population and funding. Size of nations, population density, and land area may influence access rates. The analysis also uncovered inequalities in funding allocation. Larger sums

were allocated to projects directed towards water and large systems compared to projects with a primary focus on sanitation or the basic needs of a population. Such disparity can be a factor causing slow progress, with investments targeted towards existing infrastructure and away from expanding coverage.

The current fragmented and incoherent way of dealing with funding the water and sanitation sector, has led to slow progress and delays in meeting the targets, causing intense scrutiny of the MDGs and its methods. The examination of the funding practices and the expansion of access rates to safe drinking water and adequate sanitation exposed numerous gaps in the funding mechanism and called for a holistic approach. This highlighted the importance of better funding practices and systematic approach. The shift in perception of both poverty and water procurement requires a change in management and intervention style.

8.5 The role of funding in the delay of the completion of MDG 7: Case study

The analysis of the financial breakdown for the 48 countries in Sub-Saharan Africa demonstrates the poor funding practices of many nations who are working towards achieving the targets. A large number of countries allocated considerable sums to areas outside of water supply and sanitation or to areas with large success rates, despite little improvement where it matters. Guinea-Bissau invested 6 million US on water policy and management, while it requires a progress of 65% to reach its sanitation target. Sao Tome and Principe, allotted the majority of aid funds to water supply, even though the target was met before 2007, and access to sanitation is at 34%.

Other nations devote substantial funding to the water supply and sanitation category, but do not report improvements to access rates. This can be explained by the lag effect of progress made. Investment doesn't bring about immediate change, but rather requires time to take effect (investment in infrastructure, expanding networks). Or is due to poor spending in the sector. Sudan is a prime example. 187 million USD was spent on water supply and sanitation in Sudan from 2007 to 2011, yet Sudan reported a decrease in access rates to safe drinking water.

The analysis of the financial data revealed that countries directed funds towards areas closer to being achieved, rather than attempting to close access gaps. Cameroon diverted aid to water supply, marking an improvement of 4.1% to access rates, pushing it within 10% of achieving the water target. A change of 37% is required to meet the sanitation target. This has been identified as a weakness and criticism of the MDGs. The target nature of the goals pushes nations to focus on areas already close to the target, rather than on areas most in need. A considerable number of countries report a disproportionate improvement to access to safe drinking water compared to access to adequate sanitation. Swaziland stated an increase of 7.5% in access to safe drinking water, with a progress of 1.9% in access to adequate sanitation. Burkina Faso, Cameroon, Guinea-Bissau, Mali and Malawi described similar figures. This is mostly due to prioritising water supply, and therefore investing more funds to water supply.

8.6 Development of a coherent framework aimed at reducing water and sanitation needs

A needs based approach is the process of identifying the nature of a group's needs to define which type of intervention or assistance to provide to bring about beneficial change. In the case of the water and sanitation sector, this means collecting and evaluating data on the available facilities and networks, reviewing access rates, and identifying the priority needs with the aim of increasing access rates. The practical purpose of a needs based assessment is the special allocation of resources to ensure the geographical equity of regions, districts, and localities, as well as social equalities. In other terms, it helps spread the allotment of resources to minimise regional and social inequality. This is an asset, particularly when considering urban and rural water and sanitation interventions. It also encourages cooperation between donors and recipients in determining and prioritising needs.

The term need was defined as the difference between the current state of affairs and the targeted improvement. For this thesis it was identified as the gap between the current state or baseline (current access percentage rates to safe drinking water and adequate sanitation), and the target or goal (target access percentage rates to safe drinking water and adequate sanitation).

A needs based assessment is seen as the evaluation and analysis of data to identify and determine the needs of a subset to create targeted solutions to fulfil those needs. The main components of a needs assessment are:

- The determination of the baseline: what is already available and in existence
- The prevalence of the 'need': how widespread and extensive it is
- The effectiveness of interventions: how well can the 'need' be met

For the purpose of this thesis:

- The determined baseline is the access percentage rate to safe drinking water and adequate sanitation in 2000 and reflects the current state of affairs.
- The prevalence of the 'need' is widespread and encompasses entire populations without access to safe drinking water and adequate sanitation. While this is not a global study of the current state of affairs, it is established that any needs based assessment to be conducted would be either at a national or regional level. This makes any assessment expansive and prevalent.
- The effectiveness of interventions is the projected efficiency and effectiveness of the established and appropriate intervention for the specific population studied: the capacity of any action taken to increase access rates to both safe drinking water and adequate sanitation. Each potential plan will help to reach the target, but not with the same effectiveness or efficiency. This step serves to determine the best and most fitting action

The value of a needs based approach in the water and sanitation sector was highlighted by answering gauging questions:

- The need assessment is about an entire population. It is to appraise the needs of a nation or region as a whole and includes all individuals living within its borders.
- The needs assessed will favour increasing access rates to both safe drinking water and adequate sanitation. It is identifying needs that will achieve the target. However, it could also prioritise the recognised needs when several possibilities are known.
- The needs assessment will be both exploratory to identify 'needs', and definitive to determine appropriate interventions. The aim of the aid sector is to provide assistance, e.g. propose interventions. To improve the effectiveness of the advised action, the requirements of recipients can be considered, e.g. needs. In the case of this thesis, both aspects are merged. The needs of the population are established to achieve better action. The role of the needs assessment will be to ascertain the needs, and propose apt interventions.
- The determination of priorities is primarily based on expert knowledge, but participatory approaches can be used where applicable to supplement information. Determining the perceived needs of a community is greatly helped by participatory approaches, such as community based assessments. This is particularly useful in areas where cultural sensitivities are prevalent.

Three main benefits of a needs based approach were identified: through the systematic review of issues facing a particular group, and determination of the baseline, a better understanding of the problem is accomplished; bringing consensus among all participants and decision makers, which increases the success rates of projects; resource allocation improves the situation and reduces inequality, by levelling the playing field and ensuring equity of asset distribution.

Needs based assessment has proven to be a useful and effective method to increase project success in many different fields of research. There has been an insurgence of studies demonstrating the benefits of maximising the use and distribution of minimal resources following a needs based approach in public health, medicine and in emergency aid funding. As the systematic analysis of the current situation with the aim to bring about appropriate change, needs based assessment has immense potential to improve the method by which aid projects for water and sanitation are conducted. Through the adoption of a needs based approach to funding water and sanitation projects, present gaps and the most effective and efficient intervention to be taken are identified. This eliminates the one-size fits all solution. The universal adoption of this systematic approach will help guide decision making, facilitate the prioritisation of needs, as well as homogenise the funding process, making it an asset for all projects and funding agencies alike. This provides more transparency, and enlists mutual trust and confidence between funders and recipients.

With limited resources, it is very important that all funds are maximised and the application of needs based assessments in the water and sanitation sector has the potential to greatly improve the effectiveness and efficiency of intervention projects. It remains a constructive and practical system for

the impartial allocation of resources. It instils trust and confidence in donors and recipients, and offers transparency to the funding process. These are all particularly important attributes for the water and sanitation aid sector.

8.7 Application of a tier 1 needs based assessment

The financial breakdown revealed the common parameters in the funding practices of the countries in Sub-Saharan Africa, as well as their potential to benefit from the adoption of a needs based assessment. The majority of nations would profit from the identification of needs and their prioritisation, as well as tackling the misuse of funds. A characteristic of a NBA is to outline the logic behind needs prioritisation and to validate selecting one aspect in the sector, i.e. water over sanitation and vice versa. Another core principle of the approach is the efficient use of resources. Through a NBA, funding is distributed and utilised to maximise the assets available.

All discrepancies and issues mentioned in the previous sections are easily avoided with the application of a NBA to the water supply and sanitation sector. The process followed in a NBA identifies areas of 'need', prioritises said 'needs' according to the specific and individual concerns of countries, demonstrates the most efficient and effective methods to allocate and distribute funds to maximise limited resources, it equally justifies prioritisation of 'needs' and the allocation of resources. It would similarly eliminate ambiguous and unclear spending, highlight areas that need funding and better spending. A NBA can also help close the gaps between water and sanitation.

A tier 1 Needs Based Assessment was completed for the 48 identified countries in Sub-Saharan Africa using the access rates in 2007, 2011, and the individual national targets for water and sanitation.

Access rates in 2007 were used to define and establish the baseline, and the calculated MDG targets represented the target or goal to achieve. Need was determined as the target minus the baseline and improvement was the representation of the reduction in the Need. Figure 124 summarises the identification of need in the water and sanitation sector. A new baseline using the access rates reported in 2011 was created, leading to a new need calculated as the target minus the access rates in 2011.

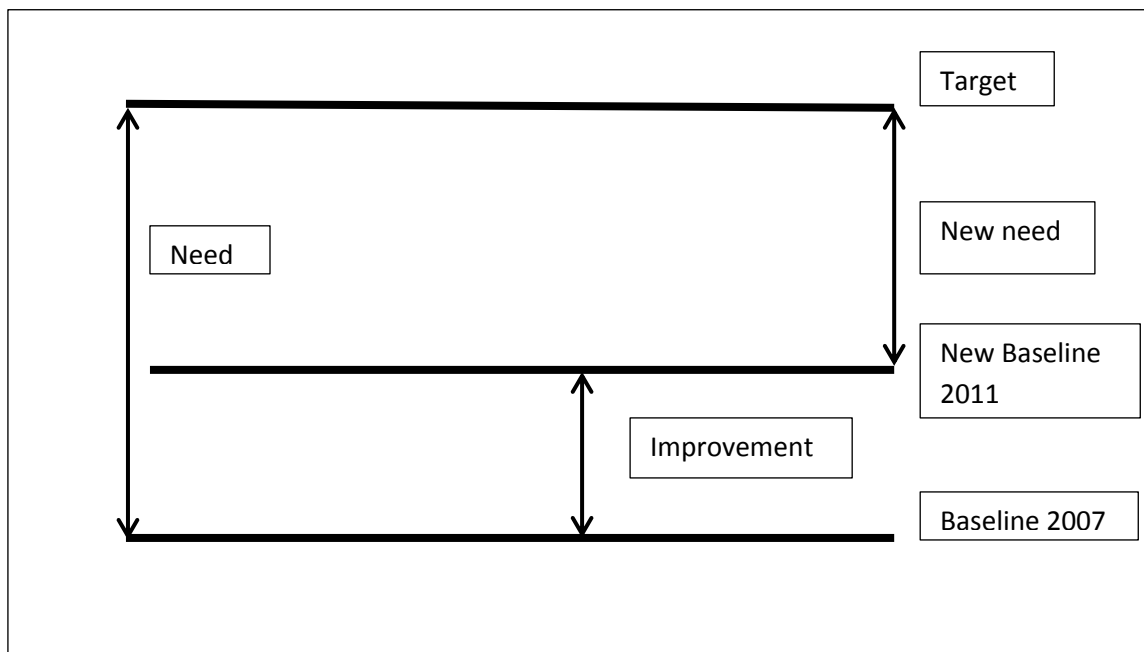


Figure 124: Identification of Need in the water and sanitation sector

The difference between the 2011 access rates and the target represents how far each country is from reaching their target. The difference between the 2007 access rates and the 2011 access rates represent the improvement or reduction in need, in other terms how far they have come.

Tables 78 and 79 recapitulate the individual baselines, targets, need, and improvement for the 48 countries in Sub-Saharan Africa.

Table 78: Tier one Needs Based Assessment - Water

	Target	Baseline	Need	New Baseline	New Need	
Country Name	Target	% Access to Water in 2007	Target - % Access in 2007	% Access to Water in 2011	Target - % Access in 2011	Improvement
Mali	73.3	60.8	12.5	68.9	4.4	8.1
Ethiopia	64.45	42.0	22.5	49.7	14.8	7.7
Swaziland	75.95	64.8	11.2	72.3	3.7	7.5
Guinea-Bissau	76.05	64.3	11.8	71.7	4.3	7.4
Malawi	81.25	75.5	5.8	82.9	-1.7	7.4
Burkina Faso	79.95	72.8	7.2	80.0	0.0	7.2
Sao Tome and Principe	89.1	90.4	-1.3	97.0	-7.9	6.6
Uganda	78.2	67.7	10.5	74.2	4.0	6.5
Ghana	85.25	79.5	5.8	84.3	1.0	4.8
Mauritania	71	50.7	20.3	55.5	15.5	4.8
Nigeria	75.9	60.1	15.8	64.5	11.4	4.4
Niger	71.85	50.8	21.1	55.1	16.8	4.3
Sierra Leone	73.6	54.3	19.3	58.5	15.1	4.2
Cameroon	80.85	69.0	11.9	73.1	7.8	4.1
Guinea	81.35	69.8	11.6	73.8	7.6	4.0

Madagascar	69	44.0	25.0	47.8	21.2	3.8
Liberia	81.2	68.5	12.7	72.0	9.2	3.5
Benin	83	72.0	11.0	75.3	7.7	3.3
Namibia	89.25	84.8	4.5	88.0	1.3	3.2
Zambia	76.5	59.0	17.5	62.2	14.3	3.2
Kenya	75.9	57.7	18.2	60.8	15.1	3.1
Mozambique	70.55	46.3	24.3	49.3	21.3	3.0
Senegal	83.7	72.6	11.1	75.6	8.1	3.0
Djibouti	91.15	87.1	4.1	89.9	1.3	2.8
Cape Verde	91.2	86.9	4.3	89.6	1.6	2.7
Rwanda	83.15	71.1	12.1	73.7	9.5	2.6
Togo	76.8	57.9	18.9	60.5	16.3	2.6
Gambia, The	91.35	87.1	4.3	89.5	1.8	2.4
Gabon	91.9	89.3	2.6	91.6	0.3	2.3
Eritrea	75.5	54.8	20.7	57.0	18.5	2.2
Central African Republic	81.25	65.7	15.6	67.7	13.6	2.0
Chad	72.35	48.2	24.2	50.2	22.2	2.0
Congo, Rep.	84.6	72.8	11.8	74.8	9.8	2.0
South Africa	93.25	89.8	3.5	91.6	1.7	1.8
Congo, Dem. Rep.	73.55	49.7	23.9	51.1	22.5	1.4
Burundi	85.9	73.8	12.1	75.0	10.9	1.2
Cote d'Ivoire	88.95	79.8	9.2	80.9	8.1	1.1
Angola	72.85	46.4	26.5	47.5	25.4	1.1
Somalia	61.75	30.7	31.1	31.7	30.1	1.0
Lesotho	89.5	80.3	9.2	81.0	8.5	0.7
Botswana	83	95.5	-12.5	96	-13.0	0.5
Tanzania	77.2	54.9	22.3	55.3	21.9	0.4
Equatorial Guinea	73.65	47.4	26.3	47.6	26.1	0.2
Mauritius	99.6	99.6	0.0	99.8	-0.2	0.2
Comoros	95.05	90.1	5.0	90.1	5.0	0.0
Seychelles	97.85	95.7	2.1	95.7	2.1	0.0
Zimbabwe	89.7	78.4	11.3	77.7	12.0	-0.7
Sudan	81	57.0	24.0	55.4	25.6	-1.6
South Sudan	0	0	0.0	0	0.0	

Table 79: Tier one Needs Based Assessment – Sanitation

	Target	Baseline	Need	New Baseline	New Need	
Country Name	Target	% Access to Sanitation in 2007	Target - % Access 2007	% Access to Sanitation in 2011	Target - % Access 2011	Improvement
Cape Verde	71.8	58.1	13.7	66.2	5.6	8.1
Angola	66.05	41.8	24.3	47.6	18.5	5.8

Ethiopia	54.3	17.8	36.5	23.0	31.3	5.2
Mauritania	61.85	32.0	29.9	36.9	25.0	4.9
Sao Tome and Principe	60.45	29.4	31.1	34.3	26.2	4.9
Rwanda	73.3	54.3	19.0	58.2	15.1	3.9
Botswana	55.95	58.0	-2.1	61.5	-5.6	3.5
Comoros	62.55	30.4	32.2	33.5	29.1	3.1
Guinea-Bissau	56.2	16.9	39.3	19.6	36.6	2.7
Burkina Faso	66.05	15.6	50.5	18.0	48.1	2.4
South Africa	78.6	61.7	16.9	64.1	14.5	2.4
Benin	55.95	15.6	40.4	17.8	38.2	2.2
Guinea	56.45	16.3	40.2	18.4	38.1	2.1
Senegal	70.15	43.6	26.6	45.6	24.6	2.0
Mozambique	57.05	17.4	39.7	19.3	37.8	1.9
Namibia	63.7	30.8	32.9	32.7	31.0	1.9
Swaziland	75.9	55.1	20.8	57.0	18.9	1.9
Malawi	67.15	37.4	29.8	39.2	28.0	1.8
Tanzania	54.65	11.8	42.9	13.6	41.1	1.8
Lesotho	61.95	27.1	34.9	28.9	33.1	1.8
Mali	59	21.1	37.9	22.9	36.1	1.8
Congo, Dem. Rep.	61.35	25.6	35.8	27.2	34.2	1.6
Central African Republic	58.6	19.6	39.0	21.1	37.5	1.5
Cote d'Ivoire	58.8	19.9	38.9	21.3	37.5	1.4
Ghana	55.15	12.6	42.6	14.0	41.2	1.4
Niger	53.3	8.5	44.8	9.8	43.5	1.3
Eritrea	55.7	13.7	42.0	14.9	40.8	1.2
Burundi	72.15	46.1	26.1	47.2	25.0	1.1
Cameroon	71.1	43.9	27.2	44.9	26.2	1.0
Liberia	56.55	14.8	41.8	15.8	40.8	1.0
Uganda	57.8	17.3	40.5	18.3	39.5	1.0
Gabon	69.4	40.3	29.1	41.2	28.2	0.9
Kenya	63.45	28.5	35.0	29.4	34.1	0.9
Chad	54.85	11.0	43.9	11.8	43.1	0.8
Somalia	60.9	22.7	38.2	23.5	37.4	0.8
Zambia	70.3	42.2	28.1	43.0	27.3	0.8
Congo, Rep.	56.35	13.7	42.7	14.4	42.0	0.7
Mauritius	95.7	92.3	3.4	92.9	2.8	0.6
Madagascar	55.15	11.0	44.2	11.5	43.7	0.5
Sierra Leone	55.65	12.2	43.5	12.7	43.0	0.5
Sudan	62.7	23.4	39.3	23.5	39.2	0.1
Togo	55.7	11.4	44.3	11.5	44.2	0.1
Seychelles	99.2	98.4	0.8	98.4	0.8	0.0
Gambia, The	79.85	59.0	20.9	58.8	21.1	-0.2
Zimbabwe	69.6	38.2	31.4	37.5	32.1	-0.7

Nigeria	67	31.5	35.5	30.2	36.8	-1.3
Equatorial Guinea	90.1	77.1	13.0	75.4	14.7	-1.7
Djibouti	79.75	51.7	28.1	47.3	32.5	-4.4
South Sudan	0	0	0.0	0	0.0	

8.8 Individual country performance towards achieving target 7.C

8.8.1 Performance towards the water target

The tables below rank the countries according to their performance in achieving the water section of target 7.C. Table 80 condenses the funds received in 2007, the percentage access to safe drinking water in 2007, the water target, and the calculated need, table 81 summarises the funds received in 2011, the percentage access to safe drinking water in 2011, the water target, and the calculated need and table 82 abridges the total funds received from 2007 to 2011, the gap/need in 2007 and 2011, and the total progress made from 2007 to 2011 for the 48 countries in Sub-Saharan Africa. The countries are divided into 3 groups according to size of their need or their improvement. South Sudan is included in the table and but is not ranked due to the lack of data available for the studies period.

8.8.1.1 Group1: Good progress

Group 1 represents the countries with the smallest need and greatest progress in the region. In 2007, group 1 consisted of 16 countries with a need ranged from -15% in Botswana, ranked first in the group, to 10% in Lesotho and Cote d'Ivoire, ranked last. Both Botswana and Sao Tome and Principe have completed their water target prior to 2007, explaining the negative value of their need. This number represents the improvement they have achieved above and beyond the target.

Table 80: Group 1 ranking of countries according to their performance - Water 2007

Country Name	Funds (USD Millions)	Target	% Access to Water in 2007	Gap/Need
Group 1				
Botswana	0.11	83	95.5	-15%
Sao Tome and Principe	0.57	89.1	90.4	-1%
Mauritius	0.00	99.6	99.6	0%
Seychelles	0.00	97.85	95.7	2%
Gabon	52.02	91.9	89.3	3%
South Africa	152.72	93.25	89.8	4%
Djibouti	24.79	91.15	87.1	4%
Gambia, The	10.23	91.35	87.1	5%
Cape Verde	8.57	91.2	86.9	5%
Namibia	4.68	89.25	84.8	5%
Comoros	0.00	95.05	90.1	5%
Ghana	89.46	85.25	79.5	7%
Malawi	54.54	81.25	75.5	7%
Burkina Faso	61.56	79.95	72.8	9%
Lesotho	8.46	89.5	80.3	10%

Cote d'Ivoire	2.12	88.95	79.8	10%
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In 2011, the group grew to include 24 countries with Malawi, Mauritius, and Burkina Faso achieving the water target and Gabon reducing their gap to close to 0%. Swaziland, Uganda, Guinea –Bissau, Mali, Benin, Guinea, Cameroon and Senegal, all reduced their gap to less equal or less than 10% to move up into group 1. There was movement in the ranks from 2007 to 2011 in group 1, with new countries like Guinea-Bissau outperforming previous nation such as Lesotho and Cote d'Ivoire in reducing their gap, despite receiving a fraction of the funds. The Seychelles reported no change in their need from 2007 to 2011; the gap remained at 2% with an access rate to safe drinking water of 95.7%.

Table 81: Group 1 ranking of countries according to their performance - Water 2011

Country Name	Funds (USD Millions)	Target	% Access to Water in 2011	Gap/Need
Group 1				
Botswana	0.80	83	96	-16%
Sao Tome and Principe	3.57	89.1	97.0	-9%
Malawi	131.63	81.25	82.9	-2%
Mauritius	0.80	99.6	99.8	0%
Burkina Faso	0.80	79.95	80.0	0%
Gabon	16.78	91.9	91.6	0%
Ghana	11.09	85.25	84.3	1%
Djibouti	9.68	91.15	89.9	1%
Namibia	8.11	89.25	88.0	1%
Cape Verde	5.67	91.2	89.6	2%
South Africa	79.67	93.25	91.6	2%
Gambia, The	0.92	91.35	89.5	2%
Seychelles	0.00	97.85	95.7	2%
Swaziland	17.59	75.95	72.3	5%
Uganda	47.63	78.2	74.2	5%
Comoros	6.07	95.05	90.1	5%
Guinea-Bissau	1.72	76.05	71.7	6%
Mali	53.27	73.3	68.9	6%
Cote d'Ivoire	36.46	88.95	80.9	9%
Benin	58.53	83	75.3	9%
Guinea	1.09	81.35	73.8	9%
Lesotho	23.67	89.5	81.0	9%
Cameroon	103.84	80.85	73.1	10%
Senegal	38.83	83.7	75.6	10%

14 countries were included in group 1 in terms of progress, with a reduction in need ranging from 12% in Ethiopia to 6% in Madagascar. Mali, Sao Tome and Principe, Swaziland, Guinea-Bissau, Malawi, Burkina Faso, Uganda and Ghana are all ranked in group 1 for having a small gap/need, yet still managed to achieve a substantial reduction or progress of over 6%. Other nations part of group 1 for

progress are Ethiopia, who tops the group with the greatest progress of 12% and is among the highest funded countries in the region receiving a total of 696.99 million USD from 2007 to 2011. Mauritania, Niger, Nigeria and Sierra Leone, all well-funded countries, reporting progress of 6% and above. And Madagascar, keeping pace with a progress of 6%, and less than a quarter of the funding than Nigeria. Mali came 2nd in the list of countries in Sub-Saharan Africa in terms of improvement to access rates to safe drinking water from 2007 to 2011, with an upturn of 11%. It also rounded out the top 10 most funded countries in the region, having gotten 352.35 million USD over the 5 year period. Swaziland (10%) came in 3rd in the group ranking, in spite of receiving 20 times less funds from 2007 to 2011. Ethiopia was in group 3 (greatest need) in 2007 and group 2 in 2011, while Swaziland had moved up from group 2 (moderate need) to group 1 in 2011. Even though Sao Tome and Principe had completed the water target before 2007, they expanded access by 6.6% by 2011. With the exception of Ethiopia, the top half of the table, the countries reporting the greatest improvement in access to safe drinking water, is filled with nations with the smallest need. They are Guinea-Bissau, Uganda, Swaziland, Burkina Faso, Sao Tome and Principe, Ghana and Malawi. While these nations have improved the most, not all received the most funds over the 5 year period

Table 82: Group 1 ranking of countries according to their performance - Water

Country Name	Total Funds (USD Millions)	Gap/Need in 2007	Gap/Need in 2011	Progress
Group 1				
Ethiopia	696.66	35%	23%	-12%
Mali	352.35	17%	6%	-11%
Swaziland	33.86	15%	5%	-10%
Guinea-Bissau	11.69	15%	6%	-10%
Malawi	255.71	7%	-2%	-9%
Burkina Faso	473.55	9%	0%	-9%
Uganda	383.22	13%	5%	-8%
Sao Tome and Principe	5.84	-1%	-9%	-7%
Mauritania	162.09	29%	22%	-7%
Niger	125.46	29%	23%	-6%
Nigeria	420.39	21%	15%	-6%
Sierra Leone	120.21	26%	21%	-6%
Ghana	340.50	7%	1%	-6%
Madagascar	38.44	36%	31%	-6%

8.8.1.2 Group 2: medium progress

Group 2 comprises the countries with a moderate need and improvement in Sub-Saharan Africa. In 2007, group 2 comprised 18 countries and a need ranging from 13% in Zimbabwe, Benin, Senegal and Uganda, to 25% in Togo, ranked last in the group. Uganda, Swaziland, Guinea-Bissau, Mali, Cameroon, Benin, Guinea and Senegal were part of group 2 in 2007, with a need from 17% to 13%. Swaziland, Mali, Guinea-Bissau and Uganda ranked in group 1 for progress, moving them up the rankings in 2011 to group 1.

Table 83: Group 2 ranking of countries according to their performance - Water 2007

Country Name	Funds (USD Millions)	Target	% Access to Water in 2007	Gap/Need
Group 2				
Zimbabwe	1.74	89.7	78.4	13%
Benin	39.90	83	72.0	13%
Senegal	65.88	83.7	72.6	13%
Uganda	78.32	78.2	67.7	13%
Congo, Rep.	0.00	84.6	72.8	14%
Burundi	0.78	85.9	73.8	14%
Guinea	24.34	81.35	69.8	14%
Rwanda	21.03	83.15	71.1	14%
Cameroon	39.53	80.85	69.0	15%
Swaziland	0.86	75.95	64.8	15%
Guinea-Bissau	1.20	76.05	64.3	15%
Liberia	6.44	81.2	68.5	16%
Mali	39.74	73.3	60.8	17%
Central African Republic	11.51	81.25	65.7	19%
Nigeria	119.66	75.9	60.1	21%
Zambia	55.48	76.5	59.0	23%
Kenya	302.20	75.9	57.7	24%
Togo	0.25	76.8	57.9	25%

In 2011, group 2 decreased to 15 countries, with 5 new nations climbing up the ranks. Eritrea, Niger, Ethiopia, Mauritania and Sierra Leone lessened their gap to between 25 and 21%. It is not surprising to see Ethiopia, Sierra Leone, Niger and Mauritania move up the table, as they are all comprised in group 1 for progress. They are also nations that receive significant sums of aid funding. Eritrea, on the other hand, received over the 5 year period the equivalent of 1 years' worth of aid for Niger. Zimbabwe maintained a gap of 13% slipping down the table and being overtaken by Burundi, Liberia, Rwanda and the Republic of Congo all with a need equal or less than 13%.

Table 84: Group 2 ranking of countries according to their performance - Water 2011

Country Name	Funds (USD Millions)	Target	% Access to Water in 2011	Gap/Need
Group 2				
Liberia	12.33	81.2	72.0	11%
Rwanda	15.98	83.15	73.7	11%
Congo, Rep.	0.12	84.6	74.8	12%
Burundi	18.24	85.9	75.0	13%
Zimbabwe	26.50	89.7	77.7	13%
Nigeria	118.29	75.9	64.5	15%
Central African Republic	5.67	81.25	67.7	17%
Zambia	87.17	76.5	62.2	19%
Kenya	173.11	75.9	60.8	20%
Sierra Leone	30.69	73.6	58.5	21%
Togo	1.95	76.8	60.5	21%
Mauritania	56.11	71	55.5	22%
Ethiopia	71.93	64.45	49.7	23%
Niger	30.50	71.85	55.1	23%
Eritrea	0.81	75.5	57.0	25%

23 countries were included in group 2 in terms of progress, with a reduction in need ranging from 5% in Cameroon and Guinea to 2% in the Central African Republic, the Republic of Congo, South Africa, the Democratic Republic of Congo, Angola and Somalia. Eritrea, Liberia, Zambia, Republic of Congo, Rwanda, Kenya, Togo and the Central African Republic are in group 2 (moderate progress) for both size of gap and progress, with a progress between 2 and 4%. The countries part of group 1 (smallest gap/need), but in group 2 for progress are Namibia, Djibouti, South Africa, Cape Verde, Gambia, Benin, Cameroon, Guinea, Senegal and Gabon, filling up the most of the table with progress varying from 3 to 5%. Rounding out the bottom of the table are Chad, the Democratic Republic of Congo, Somalia, and Angola, all in group 3 in terms of gap. Mozambique is part of group 3 for size of need, but achieved a moderate to high progress, placing it higher up the table.

Table 85: Group 2 ranking of countries according to their performance – Water

Country Name	Total Funds (USD Millions)	Gap/Need in 2007	Gap/Need in 2011	Progress
Group 2				
Cameroon	323.48	15%	10%	-5%
Guinea	45.93	14%	9%	-5%
Liberia	86.76	16%	11%	-4%
Mozambique	709.83	34%	30%	-4%
Zambia	280.20	23%	19%	-4%
Kenya	877.55	24%	20%	-4%
Benin	179.16	13%	9%	-4%

Namibia	72.68	5%	1%	-4%
Senegal	399.72	13%	10%	-4%
Togo	23.92	25%	21%	-3%
Rwanda	147.75	14%	11%	-3%
Djibouti	73.90	4%	1%	-3%
Cape Verde	54.60	5%	2%	-3%
Eritrea	27.80	27%	25%	-3%
Chad	58.37	33%	31%	-3%
Gambia, The	26.98	5%	2%	-3%
Gabon	146.79	3%	0%	-3%
Central African Republic	43.24	19%	17%	-2%
Congo, Rep.	28.97	14%	12%	-2%
South Africa	250.23	4%	2%	-2%
Congo, Dem. Rep.	599.89	32%	31%	-2%
Somalia	15.52	50%	49%	-2%
Angola	285.05	36%	35%	-2%

8.8.1.3 Group 3: poor progress

Group 3 contains the countries with the largest need and smallest progress in the region. In 2007, the group counted 14 countries and a need ranging from 26% in Sierra Leone to 50% in Somalia. There was a lot of movement in the ranks in group 3. Ethiopia, Eritrea, Niger, Mauritania and Sierra Leone managed to diminish their need to jump into group 2.

Table 86: Group 3 ranking of countries according to their performance - Water 2007

Country Name	Funds (USD Millions)	Target	% Access to Water in 2007	Gap/Need
Group 3				
Sierra Leone	11.56	73.6	54.3	26%
Eritrea	13.75	75.5	54.8	27%
Mauritania	16.45	71	50.7	29%
Tanzania	375.80	77.2	54.9	29%
Niger	27.57	71.85	50.8	29%
Sudan	37.75	81	57.0	30%
Congo, Dem. Rep.	178.98	73.55	49.7	32%
Chad	0.87	72.35	48.2	33%
Mozambique	108.05	70.55	46.3	34%
Ethiopia	167.71	64.45	42.0	35%
Equatorial Guinea	0.52	73.65	47.4	36%
Madagascar	5.57	69	44.0	36%
Angola	50.68	72.85	46.4	36%
Somalia	2.02	61.75	30.7	50%
South Sudan	0.00	0	0	

In 2011, group 2 was reduced to 9 countries with needs on a scale from 28 to 49%. Sudan reported a decrease in access to safe drinking water and a rise need, pushing it down the ranks. Slow progress in Equatorial Guinea, Angola and Somalia has left them at the bottom of the table with a reduction of just 1%. Mozambique jumped to second thanks to its moderate improvement of 4%.

Table 87: Group 1 ranking of countries according to their performance - Water 2011

Country Name	Funds (USD Millions)	Target	% Access to Water in 2011	Gap/Need
Group 3				
Tanzania	127.59	77.2	55.3	28%
Mozambique	125.22	70.55	49.3	30%
Congo, Dem. Rep.	81.28	73.55	51.1	31%
Chad	6.79	72.35	50.2	31%
Madagascar	8.09	69	47.8	31%
Sudan	32.79	81	55.4	32%
Angola	120.71	72.85	47.5	35%
Equatorial Guinea	0.23	73.65	47.6	35%
Somalia	5.05	61.75	31.7	49%
South Sudan	0.00	0	0	0.0

Sudan, Equatorial Guinea and Tanzania, reported among the lowest improvement rates in Sub-Saharan Africa. They are also in the group of countries with the greatest need. Despite funds allocated to the water and sanitation sector in these countries, no significant progress has been made. Tanzania is the premier funded country in the region, receiving 960.96million USD from 2007 to 2011, and reporting an improvement of only 1%. Sudan and Zimbabwe had a decrease in access to safe drinking water of 2 and 1% respectively.

Botswana is included in group 3, with an increase of 1%, yet it had achieved the water target prior to 2007, and reports an access rate of 96%. Burundi, Cote d'Ivoire and Lesotho recounted improvement rates of 1%. They are also within 1% of completing the water target. Other nations part of group 1 (smallest need), included in group 3 for a lack of improvement, are the Seychelles, Comoros, both reporting no change in access rates, and Mauritius, which surpassed its target in 2011.

Table 88: Group 3 ranking of countries according to their performance - Water

Country Name	Total Funds (USD Millions)	Gap/Need in 2007	Gap/Need in 2011	Progress
Group 3				
Burundi	85.22	14%	13%	-1%
Cote d'Ivoire	145.05	10%	9%	-1%
Lesotho	270.19	10%	9%	-1%
Botswana	1.10	-15%	-16%	-1%
Tanzania	960.96	29%	28%	-1%
Equatorial Guinea	0.78	36%	35%	0%

Mauritius	172.94	0%	0%	0%
Comoros	13.23	5%	5%	0%
Seychelles	0.53	2%	2%	0%
Zimbabwe	148.15	13%	13%	1%
Sudan	187.03	30%	32%	2%
South Sudan				

It is worth mentioning that ranking in group 3 (greatest need) is not necessarily a reflection on the effort and progress made by a nation. For a more accurate account of advancement, ranking in the table for progress should be referenced. Madagascar is a prime example of this reporting a large need of 31%, ranked in group 3 for water and included in group 1 (greatest improvement) with an expansion of 6% to access rates for water. Another example is Zimbabwe. Zimbabwe is ranked in group 2 (moderate need), yet had a decline in access to safe drinking water in the same year.

8.8.2 Performance towards the sanitation target

The tables below rank the countries according to their performance in achieving the sanitation section of target 7.C. Table 89 condenses the funds received in 2007, the percentage access to adequate sanitation in 2007, the sanitation target, and the calculated need, table 90 summarises the funds received in 2011, the percentage access to adequate sanitation in 2011, the sanitation target, and the calculated need and table 91 abridges the total funds received from 2007 to 2011, the gap/need in 2007 and 2011, and the total progress made from 2007 to 2011 for the 48 countries in Sub-Saharan Africa. The countries are divided into 3 groups according to size of their need or their improvement. South Sudan is included in the table and but is not ranked due to the lack of data available for the studies period.

8.8.2.1 Group 1: Good progress

Group 1 represents the countries with the smallest need and greatest progress in the region. In 2007, group consisted of 9 countries with a need ranging from -3.7% in Botswana, ranked first in the group, to 27.7% in Swaziland, and ranked last. Botswana has completed their sanitation target prior to 2007, explaining the negative value of their need. This number represents the improvement they have achieved above and beyond the target.

Table 89: Group 1 ranking of countries according to their performance - Sanitation 2007

Country Name	Funds (USD Millions)	Target	% Access to Sanitation in 2007	Gap/Need
Group 1				
Botswana	0.11	55.95	58.0	-3.7%
Seychelles	0.00	99.2	98.4	0.8%
Mauritius	0.00	95.7	92.3	3.6%
Equatorial Guinea	0.52	90.1	77.1	14.4%
Cape Verde	8.57	71.8	58.1	19.1%
South Africa	152.72	78.6	61.7	21.5%
Rwanda	21.03	73.3	54.3	25.9%

Gambia, The	10.23	79.85	59.0	26.1%
Swaziland	0.86	75.9	55.1	27.4%

In 2011, Angola moved up the table to be part of group 1, bringing the total to 10 countries. The order remained largely the same with Equatorial Guinea and the Gambia moving down the table. Both countries reported a decrease in access to adequate sanitation, yet remained in the group representing the smallest need. Angola squeezing into last place with a need of 27.9%

Table 90: Group 1 ranking of countries according to their performance - Sanitation 2011

Country Name	Funds (USD Millions)	Target	% Access to Sanitation in 2011	Gap/Need
Group 1				
Botswana	0.80	55.95	61.5	-9.9%
Seychelles	0.00	99.2	98.4	0.8%
Mauritius	0.80	95.7	92.9	2.9%
Cape Verde	5.67	71.8	66.2	7.8%
Equatorial Guinea	0.23	90.1	75.4	16.3%
South Africa	79.67	78.6	64.1	18.4%
Rwanda	15.98	73.3	58.2	20.6%
Swaziland	17.59	75.9	57.0	24.9%
Gambia, The	0.92	79.85	58.8	26.4%
Angola	120.71	66.05	47.6	27.9%

Three countries from group 1 for size of need are also in group 1 for progress: Botswana, Cape Verde, topping the ranking and Rwanda. The only nations in group 3 (greatest need) and group 1 for progress are Guinea-Bissau with a reported progress of 5% and Ethiopia, who ranked 2nd with a reduction in need of 10%. The rest of the countries in table 91 are in group 2 for need and stated a progress between 5 and 9%. Cape Verde tops the list of countries in Sub-Saharan Africa in terms of improvement to access rates to adequate sanitation from 2007 to 2011, with an upturn of 11%. Ethiopia edged out Angola to second the group with an increase of 10%. Both countries are in the top 15 highest funded nations, with Ethiopia ranked 4th. Even though Botswana had completed the sanitation target before 2007, they expanded access by 6% by 2011. Excluding Ethiopia, the top 5 funded countries are not ranked in group 1 for greatest improvement.

Table 91: Group 1 ranking of countries according to their performance - Sanitation

Country Name	Total Funds (USD Millions)	Gap/Need in 2007	Gap/Need in 2011	Progress
Group 1				
Cape Verde	54.60	19.1%	7.8%	-11%
Ethiopia	696.66	67.2%	57.6%	-10%
Angola	285.05	36.7%	27.9%	-9%
Sao Tome and Principe	5.84	51.4%	43.3%	-8%
Mauritania	162.09	48.3%	40.3%	-8%

Botswana	1.10	-3.7%	-9.9%	-6%
Rwanda	147.75	25.9%	20.6%	-5%
Comoros	13.23	51.4%	46.4%	-5%
Guinea-Bissau	11.69	69.9%	65.1%	-5%

8.8.2.2 Group 2: moderate progress

Group 2 comprises the countries with a moderate need and improvement in Sub-Saharan Africa. In 2007, group comprised 17 countries and a need between 35.2% in Djibouti, ranked first in the group, and 58.3% in the Democratic Republic of Congo, ranked last. Angola was included in group 2 in 2007 with a need of 36.7%. Its fast improvement moved it up the table to group 1 in 2011.

Table 92: Group 2 ranking of countries according to their performance - Sanitation 2007

Country Name	Funds (USD Millions)	Target	% Access to Sanitation in 2007	Gap/Need
Group 2				
Djibouti	24.79	79.75	51.7	35.2%
Burundi	0.78	72.15	46.1	36.1%
Angola	50.68	66.05	41.8	36.7%
Senegal	65.88	70.15	43.6	37.8%
Cameroon	39.53	71.1	43.9	38.3%
Zambia	55.48	70.3	42.2	40.0%
Gabon	52.02	69.4	40.3	41.9%
Malawi	54.54	67.15	37.4	44.3%
Zimbabwe	1.74	69.6	38.2	45.1%
Mauritania	16.45	61.85	32.0	48.3%
Sao Tome and Principe	0.57	60.45	29.4	51.4%
Comoros	0.00	62.55	30.4	51.4%
Namibia	4.68	63.7	30.8	51.6%
Nigeria	119.66	67	31.5	53.0%
Kenya	302.20	63.45	28.5	55.1%
Lesotho	8.46	61.95	27.1	56.3%
Congo, Dem. Rep.	178.98	61.35	25.6	58.3%

The group remained 17 countries in 2011, with both Angola and Ethiopia moving up a group. Djibouti, Zimbabwe and Gabon reported a decrease in access to adequate sanitation and a growth in need to 40.7%, 46.1% and 41.2% respectively, to fall further down the table. Fast progress in Mauritania and Lesotho has caused them to climb a few places, with Malawi. Nigeria and Kenya slipping and Ethiopia joining the group.

Table 93: Group 2 ranking of countries according to their performance - Sanitation 2011

Country Name	Funds (USD Millions)	Target	% Access to Sanitation in 2011	Gap/Need
Group 2				
Burundi	18.24	72.15	47.2	34.6%
Senegal	38.83	70.15	45.6	35.0%
Cameroon	103.84	71.1	44.9	36.8%
Zambia	87.17	70.3	43.0	38.8%
Mauritania	56.11	61.85	36.9	40.3%
Gabon	16.78	69.4	41.2	40.6%
Djibouti	9.68	79.75	47.3	40.7%
Malawi	131.63	67.15	39.2	41.6%
Sao Tome and Principe	3.57	60.45	34.3	43.3%
Zimbabwe	26.50	69.6	37.5	46.1%
Comoros	6.07	62.55	33.5	46.4%
Namibia	8.11	63.7	32.7	48.7%
Lesotho	23.67	61.95	28.9	53.3%
Kenya	173.11	63.45	29.4	53.7%
Nigeria	118.29	67	30.2	54.9%
Congo, Dem. Rep.	81.28	61.35	27.2	55.7%
Ethiopia	71.93	54.3	23.0	57.6%

31 countries are comprised in group 2 for progress. Progress ranged from 4% in Benin, Guinea and Burkina Faso, to 1% in Chad, Kenya, Cameroon, Somalia, Gabon, the Republic of Congo, Zambia, Madagascar, Sierra Leone and Mauritius. 10 nations from group 2 (moderate need) are included: Burundi, Senegal, Cameroon, Zambia, Gabon, Malawi, Namibia, Lesotho, Kenya and the Democratic Republic of Congo. Ethiopia, Sao Tome and Principe, Mauritania and Comoros are part of group 1 for progress, and Zimbabwe, Nigeria and Djibouti are in group 3 (poor progress). Mauritius and Zambia reported a progression of 1%. Both obtained large sums in the 5 year period, 172.94 million and 280.2 million USD respectively. Only one, Zambia remained far from the sanitation target with an access rate of 43% in 2011. Mauritius, on the other hand, is 2.8% away from the target with an access rate of 92.9%.

Table 94: Group 2 ranking of countries according to their performance - Sanitation

Country Name	Total Funds (USD Millions)	Gap/Need in 2007	Gap/Need in 2011	Progress
Group 2				
Benin	179.16	72.1%	68.2%	-4%
Guinea	45.93	71.1%	67.4%	-4%
Burkina Faso	473.55	76.4%	72.7%	-4%
Mozambique	709.83	69.5%	66.2%	-3%

Tanzania	960.96	78.4%	75.1%	-3%
South Africa	250.23	21.5%	18.4%	-3%
Mali	352.35	64.2%	61.2%	-3%
Namibia	72.68	51.6%	48.7%	-3%
Lesotho	270.19	56.3%	53.3%	-3%
Senegal	399.72	37.8%	35.0%	-3%
Malawi	255.71	44.3%	41.6%	-3%
Congo, Dem. Rep.	599.89	58.3%	55.7%	-3%
Central African Republic	43.24	66.6%	64.0%	-3%
Ghana	340.50	77.2%	74.6%	-3%
Swaziland	33.86	27.4%	24.9%	-3%
Niger	125.46	84.1%	81.6%	-2%
Cote d'Ivoire	145.05	66.2%	63.8%	-2%
Eritrea	27.80	75.4%	73.2%	-2%
Liberia	86.76	73.8%	72.1%	-2%
Uganda	383.22	70.1%	68.3%	-2%
Burundi	85.22	36.1%	34.6%	-2%
Chad	58.37	79.9%	78.5%	-1%
Kenya	877.55	55.1%	53.7%	-1%
Cameroon	323.48	38.3%	36.8%	-1%
Somalia	15.52	62.7%	61.4%	-1%
Gabon	146.79	41.9%	40.6%	-1%
Congo, Rep.	28.97	75.7%	74.4%	-1%
Zambia	280.20	40.0%	38.8%	-1%
Madagascar	38.44	80.1%	79.1%	-1%
Sierra Leone	120.21	78.1%	77.2%	-1%
Mauritius	172.94	3.6%	2.9%	-1%

8.8.2.3 Group 3: poor progress

Group 3 contains the countries with the greatest need and smallest improvement in the region. In 2007, the group encompassed 22 countries and a need ranging from 62.7% in Sudan and Somalia, and 84.1% in Niger.

Table 95: Group 3 ranking of countries according to their performance - Sanitation 2007

Country Name	Funds (USD Millions)	Target	% Access to Sanitation in 2007	Gap/Need
Group 3				
Sudan	37.75	62.7	23.4	62.7%
Somalia	2.02	60.9	22.7	62.7%
Mali	39.74	59	21.1	64.2%
Cote d'Ivoire	2.12	58.8	19.9	66.2%
Central African Republic	11.51	58.6	19.6	66.6%
Ethiopia	167.71	54.3	17.8	67.2%

Mozambique	108.05	57.05	17.4	69.5%
Guinea-Bissau	1.20	56.2	16.9	69.9%
Uganda	78.32	57.8	17.3	70.1%
Guinea	24.34	56.45	16.3	71.1%
Benin	39.90	55.95	15.6	72.1%
Liberia	6.44	56.55	14.8	73.8%
Eritrea	13.75	55.7	13.7	75.4%
Congo, Rep.	0.00	56.35	13.7	75.7%
Burkina Faso	61.56	66.05	15.6	76.4%
Ghana	89.46	55.15	12.6	77.2%
Sierra Leone	11.56	55.65	12.2	78.1%
Tanzania	375.80	54.65	11.8	78.4%
Togo	0.25	55.7	11.4	79.5%
Chad	0.87	54.85	11.0	79.9%
Madagascar	5.57	55.15	11.0	80.1%
Niger	27.57	53.3	8.5	84.1%
South Sudan	0.00	0	0	0.0

In 2011, group 3 declined by 1 to reach 21 countries. Ethiopia moved to group 2 with a reduced need of 57.6%. All the countries in group 3 in 2007 remained in group 3 in 2011, with the exception of Ethiopia. The array in need decreased insignificantly from 62.7% and 84.1% in 2007, to 61.2% and 81.6% in 2011. While the countries did not change the rankings did, Somalia, Sudan, Mozambique, Uganda, Sierra Leone and Togo, all moved down in the table, while Burkina Faso, and Guinea Moved up.

Table 96: Group 3 ranking of countries according to their performance - Sanitation 2011

Country Name	Funds (USD Millions)	Target	% Access to Sanitation in 2011	Gap/Need
Group 3				
Mali	53.27	59	22.9	61.2%
Somalia	5.05	60.9	23.5	61.4%
Sudan	32.79	62.7	23.5	62.5%
Cote d'Ivoire	36.46	58.8	21.3	63.8%
Central African Republic	5.67	58.6	21.1	64.0%
Guinea-Bissau	1.72	56.2	19.6	65.1%
Mozambique	125.22	57.05	19.3	66.2%
Guinea	1.09	56.45	18.4	67.4%
Benin	58.53	55.95	17.8	68.2%
Uganda	47.63	57.8	18.3	68.3%
Liberia	12.33	56.55	15.8	72.1%
Burkina Faso	0.80	66.05	18.0	72.7%
Eritrea	0.81	55.7	14.9	73.2%
Congo, Rep.	0.12	56.35	14.4	74.4%

Ghana	11.09	55.15	14.0	74.6%
Tanzania	127.59	54.65	13.6	75.1%
Sierra Leone	30.69	55.65	12.7	77.2%
Chad	6.79	54.85	11.8	78.5%
Madagascar	8.09	55.15	11.5	79.1%
Togo	1.95	55.7	11.5	79.4%
Niger	30.50	53.3	9.8	81.6%
South Sudan	0.00	0	0	0.0

None of the four countries with a decrease in access to adequate sanitation are in group 3 for need. Djibouti, Nigeria and Zimbabwe are in group 2 (moderate progress) and Equatorial Guinea is in group 1 (good progress). Nigeria and Zimbabwe received significant resources from 2007 to 2011, nonetheless their access rates declined. Djibouti related the highest drop of 6% in access to adequate sanitation, despite 73.9 million USD invested in the sector. The Seychelles are also in group 3 in terms of progress, while being ranked in group 1 for need. The Seychelles are 0.8% away from the sanitation target, but recounted no change in access rates from 2007 to 2011. Togo, Sudan, and the Gambia had such an insignificant change that their progress is marked as 0%.

Table 97: Group 3 ranking of countries according to their performance – Sanitation

Country Name	Total Funds (USD Millions)	Gap/Need in 2007	Gap/Need in 2011	Progress
Group 3				
Togo	23.92	79.5%	79.4%	0%
Sudan	187.03	62.7%	62.5%	0%
Seychelles	0.53	0.8%	0.8%	0%
Gambia, The	26.98	26.1%	26.4%	0%
Zimbabwe	148.15	45.1%	46.1%	1%
Equatorial Guinea	0.78	14.4%	16.3%	2%
Nigeria	420.39	53.0%	54.9%	2%
Djibouti	73.90	35.2%	40.7%	6%
South Sudan	0.00	0.0	0.0	

It is worth mentioning that ranking in group 3 (greatest need) is not necessarily a reflection on the effort and progress made by a nation. For a more accurate account of advancement, ranking in the table for progress should be referenced. Guinea-Bissau is a good example of this reporting a large need of 65.1%, ranked in group 3 for sanitation and included in group 1 (greatest improvement) with an expansion of 5% to access rates for sanitation. Another example is Equatorial Guinea that reported a decline in access to adequate sanitation in 2011, yet was ranked in group 1 (smallest need) in the same year.

8.8.3 Performance towards both the water and sanitation targets

Table 98 encapsulates the total funds received from 2007 to 2011, the percentage access to safe drinking water and adequate sanitation in 2007 and 2011, the total improvement for water from 2007

to 2011, the total improvement for sanitation from 2007 to 2011 and the combined total improvement in both water and sanitation from 2007 to 2011 for the 48 countries in Sub-Saharan Africa. The countries are divided into 3 groups according to their combined total improvement. South Sudan is included at the end of the table and but is not ranked due to the lack of data available for the studies period. All need values stated in the tables are absolute values, as some nations had achieved their targets.

8.8.2.1 Group 1: good progress

Group 1 is comprised of the 25 countries in Sub-Saharan Africa with the greatest progress in increasing access rates to safe drinking water and adequate sanitation from 2007 to 2011. The reported changes in access range for an increase of 6% in Kenya to 22% in Ethiopia. Nine countries in the top 15 for funding are considered to have made good progress; they are Ethiopia (4th), Mali (10th), Burkina Faso (6th), Uganda (9th), Mozambique (3rd), Senegal (8th), Cameroon (12th), Kenya (2nd) and Angola (13th). This group includes 2 of the top 3 highest funded nations, Mozambique ranked 3rd with 709.83 million USD and Kenya with 877.55 million USD. Also included are 6 countries from the bottom 15 least funded countries: Swaziland (37th), Guinea-Bissau (44th), Madagascar (36th), Botswana (46th), Sao Tome and Principe (45th) and Guinea (34th). Out of the 25 countries in this ranking, only 6 had improved more in sanitation than water. Cape Verde, Angola, Sao Tome and Principe, Mauritania, Botswana and Rwanda increased access to adequate sanitation by a minimum of 5% and a maximum of 11% over water. Uganda, Malawi, Swaziland, Cameroon, Sierra Leone and Mali had a difference of over 5% between the improvement reported for water and sanitation, and Guinea-Bissau, Madagascar and Burkina Faso had a difference equal or just below to 5%. Kenya had a difference exceeding 2%.

Table 98: Group 1 ranking of countries according to their performance - Water and Sanitation

Country Name	Total funds (USD Millions)	Improvement Water	Improvement Sanitation	Total Improvement (water + sanitation)
Group 1				
Ethiopia	696.66	-12%	-10%	-22%
Sao Tome and Principe	5.84	-7%	-8%	-16%
Mauritania	162.09	-7%	-8%	-15%
Guinea-Bissau	11.69	-10%	-5%	-15%
Cape Verde	54.60	-3%	-11%	-14%
Mali	352.35	-11%	-3%	-14%
Burkina Faso	473.55	-9%	-4%	-13%
Swaziland	33.86	-10%	-3%	-12%
Malawi	255.71	-9%	-3%	-12%
Angola	285.05	-2%	-9%	-10%
Uganda	383.22	-8%	-2%	-10%
Guinea	45.93	-5%	-4%	-9%
Rwanda	147.75	-3%	-5%	-8%

Niger	125.46	-6%	-2%	-8%
Ghana	340.50	-6%	-3%	-8%
Benin	179.16	-4%	-4%	-8%
Mozambique	709.83	-4%	-3%	-8%
Botswana	1.10	-1%	-6%	-7%
Sierra Leone	120.21	-6%	-1%	-7%
Namibia	72.68	-4%	-3%	-7%
Cameroon	323.48	-5%	-1%	-6%
Senegal	399.72	-4%	-3%	-6%
Madagascar	38.44	-6%	-1%	-6%
Liberia	86.76	-4%	-2%	-6%
Kenya	877.55	-4%	-1%	-6%

8.8.2.2 Group 2: medium progress

Group 2 is comprised of the 18 countries in Sub-Saharan Africa showing moderate improvement in increasing access rates to safe drinking water and adequate sanitation from 2007 to 2011. The reported changes in access range for an increase of 1% in Mauritius to 5% in Zambia, Eritrea, Central African Republic, South Africa, Comoros and the Democratic Republic of Congo. Five countries in the top 15 for funding are considered to have made moderate progress; they are Zambia (14th), Nigeria (7th), the Democratic Republic of Congo (5th), Lesotho (15th) and Tanzania (1st). This group includes the highest funded nation, Tanzania ranked 1st with 960.96 million USD. Also included are 7 countries from the bottom 15 least funded countries: Central African Republic (35th), Eritrea (39th), the Republic of Congo (38th), Togo (41st), the Gambia (40th), Somalia (42nd), and Comoros (43rd). Out of the 18 countries in this ranking, only 8 had improved more in sanitation than water. South Africa, Central African Republic, Democratic Republic of Congo, Tanzania, Lesotho, Cote d'Ivoire, Burundi, Mauritius and Comoros increased access to adequate sanitation by a minimum of 1% and a maximum of 5% over water. It is important to note that Comoros reported no change in access rates to safe drinking water and that Mauritius achieved the target for access rates to safe drinking water. Nigeria had a difference of over 4% between the improvement reported for water and sanitation and Zambia had a difference exceeding 2%. Nigeria also reported a decrease in access to adequate sanitation from 2007 to 2011.

Table 99: Group 2 ranking of countries according to their performance - Water and Sanitation

Country Name	Total funds (USD Millions)	Improvement Water	Improvement Sanitation	Total Improvement (water + sanitation)
Group 2				
Zambia	280.20	-4%	-1%	-5%
Eritrea	27.80	-3%	-2%	-5%
Central African Republic	43.24	-2%	-3%	-5%
South Africa	250.23	-2%	-3%	-5%

Comoros	13.23	0%	-5%	-5%
Congo, Dem. Rep.	599.89	-2%	-3%	-5%
Chad	58.37	-3%	-1%	-4%
Nigeria	420.39	-6%	2%	-4%
Tanzania	960.96	-1%	-3%	-4%
Gabon	146.79	-3%	-1%	-4%
Lesotho	270.19	-1%	-3%	-4%
Cote d'Ivoire	145.05	-1%	-2%	-4%
Congo, Rep.	28.97	-2%	-1%	-4%
Togo	23.92	-3%	0%	-4%
Somalia	15.52	-2%	-1%	-3%
Burundi	85.22	-1%	-2%	-3%
Gambia, The	26.98	-3%	0%	-2%
Mauritius	172.94	0%	-1%	-1%

8.8.2.3 Group 3: poor progress

Group 3 is comprised of the 5 countries in Sub-Saharan Africa reporting the least improvement in increasing access rates to safe drinking water and adequate sanitation from 2007 to 2011. The reported changes in access range for a decrease of 2% in Djibouti, Equatorial Guinea, Zimbabwe and Sudan to no change 0% in the Seychelles. Two countries in the bottom 15 for funding are considered to have made poor progress; they are Seychelles (48th) and Equatorial Guinea (47th). Four of the 5 countries in the group have a negative total progress and the Seychelles was even at 0%. Djibouti had a difference of 3% between the improvement reported for water and sanitation. The Gambia reported a decrease in access to adequate sanitation from 2007 to 2011. Djibouti and Equatorial Guinea both reported a decrease in access to adequate sanitation large enough to surpass their improvement in access to safe drinking water. Zimbabwe and Sudan recounted a decrease in both access to safe drinking water and adequate sanitation.

Table 100: Group 3 ranking of countries according to their performance - Water and Sanitation

Country Name	Total funds (USD Millions)	Improvement Water	Improvement Sanitation	Total Improvement (water + sanitation)
Group 3				
Seychelles	0.53	0%	0%	0%
Equatorial Guinea	0.78	0%	2%	2%
Zimbabwe	148.15	1%	1%	2%
Sudan	187.03	2%	0%	2%
Djibouti	73.90	-3%	6%	2%
South Sudan				

In general more progress has been made in achieving the water target, with 6 countries relating a decrease in access to adequate sanitation. No country, with the exceptions of Zimbabwe and Sudan, has stated a decrease in access to safe drinking water. But this does not affect the rankings. Most nations are categorised in different groups for improvement in access rates to safe drinking water and

adequate sanitation. Ethiopia, Guinea-Bissau, Mauritania and Sao Tome and Principe are the only countries to be ranked in group 1 (good progress) for both water and sanitation. Guinea, Liberia, Cameroon, Mozambique, Zambia, Kenya, Benin, Namibia, Senegal, Eritrea, Chad, Gabon, Central African Republic, Republic of Congo, South Africa, Democratic of Congo and Somalia are ranked in group 2 (moderate progress) for both water and sanitation and Equatorial Guinea, Seychelles, Sudan and Zimbabwe are the countries to be ranked in group 3 (poor progress) for both water and sanitation.

8.9 Overall discussion

Through the critical assessment of the delivery of water and sanitation related MDGs, this research identified the main causes for concern driving the delay in completing MDG7. The key findings were the disregard for the link between the 8 MDGS and the effect of their achievement on the others; a lack of understanding in the role played by water in tackling poverty; the separation of water from sanitation in undertaking the MDG for water and sanitation; criticisms and reproaches directly related to the MDGS; the misallocation of funds. As it underpins the other causes, the misallocation of funding warrants more scrutiny. The role and extent played by funding in driving the delay in achieving the water and sanitation MDG was accomplished using access rates and financial data. This revealed the link between funding and access rates, as well as poor funding practices shared by most nations. Based on these findings, a solution was proposed that addresses the recognised root causes. NBA was found to answer the acknowledged problems and offer the greatest potential to maximising the limited resources available in the aid sector for the water and sanitation MDG.

Chapter 9: Conclusions

The aim of the research was to evaluate the role of ODA in the delivery of water and sanitation related MDGs from a systems perspective, in order to deliver a more coherent framework that aims to reduce developing countries' water and sanitation needs. This research is unique in its compilation and comparison of access rates and financial data in order to establish the relationship between access to safe drinking water and adequate sanitation and funds and understand the delays in achieving MDG 7.

In an attempt to address the developmental challenges facing developing nations, the United Nations created the MDGs as an agenda outlining the main global issues recognised by the international community. These goals represent eight areas believed to be a universal right. Target 7.C of MDG 7, halve by 2015 (from 1990 levels) the proportion of the population without sustainable access to safe drinking water and basic sanitation, was the focus of this thesis.

Many authors have offered suggestions as to why the current methods used in the water and sanitation aid sector have failed to deliver promised results, identifying isolated components as responsible. While this has highlighted many issues, evaluating the aid sector as a whole from a systems perspective offers a better understanding of the failings. Through the investigation of the delivery of the water and sanitation MDG, a number of causes for concern were identified. The key findings were:

- The disregard for the link between the 8 MDGs and the effect of their completion on the others. The water and sanitation MDG supports the promotion of health and education (MDG 2,3,5), the protection of children and the most vulnerable (MDG 1,4,6), has been linked to reducing the burden of disease and malnutrition, as well as reinforces an increase in development (MDG 8).
- A lack of understanding in the role played by water in tackling poverty. The MDGs have helped shift the view on poverty and its definition. The inclusion of criteria such as ill health, hunger and malnutrition, unsafe environments and social discrimination in the view of poverty, has highlighted the role water plays in either increasing poverty or eradicating it. Water related diseases are the most prevalent illness affecting the poor and vulnerable in the developing world and the procurement of water to meet basic needs spread such ailments.
- The separation and distinction between water and sanitation in undertaking the water and sanitation MDG. Many countries have chosen to split the MDG into two targets, focusing on achieving increased access to either improved water sources or improved sanitation facilities. This ignores the inherent link between water and sanitation. Poor sanitation leads to water contamination.
- Although the MDGs have encouraged action to eradicate poverty and achieved improvements, the goals have received some criticism. The appropriateness and wording of

indicators are called into questions, as well as their narrow focus and target centric nature which has boosted vertical programming aimed at those closest to the thresholds.

- The final and main cause of concern is the misallocation of funds for the completion of the water and sanitation MDG. Funding has increased in the aid sector without real improvement on the ground indicating that success in achieving the goals requires more than just funds. As it underpins the other causes, the misallocation of funding warrants more scrutiny to determine its role and extent in driving the delay in achieving the water and sanitation MDG.

Although there have been substantial improvements in access rates to improved water sources and adequate sanitation facilities on a global scale, many of the most vulnerable regions are lagging behind. Access rates in Sub-Saharan Africa reached 61% for improved water sources and 31% for adequate sanitation, whilst access rates in the LDC were reported as 63% for improved water sources and 36% for adequate sanitation. However, the majority of aid funding is directed to the regions most in need. Sub-Saharan Africa and South Central Asia received 2.2 billion USD and 2 billion USD respectively out of the 7.8 billion USD donated in 2011. Despite the majority of funds aimed at vulnerable regions, the lack of significant improvement is indicative of underlying issues other than lack of funding. This warrants a closer look at funding practices.

An analysis of financial data taken from the OECD reveals a correlation between funding and access rates, countries farther from reaching the target access rates for either improved water sources or adequate sanitation, or both received comparatively more funds. No link or correspondence was recognised between GDP and funding, or population and funding. Size of nations, population density, and land area may influence access rates. The analysis also uncovered inequalities in funding allocation. Larger sums were allocated to projects directed towards water and large systems compared to projects with a primary focus on sanitation or the basic needs of a population. Such disparity can be a factor causing slow progress, with investments targeted towards existing infrastructure and away from expanding coverage. This highlights the need for continuation of aid and better targeting, as well as improved funding practices.

The current fragmented and incoherent way of dealing with funding the water and sanitation sector, has led to slow progress and delays in meeting the targets, causing intense scrutiny of the MDGs and its methods. The examination of funding practices and the expansion of access to safe drinking water and adequate sanitation exposes the numerous lapses in the current situation and calls for a holistic approach. A further, more expansive investigation of the extent to which funding drives the lag in progress in the water and sanitation MDG is called for on a more detailed scale.

An analysis of the financial data for the 48 countries in Sub-Saharan Africa was completed and confirmed the conclusions drawn previously. The majority of countries prioritise water supply and large systems, over sanitation and basic provision of services and dedicate large sums to the provision of water and sanitation facilities. The preponderance of countries is substantially closer to achieving the water target than the sanitation target, with a few nations reporting a decrease in

access to adequate sanitation. When given the opportunity, projects and resources will be reported in ambiguous and unclear categories. The combined sub-categories for basic supply and large systems continued to be used after the distinction was made and despite guidance notes explicitly stating they are to be used only when components cannot be identified or not known. It is also increasingly difficult to quantify the improvement versus the aid received and determine if enough progress has been achieved for the amount of investment.

The exploration of the financial breakdown for the 48 countries in Sub-Saharan Africa revealed a series of findings considered root causes for the delay in the completion of the water and sanitation MDG. It demonstrates the poor funding practices of many nations who are working towards achieving the targets. A large number of countries allocated considerable sums to areas outside of water supply and sanitation or to areas with large success rates, despite little improvement where it matters. Other nations devote substantial funding to the water supply and sanitation category, but do not report improvements to access rates. This can be explained by the lag effect of progress made. Investment doesn't bring about immediate change, but rather requires time to take effect (investment in infrastructure, expanding networks). Or is due to poor spending in the sector. The exploration also revealed that countries directed funds towards areas closer to being achieved, rather than attempting to close access gaps. This has been identified as a weakness and criticism of the MDGs. The target nature of the goals pushes nations to focus on areas already close to the target, rather than on areas most in need. A considerable number of countries report a disproportionate improvement to access to safe drinking water compared to access to adequate sanitation. This is mostly due to prioritising water supply, and therefore investing more funds to water sources. The main outcome from the examination of the data is the misalignment of the financing and the MDGs, and the resources and the motivation behind aid funding.

Based on the areas of concern highlighted in the previous chapters and the identification of the common parameters in the funding practices of the countries in Sub-Saharan Africa, a better understanding of the current system and its issues has been achieved. This allows for the proposal of a solution that addresses all the recognised gaps in the system and the development of a coherent frame that aims to reduce the water and sanitation needs of countries in the developing world. Needs based approach (NBA) is suggested as a resolution as it answers all the acknowledged points of failures. A NBA is the systematic review of information gathered on an issue facing a particular group, leading to the determination of priorities and the allocation of resources accordingly. This is done to bring about beneficial change. The practical purpose of a NBA is the special allocation of resources to ensure the geographical equity of regions, districts, and localities, as well as social equalities.

The application of needs based assessments in the water and sanitation sector has the potential to greatly improve the effectiveness and efficiency of intervention projects. It remains a constructive and practical system for the impartial allocation of resources. It instils trust and confidence in donors and recipients, and offers transparency to the funding process. These are all particularly important attributes for the water and sanitation aid sector.

A basic tier one needs assessment was conducted for the 48 countries in Sub-Saharan Africa, determining their baseline (access rates in 2007), calculating the targets for access to safe drinking water and adequate sanitation, and quantifying their 'needs'.

The finding of this study demonstrated the benefit of adopting a systems based approach to funding the water and sanitation sector, based on the recognised points of failure of the funding mechanism, and its potential to improve the effectiveness and efficiency of intervention projects. The results of the basic tier one needs assessment confirm the previous statement and strengthen the suggestion of moving towards a systems based approach, and more specifically the inclusion of a needs based assessment in the funding process for water and sanitation aid.

9.1 Recommendations for further research

The following recommendations are put forward for further work.

- Research into alternative funding mechanism applied in the aid sector and their incorporation into the NBA.
- Research the role and impact of other indicators on funding such as Gross National Income, natural resources, population, Gross Domestic Product and political stability.
- Investigate capacity building programs and initiative for the application of a NBA in the field, both for local expertise and donor knowledge.
- Further development of the Needs Based Assessment framework to cover all aspects of the water and sanitation sector and to other areas in the aid sector.

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