

**EXPORT-IMPORT BANK OF INDIA**

**WORKING PAPER NO. 64**

**WATER, SANITATION AND HEALTHCARE IN AFRICA:  
ENHANCING FACILITY, ENABLING GROWTH**

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# Executive Summary

## Introduction

Nations across the globe aspire for economic prosperity so that it translates into a better standard of living. Economic growth without much social progress falls short of achieving the aim of improved welfare of the citizens. Social progress could be defined as the capacity of a society to meet the elementary human needs of its citizens, create the building blocks that allow citizens and communities to augment and sustain the quality of their lives, while developing an ecosystem for all individuals to realize their latent potential.

While achieving these objectives may be a long-term phenomenon, focusing on three key social segments, viz. water, sanitation and healthcare and their universal access to its citizens at an affordable cost has become a primary objective, especially for the lesser developed countries.

Africa has been drawing increasing global attention with the region being home to some of the fastest growing economies – three of the world’s ten fastest growing economies over the last few years 2015-2016 are in Africa. The continent also has a young and rapidly growing population of over 1 billion people, more than half of which are below 25 years and nearly two-thirds have a mobile phone. At the same time, Africa has been urbanizing rapidly and about two-fifth of its population now live in cities.

Despite the huge potential for growth in Africa, economic and social challenges still plague the continent, even in basic needs such as water, sanitation and healthcare. In many parts of Sub-Saharan Africa, less than half of the population uses a toilet fit for human beings, and approximately 90% of wastewater in developing countries is discharged directly into rivers, lakes, and seas. According to United Nations, worldwide more than 2 million people die every year from diarrhoea. A study by the World Bank, shows, the economic impact of not investing in water and sanitation would be equivalent to 4.3% of Sub-Saharan African GDP.

In order to effectively address the major challenges under water, sanitation and healthcare, it is important to first appreciate the extent of the problem and subsequently prioritize action where needs are greatest and impacts are widespread. In this Study, an effort has been made towards highlighting the trends in social progress of Africa, in the key social segments of water, sanitation, and healthcare, identify select challenges and prescribe few strategies which could ameliorate the situation in the long run.

India itself has gone through a similar cycle of economic and social progress, and hence is well equipped to share its experience with members of the African continent. It is in this context that the Study makes an effort towards highlighting select cases which have been successfully implemented in India, which could possibly be replicated in Africa, as well.

## Water in Africa

### Case for Investing in Water

Inefficiencies in the water sector are divided between distribution losses and under-collection of revenue. According to the African Development Bank (AfDB), these combined inefficiencies create a huge economic burden, especially in countries like Democratic Republic of Congo, Ghana, and Zambia. The main factors that have added to the inadequate access to water include population growth and rural-urban migration. The access to improved water sources in rural and urban areas of Sub-Saharan Africa has improved by a mere 14% and 3% respectively during the 2000-2015 period, while the population has grown by almost 3% during the same period.

### Challenges for Investment in Water in Africa

A plausible reason for low investment levels is that limited funding is available, and whatever little is available is often not used very effectively. Absorbing this funding effectively and in a manner that results in

sustainable profits remains both a challenge and an opportunity.

#### *Funding gap for water investments*

Availability of long-term finance on feasible terms to support the development of water and sanitation services remains a major challenge. There is insufficient domestic financing for water, sanitation and healthcare programmes overall with particularly serious shortfalls for water.

#### *Infrastructural challenges*

Developing nations often suffer from a perpetual shortfall of electricity and this proves to be another hindrance in providing universal access to water. The challenge is not only finding more money for sustainable infrastructural investments in this sector. Acquiring the technical know-how to use the resources most efficiently and the managing the institutions effectively is equally important to ensure universal access.

#### *Lack of water resource management and cooperation*

Within Africa, the water challenge remains largely unsolved at the national and regional level because of institutional, political and regulatory barriers to water cooperation. Lack of coordination among authorities, stemming from overlapping roles and responsibilities, coupled with lack of harmonization of laws and policies related to the issue leads to avoidable delays in funding and execution of projects successfully.

#### *Varied climate and natural hazards*

Sub-Saharan Africa has a relatively good supply of rainwater, but it is highly seasonal, unevenly distributed across the region and there are frequent floods and droughts. The impact of climate change has further aggravated the dramatic hydrological variability highlighting the urgent need for the adaptation of climate-resilient approaches.

#### Strategies for investment in sector

Business in water sector can be profitable only if volumes of sales are high. Since, access to safe water sources is a basic amenity and can never go out of demand, especially in Africa that is witnessing growing purchasing power of the middle class, ensuring high volume of sales is not difficult. Tapping this demand through innovative working mechanisms can pay rich dividends to entrepreneurs.

#### *Ensuring revenue to bridge the funding gap*

Water can be a profitable business and with increased viability it can be upscaled, eventually making universal accessibility in Africa a reality. For the water sector to be an attractive venture, the supplier needs to recoup its expenditure and break-even in order to maintain the supply systems and meet other overhead costs.

The introduction of metering systems such as pre-paid metering, post-paid metering and smart metering to generate more income and encourage careful water use. Metering could be either pre-paid, post-paid or smart metering. The Smart Water metering enables the automated collection of utility meter data.

#### *Cost recovery by tariffs*

Ideally, tariff structure is designed to ensure that everyone has access to water for basic requirements at a low cost, or free till a certain threshold, but high-volume users are charged at a steeply graduated tariff plan in order to deter wastage. Cost recovery is an important aspect to promote private participation in the water sector in Africa and other developing regions.

#### *Public Private Partnership (PPP)*

PPPs contribute to operational efficiencies consistently, and add to utility performance, resulting in the reduction of non-revenue water<sup>1</sup>, improvement of bill collections and better productivity.

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<sup>1</sup>Non-revenue water (NRW) is water that has been produced and is “lost” before it reaches the customer. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example through theft or metering inaccuracies).

## Sanitation in Africa

### Case for investing in Sanitation

Sanitation generally refers to the provision of facilities and services for the safe disposal of human waste, the maintenance of hygienic conditions, through services such as garbage collection and wastewater disposal, amongst others. Decent sanitation standards, together with good hygiene and safe water, are crucial for good health of the individual as well as social and economic development.

The approach towards sanitation needs to be revamped in Africa and has to be seen as a business opportunity. There is little doubt that people intrinsically enjoy cleanliness, and do not want to be looked at, or live in places that are not clean. This desire is a strong change agent that has to be leveraged successfully. Several WHO benefit-costs analyses have been conducted showing that water and sanitation interventions grant more economic returns than they cost.

Economic studies conducted in Africa have shown that impacts resulting from poor sanitation and hygiene cost the economies between 0.9% and 2.4% of annual GDP. These costs are accounted for on the basis of the adverse health effects associated with poor sanitation and water supply, costs of treating these health problems, and the associated loss of productivity that results when individuals are sick and others have to care for them.

### Challenges for Investment in Sanitation

#### *Affordability*

In a sector like sanitation, affordability of the product becomes a challenge as it largely caters to a market segment at the bottom of the pyramid, which are mostly deprived of this necessity. Thus, the only alternative is a less expensive product that is made for the poor, but which is not a poor product. The Sulabh case in India discussed in the study provides a good example of affordable and sustainable sanitation facility.

#### *Accessibility*

Although, accessibility and affordability are closely related challenges, the focus here is on physical

accessibility of the facility. Sanitation facilities need to be built in such a way that everyone can use them. Providing financial support for training masons, shopkeepers and traders can be an effective way of using subsidies to develop the sanitation sector. The RSM (Rural Sanitation Marts) another successful intervention in Indian context, discussed herein the Study is a good way of making supply chains more viable.

#### *Issues of Privatisation*

Expertise of the private sector about marketing, pricing issues or the establishment of supply chains is central to meeting the challenges facing the sanitation and hygiene sector. A strong State as a regulator and promoter that is able to channelize the dynamism of the private sector could deliver sustainable and demand driven solutions.

#### *Infrastructural Challenge*

Sanitation facilities are just the means and not the end to all the issues regarding sanitation. Governments must concentrate on establishing the infrastructure needed to run the sanitation facilities, build efficient sewage networks, and ramp up the waste treatment facilities so that water bodies are not polluted by effluent discharge.

#### *Attitudinal Challenge*

A social mobilisation campaign is required to create demand for sanitation facilities. There is an urgent need to project sanitation as desirable for reasons of privacy and comfort, including health hazards, and discourage bad sanitation practices as socially undesirable habits.

### Strategies for investment in the sector

#### *Evaluating sources of revenue for investment*

Increasing tax revenue is essential to close the sanitation funding gap. For example, a 0.5% Swacch Bharat Cess is levied in India on all services to generate revenue exclusively utilized for the Swacch Bharat (Clean India) Campaign.

#### *PPP in sanitation*

Since private equity and commercial debt are not readily available for sanitation sector, the option of lease or concession type of PPP model has to be explored.

This model allows a combination of public financing with the efficiency of the private sector.

#### *Innovation as a strategy*

Innovation in sanitation facilities is crucial today because the majority of the people who require it, lack affordability, accessibility and a conducive social environment that can facilitate its penetration. Thus, the onus hence lies on novel ideas that can overcome all these barriers and provide universal access.

#### *Changing mind-set*

Breaking taboo and creating awareness about importance of sanitation through various media campaigns using various marketing strategies is a key strategy to inculcate consciousness, which in turn will create demand for better sanitation facilities

### **Healthcare in Africa**

#### Case for Investing in Healthcare

Health is one of the largest concerns of the continent. On most of the health indicators, Africa lags behind the rest of the world not only in terms of absolute figures but also in terms of the rate of progress on these healthcare metrics. This is further exacerbated by spread of either new strains of existing disease or an outbreak of a completely new disease.

The Study analyses the health scenario in Africa on the basis of factors such as life expectancy, infant mortality rates and burden of disease, and proves the need for urgent investment in healthcare in Africa.

External resources for health account for 10.4% of total health expenditure in Africa, which is a much higher proportion than anywhere else in the world (world average is just 0.2%). Set against this background, it will not be out of place to assert that Africa's healthcare systems which today is at a nascent stage, provides tremendous opportunity for healthcare investors to create new and innovative business models for different geographies in the continent.

#### Strategies for investment in the sector

##### *Cooperation with African health establishments in training healthcare professionals*

According to WHO estimates in 2010, the current workforce in some of the most affected countries in Sub-Saharan Africa would need to be scaled up by as much as 140% to attain international health development targets such as those in the Millennium Development Goals.

##### *Cooperation with African economies in technology infusion in healthcare facilities*

Communication for health purposes has shifted from the largely manual or physical documentary method to digital communication, and as a result, has helped dissemination of information across the world. Doctors in many parts of the world are now able to collaborate as often and as quickly as they want with other medical doctors in other parts of the world through the use of ICTs. The Study analyses the role IBM played in fighting the Ebola epidemic.

##### *Cooperation in building core healthcare infrastructure*

The Study finds that the scope of Government's participation towards creating healthcare infrastructure in Africa is limited by various constraints. This provides an opportune moment for greater investments by the private sector into the African healthcare sector. Indian hospital majors, who have gained significant experiences in running hospitals under the PPP framework, could be ideal partners for Africa's healthcare infrastructure needs.

### **INDIA-AFRICA COOPERATION**

The huge paucity of adequate infrastructure offers enough headroom and tremendous opportunity for investments, through creating new infrastructure, providing technology, transfer of know-how, and serving both the domestic African market as also making it as base for exporting to other regions of the world.

Given the similar nature of socio economic scenario in India and Africa, both the nations can be prudent partners in achieving sustainable solutions for universal access in the WASH sector, and make the economic growth meaningful by improving welfare of the citizens.

India has achieved reasonable success in its water, sanitation, and healthcare initiatives with a novel mix of public policies and private investments and initiatives. India has achieved the MDG target of halving the population without access to safe water by 2015, and is striving towards hundred percent access. Sanitation and health statistics have also shown marked improvement in a short span of time. Thus, Indian investments in Africa can not only provide a greater thrust to Water Sanitation and Health sector but also provide the much needed expertise and innovation to improve access in the African settings.

India had committed US\$ 524 mn to African infrastructure projects in 2015, up from US\$ 424 mn in 2014 but still short of the US\$ 761 mn committed in 2013. Of its 2015 commitments, US\$ 255 mn was targeted at the energy sector and US\$ 268 mn was

directed at water operations. FDI investments in African healthcare sector from India stood at 280.7 million US\$ from January 2003-17.

EXIM Bank has financed many projects in the water, sanitation and healthcare sector of Africa through its unique Lines of Credit (LOC) programme in various African countries, and extended credit of more than US\$ 700 million since 2009. Specific initiatives in the water, sanitation and healthcare sector elaborated in the Study include Tata Water Mission and Swajaldhara in water sector, Water and Sanitation Pool Fund, Tamil Nadu and Sulabh Story in sanitation and Education and Telemedicine in the healthcare sector, among others.

The Study has made an effort towards structuring few financial models which could be proactively explored and considered between various development financial institutions in India and Africa, along with multilateral development banks (namely AfDB), and various sovereign and parastatal bodies to support initiatives in water, sanitation, and healthcare sectors.

# 1. Introduction

## Overview

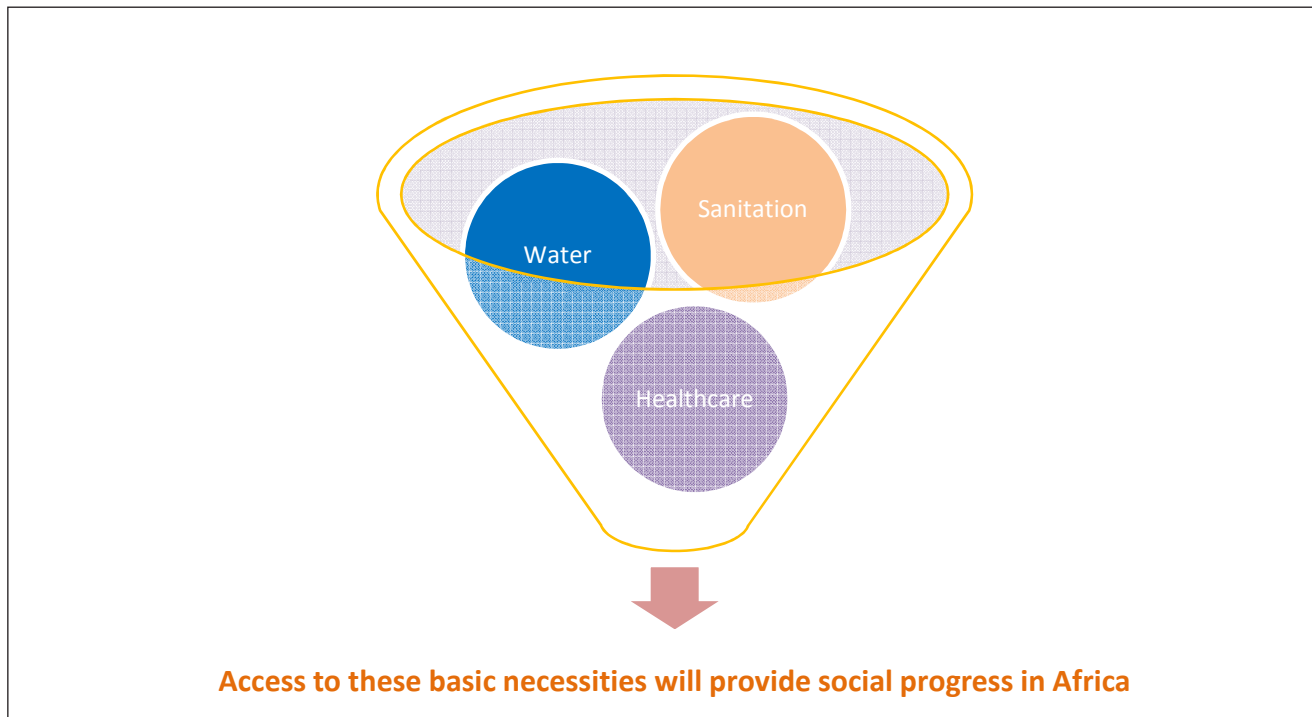
As countries across the world endeavour to expand their economic output, the progress that they make on social parameters has begun to gain increasing attention. Social progress could be defined as the capacity of a society to meet the elementary human needs of its citizens, create the building blocks that allow citizens and communities to augment and sustain the quality of their lives, while developing an ecosystem for all individuals to realize their latent potential. While achieving these objectives may be a long-term phenomenon, focusing on three key social segments, viz. water, sanitation and healthcare and their universal access to its citizens at an affordable cost has become a primary objective, especially for the lesser developed countries.

Access to water, sanitation and healthcare is a human right, and yet billions are still faced with daily challenges

accessing even the most basic of services. Many developing countries are today struggling to cope with chronic water shortages, inadequate sanitation, and poor or very rudimentary healthcare infrastructure. Coupled with this, people in developing economies are also facing unprecedented population growth, rapid urbanization, and increased economic activity. Basic needs remain unmet, and the human right to water and sanitation remains unrealized for billions of people worldwide.

The global sanitation problem requires urgent attention. Today, 2.5 billion people still lack access to basic sanitation. In many parts of Sub-Saharan Africa, less than half of the population uses a toilet fit for human beings. In South-East Asia, almost 40% of the population defecates in the open. In cases where toilets exist, it is important that they hygienically separate human waste from human contact. But this step by itself is not sufficient to protect health. There are other key

**Exhibit 1.1: Focus areas for Social Progress**



Source: Exim Bank Research



factors. For example, human wastes are often captured in unlined latrine pits from where human waste freely leach into the ground water. Also, when human wastes are emptied, the faecal sludge is frequently dumped into surrounding water bodies. Both features cause major negative health impacts on communities and the environment at large. Approximately 90% of wastewater in developing countries is discharged directly into rivers, lakes, and seas<sup>2</sup>.

Around 1.8 billion people globally use a source of drinking water that is contaminated. Water scarcity affects more than 40% of the global population and is projected to rise further. More than 80% of wastewater resulting from human activities is discharged into rivers or sea without any treatment, leading to pollution. According to United Nations, worldwide more than 2 million people die every year from diarrhoea. Poor hygiene and unsafe water are responsible for nearly 90% of these deaths, most of which affect children.

The cost to overcome this challenge, both for people and for the economy, is huge. Without better infrastructure and management, millions of people continue to die every year. A study by the World Bank, shows, the economic impact of not investing in water and sanitation would be equivalent to 4.3% of Sub-Saharan African GDP.

### **Sustainable Development Goals**

Improved access to water, sanitation and healthcare formed the cornerstone of the Millennium Development Goals and has continued to remain an important component of the Sustainable Development Goals (SDG) which was formed in 2015.

#### *Water and Sanitation (Goal 6)*

Proper water and sanitation is one of the key foundations on which the Sustainable Development Goals have been framed. Managing water sustainably enables better management of food and energy production and contributes to decent work and economic growth.

Recovering the resources embedded in human waste and wastewater like nutrients, water and energy contributes towards achieving Goal 12 (sustainable consumption and production) and Goal 2 (zero hunger) of the SDG while ensuring adequate sanitation and wastewater management along the entire value chain in cities contributes to Goal 11 (sustainable cities and communities), Goal 1 (no poverty) and Goal 8 (decent work and economic growth). Clean Water and Sanitation is the 6th goal amongst the Sustainable Development Goals. The targets in water and sanitation under the SDG formed in 2015 include the following:

- By 2030, achieve universal and equitable access to safe and affordable drinking water for all;
- By 2030, achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations;
- By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally;
- By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity;
- By 2030, implement integrated water resources management at all levels, including through trans-boundary cooperation as appropriate;
- By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes;
- By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies;

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<sup>2</sup>UNDP

- Support and strengthen the participation of local communities in improving water and sanitation management.

#### *Healthcare (Goal 3)*

The world has made huge strides in reducing child mortality, improving maternal health and fighting HIV/AIDS, malaria and other diseases. Since 1990, there has been over 50% decline in preventable child deaths globally. Maternal mortality also fell by 45% worldwide. New HIV/AIDS infections fell by 30% between 2000 and 2013, and over 6.2 million lives were saved from malaria.

Despite this incredible progress, more than 6 million children still die before their fifth birthday every year. 16,000 children die each day from preventable diseases such as measles and tuberculosis. Every day hundreds of women die during pregnancy or from child-birth related complications. In many rural areas, only 56% of births are attended by skilled professionals. AIDS is now the leading cause of death among teenagers in Sub-Saharan Africa, a region still severely devastated by the HIV epidemic.

These deaths can be avoided through prevention and treatment, education, immunization campaigns, and sexual and reproductive healthcare. The Sustainable Development Goals make a bold commitment to end the epidemics of AIDS, tuberculosis, malaria and other communicable diseases by 2030. The aim is to achieve universal health coverage, and provide access to safe and affordable medicines and vaccines for all. Supporting research and development for vaccines is an essential part of this process as well. The targets set under this SDG formed in 2015 include the following:

- By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births;
- By 2030, end preventable deaths of new-borns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births;
- By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases;
- By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being;
- Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol;
- By 2020, halve the number of global deaths and injuries from road traffic accidents;
- By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes;
- Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all;
- By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination;
- Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate;
- Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States;
- Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.

#### **This Study**

Africa's economic growth has not been rapid or inclusive enough to create enough jobs and significantly

improve quality of life. The situation in Africa on the social parameters also leave substantial scope for improvement.

In Sub-Saharan Africa, access to water, sanitation and healthcare is perhaps among the most acute in the world. Only 23.25% of the population in rural and 40.23% in urban Sub-Saharan Africa had access to sanitation facilities in 2015. In terms of access to water, only around 55.87% of the population in rural and 86.78% in urban had access to usable water. Sub-Saharan Africa accounts for 11% of the world's population, yet suffers from 24% of the global disease burden. For Africa's poor people, a heavy burden of communicable diseases and nutritional deficiencies reduces their productivity, their quality of life and their life expectancy. Poor households are particularly vulnerable to health shocks that impoverish them even further. A regular supply chain of affordable pharmaceuticals is also not in place because of limited indigenous production facilities.

The African Development Bank (AfDB) has taken upon the mandate to improve the quality of life for the people of Africa under the Hi-5 principles adopted in 2016. The Bank has committed to build up the availability of infrastructure for water, sanitation, and healthcare so that African economies can realize their full potential.

In order to effectively address the major challenges under Water Sanitation and Healthcare, it is important

to first understand the extent of the problem and subsequently prioritize action where needs are greatest and impacts are widespread. In this Study, an effort has been made towards highlighting the trends in social progress of Africa, in the key social segments of water, sanitation, and healthcare.

The huge paucity of adequate infrastructure offers enough headroom and tremendous opportunity for investments, through creating new infrastructure, providing technology, transfer of know-how, and serving both the domestic African market as also making it as base for exporting to other regions of the world, leveraging the various advantages that the continent offers.

India itself has gone through a similar cycle of economic and social progress, and is well equipped to share its experience with members of the African continent. It is in this context that the Study has highlighted various cases which have been successfully implemented in India, and those which could possibly be replicated across Africa.

It is firmly believed that success in social progress in Africa requires a collaborative effort, involving the private sector, the non-profit sector like Government, and stakeholders in the international arena, with the prime objective of working more effectively to solve the pressing problems in this huge continent.

## 2. Water in Africa

Water is the elixir of life, a fact appreciated better in regions which have challenges accessing it on a sustainable basis. Water is required not only for drinking and sanitation, but also for agricultural production, industry, energy, transport, amongst many others.

In the context of Africa, there are many prominent rivers that flow through the continent such as the Nile, Congo, Niger, Zambezi and Limpopo. However, the uneven distribution of these sources of water leaves many countries facing increasing levels of water crisis, as population and economic growth outpaces existing water infrastructure. Inefficiencies in the water sector are divided between distribution losses and under-collection of revenue. According to the African Development Bank, these combined inefficiencies create a huge economic burden, especially in countries like Democratic Republic of Congo, Ghana, and Zambia.

The main factors that have added to the inadequate access to water include population growth and rural-urban migration. The rising population is driving the demand for water and accelerating the degradation of water resources in many countries on the planet

The prevalence of large, trans-boundary river basins further complicates the task of developing large-scale

infrastructure and managing water-related conflicts. Moreover, water resources shared by the countries pose complex political and management challenges. Losses due to the inefficient management of water creates additional needs for costly treatment plants, increases the demand for energy from pumping stations, and puts added stress on already strained communities and environments. Also, the lost revenue from this water only increases the need for government subsidies, which already are necessary to cover a significant portion of the costs of water in many countries. Thus, development of sound water infrastructure is critical to harness the resource to its optimum level.

Water's crucial role in accomplishing development goals has been widely recognized. The case for scaling up investments in water in Africa is very clear, and more appropriate financing mechanisms to support the development of the sector in the region is required.

For such investments to be fruitful, it has to be tailored to local conditions, whilst being able to raise additional resources and improve effectiveness of already sanctioned funds.

The MDG proposed in 2000 aimed at halving the proportion of the population without access to

**Exhibit 2.1: African Water Vision 2025 Goals - African Development Bank Group**

**African Water Vision 2025 Goals**

- Provide safe and adequate water and sanitation for all, urgently.
- Make equitable and sustainable use of Africa's water resources.
- Ensure sustainable development and management of water resources for all.
- Use water resources wisely to promote agricultural development and food security.
- Develop water resources to stimulate socio-economic development.
- Treat water as natural asset for all in Africa.
- Share management of international water basins to stimulate efficient mutual regional economic development.
- Ensure adequate water for life-supporting ecosystems.
- Manage watersheds and flood plains to safeguard lives, land and water resources.
- Price water to promote equity, efficiency and sustainability

Source: AfDB

safe water by 2015. While this was largely achieved worldwide, many countries of Sub-Saharan Africa could not meet the MDG target on water. As a result, the water coverage for the entire continent was just 61%. (Exhibit 2.2).

Inadequate access to water and sanitation is both a cause and a consequence of poverty. Due to poverty, access to adequate water and sanitation is low in Africa. Yet, due to the inadequate access to safe water and sanitation, there is a high incidence of communicable diseases that reduce economic productivity. Similarly, inadequate water resources become a constraint to improved agricultural development and food security. The net result would be reduced availability for water resources, resulting in further reduction in the availability of water.

Consequent to the MDGs which expired in 2015, the Sustainable Development Goals (SDGs) were formulated which are to be achieved by 2030. The SDG covers a wide range of drivers across the three pillars of sustainable development, and include a dedicated goal on water and sanitation (SDG-6) that sets out to

“ensure availability and sustainable management of water and sanitation for all”. SDG-6 expands the MDG focus on drinking water and basic sanitation to cover the entire water cycle, including the management of water, wastewater and ecosystem resources.

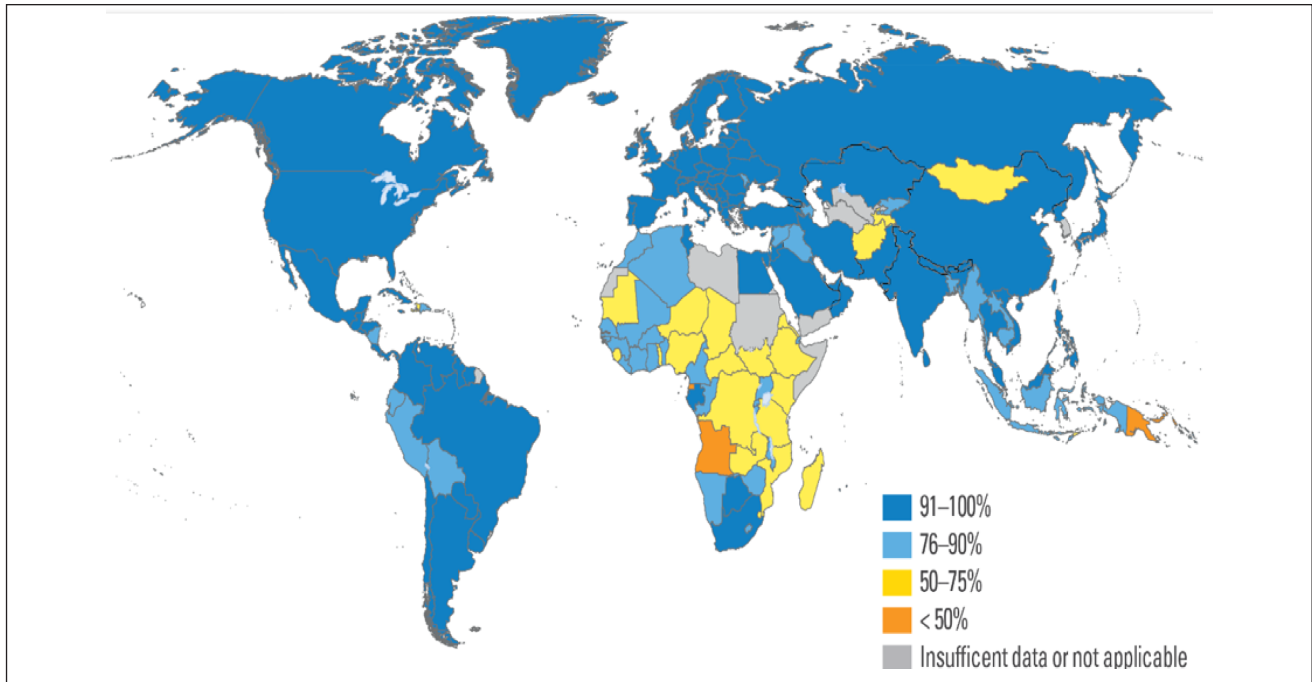
**2.1 Case for investing in water**

Importance of investment in water sector is well known, yet, this sector has attracted less investment than many other sectors, and the investments are mainly by Government with little participation from the private sector. A plausible reason for low investment levels is that limited funding is available, and whatever little is available is often not used very effectively. Absorbing this funding effectively and in a manner that results in sustainable profits remains both a challenge and an opportunity.

**Access to Water**

Renewable internal freshwater resources are vital for daily usage as well as for routine economic activities. Thus, quantifying its availability gives an idea about the level of efficiency required in utilising it for the various

**Exhibit 2.2: Level of MDG target achievement for drinking water - 2015**



Source: Data derived from Water and Sanitation Program: Report on Investment in Sanitation to Support Economic Growth in Africa: Recommendations to the African Ministers’ Council on Water (AMCOW) and Ministers of Finance, by World Bank Group – Water and Sanitation Program

activities. Renewable internal freshwater resources flow refers to internal renewable resources (internal river flows and groundwater from rainfall) in the country. It is calculated per capita using the World Bank’s population estimates.

As is evident in Exhibit 2.3, the per capita availability has been declining throughout the world, but in regions like Sub Saharan Africa where access to safe sources of water is scarce, the impact of such a decline is pronounced and needs to be arrested faster, inter alia, by augmenting investments and using technology and innovation that ensure universal availability to the population in Africa.

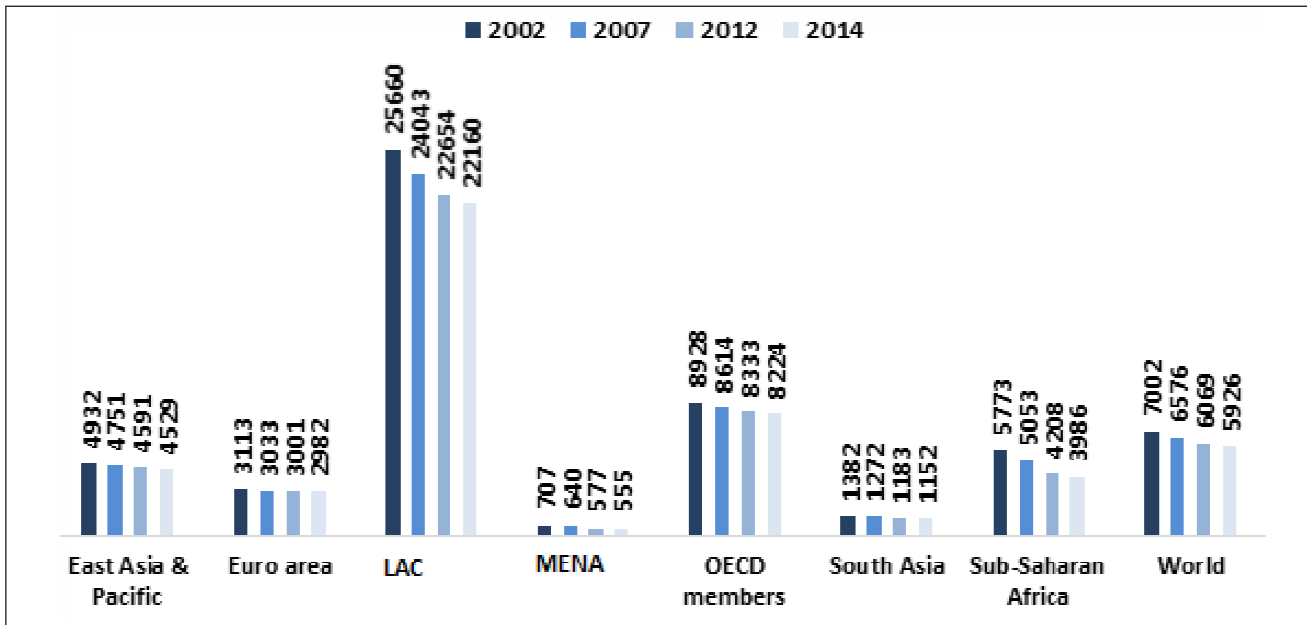
Something as basic as access to safe water sources is not guaranteed to a majority of the population in Africa. Over the fifteen years’ time period from 2000-2015, Sub Saharan Africa has improved access to safe water by around 13%. Given that it started at a low base, this progress level still leaves millions exposed to the dangers of unsafe water. The skewed distribution of

population, wherein a large proportion remains rural, aggravates the problem.

Data shows that Africa has the highest proportion of rural population, and the decline in this proportion has remained slow compared to the other regions (Table 2.1). Rural poverty in many areas of Africa has its roots in the institutional, economic and social constraints that the region faces. The low incomes and the rising vulnerability of poor people in rural areas force them to live without access to safe water sources and pushes them into a vicious cycle of diseases, debts and poverty.

As shown in Exhibit 2.4, most regions have shown improvement in access to safe water sources, notwithstanding their already better situation. As against this, in Sub Saharan Africa, the pace of improvement is not yet at a desirable rate. Given the huge disparity in demand and supply, there exists a huge scope for investment and growth.

**Exhibit 2.3: Renewable Internal Freshwater Resource per capita availability in cubic meter**



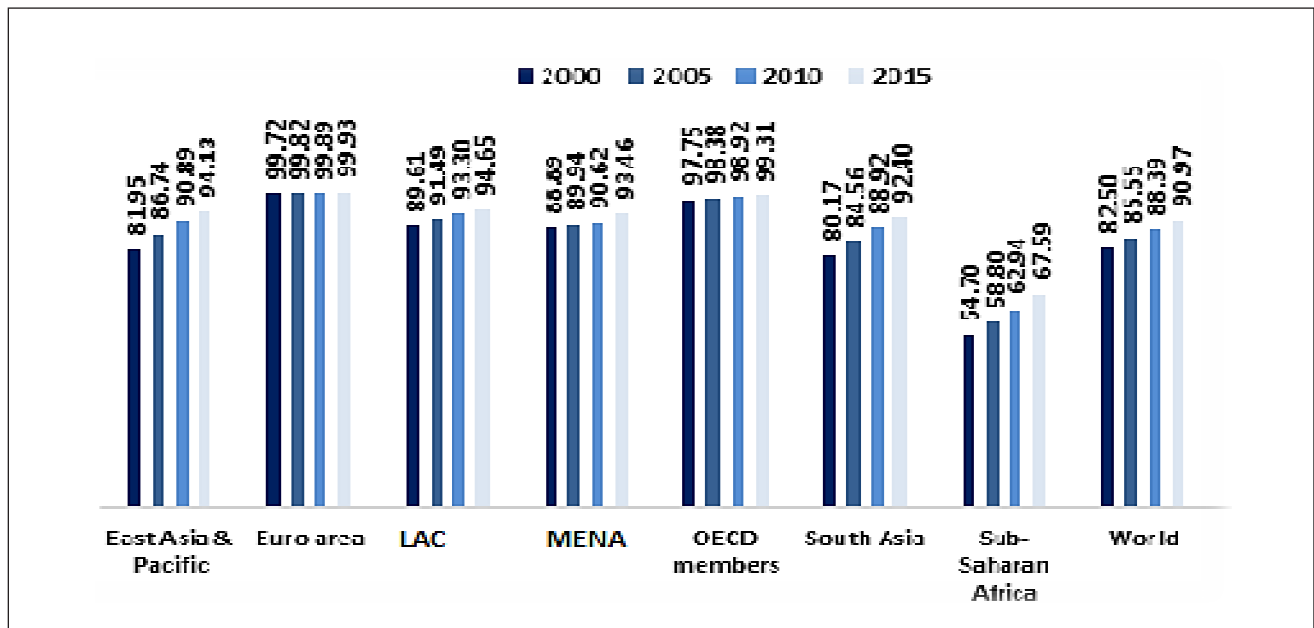
Source: World Bank Data; Exim Bank Research

**Table 2.1: Percentage of Rural Population in Africa**

Region	2000	2010	2015
East Asia & Pacific	58.8	48.2	43.4
Latin America & Caribbean	24.7	21.5	20.1
Middle East & North Africa	41.4	37.5	35.8
South Asia	69.20	64.76	62.25
OECD members	24.3	21.0	19.7
Euro area	27.4	25.2	24.1
Sub-Saharan Africa	69.2	64.8	62.3
World	53.5	48.5	46.1

Source: World Bank Data; Exim Bank Research

**Exhibit 2.4: Improved Water Source (percentage of population with access)**



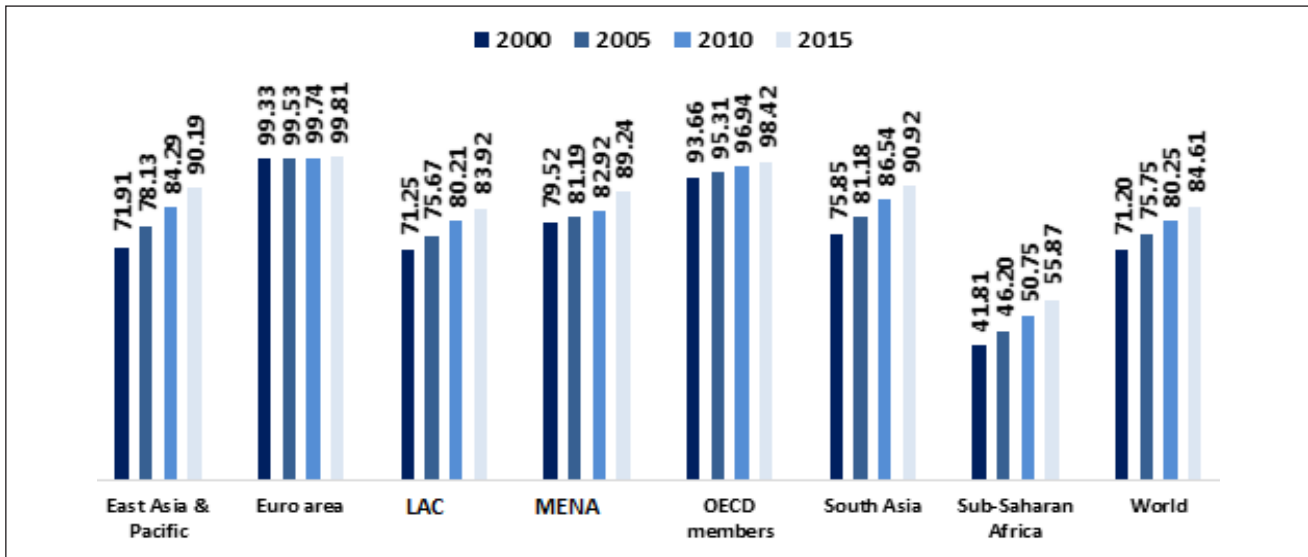
Source: World Bank Data; Exim Bank Research

A lower access to safe water sources shows the extent of people exposed to contamination and posing a health risk not just to themselves, but also for the community at large. As is evident from Exhibits 2.5 and 2.6, the access to improved water sources in rural and urban areas of Sub Saharan Africa has improved by a mere 14% and

3% respectively during the 2000-2015 period, while the population has grown by almost 3% during the same period<sup>3</sup>. Such a slow pace of increase in access is an issue of grave concern, and highlights the urgent need, as also the scope of investment in this area, especially considering the low levels of access to begin with.

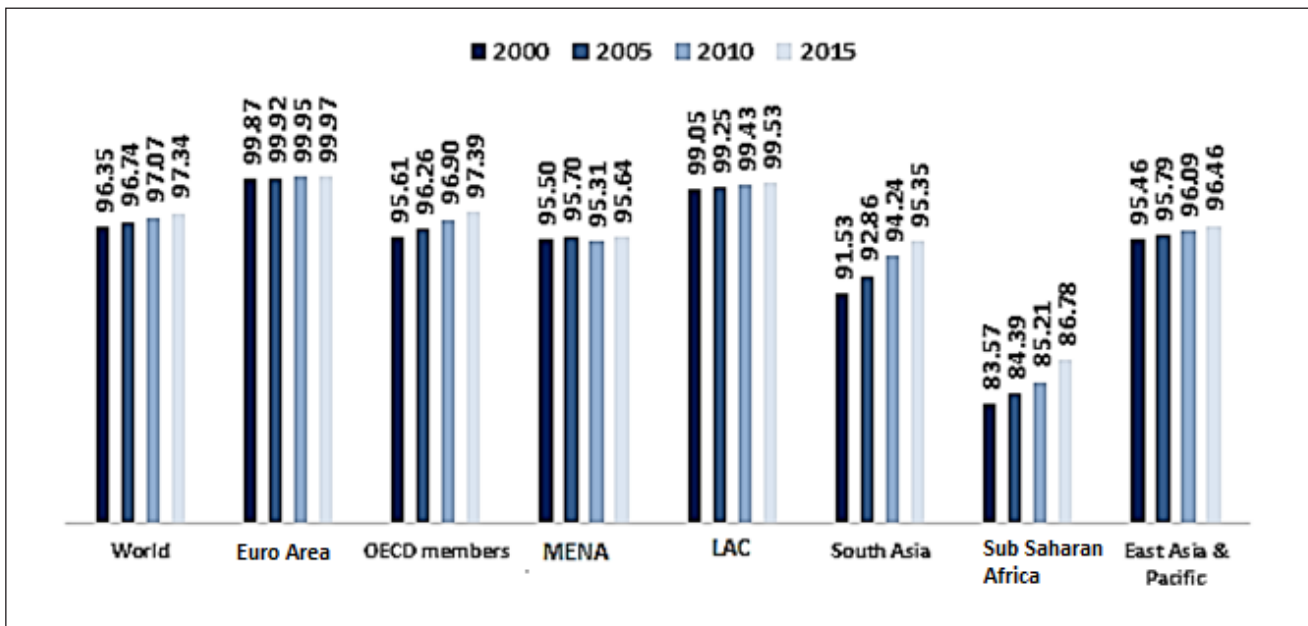
<sup>3</sup>Source: World Bank Data

Exhibit 2.5: Improved Water Source, Rural (Percentage of Rural Population with Access)



Source: World Bank Data; Exim Bank Research

Exhibit 2.6: Improved Water Source, Urban (Percentage of Urban Population with Access)



Source: World Bank Data; Exim Bank Research

### Adverse Impact of Limited Access to Safe Water

Apart from the obvious health issues due to lack of access to safe water sources, the vulnerability of agriculture and industries to inconsistent water supplies hampers economic growth potential to a large extent. Also, low or difficult-to-access water supplies negatively impact women’s participation in income-generating

activities and education, as a large proportion of their time is spent in fetching water from distant places.

Some 842,000 people are estimated to die each year from diarrhoea as a result of unsafe drinking-water, sanitation and hand hygiene. But diarrhoea is largely preventable, and the deaths of 361,000 children aged under 5 each year could be avoided if these risk factors



were addressed. Where water is not readily available, people may decide handwashing is not a priority, thereby adding to the likelihood of diarrhoea and other diseases. Diarrhoea is the most widely known disease linked to contaminated food and water but there are other hazards. Almost 240 million people are affected by schistosomiasis – an acute and chronic disease caused by parasitic worms contracted through exposure to infested water. In many parts of the world, insects that live or breed in water carry and transmit diseases such as dengue fever. Some of these insects, known as vectors, breed in clean, rather than dirty water, and household drinking-water containers can serve as breeding grounds. The simple intervention of covering water storage containers can reduce vector breeding and may also have a co-benefit of reducing faecal contamination of water at the household level<sup>4</sup>.

Lack of access to safe water sources leads to many issues, including disease and water contamination. Small-scale approaches to water management improve the ability of the rural poor to cope with water shocks by increasing agricultural productivity and providing cost-effective water supply and drought mitigation. Additional water storage infrastructure is needed to manage the subcontinent's hydrological variability and to fully harness water resources in support of development.

## **2.2 Challenges for implementation**

Water service providers grapple with many challenges, including huge debts, mismanagement of resources, dilapidated systems and limited financing that hamper efforts to expand water to rapidly-growing populations. Some of these challenges have been discussed here.

## **Funding Gap for Water Investments**

The situation of water scarcity is exacerbated by competition for public funding among sectors, and heavy public debt burdens in most countries in Africa. Availability of long-term finance on feasible terms to support the development of water and sanitation services remains a major challenge. While debt is the preferred financing instrument in the sector across the geographies, the required terms vary based on underlying business and country contexts. Factors such as type of water solution and whether the country's water sector is nascent or mature affect the kinds of loans and levels of affordable interest rates that are appropriate. Banks and other commercial investors are generally unfamiliar with the sector, and therefore reluctant to take on the risks of financing it. There is insufficient domestic financing for WASH<sup>5</sup> programmes overall with particularly serious shortfalls for water. This is heightened by difficulties in spending the limited funds that are received. Thus innovative approaches to bridge this funding gap is important to ensure universal access.

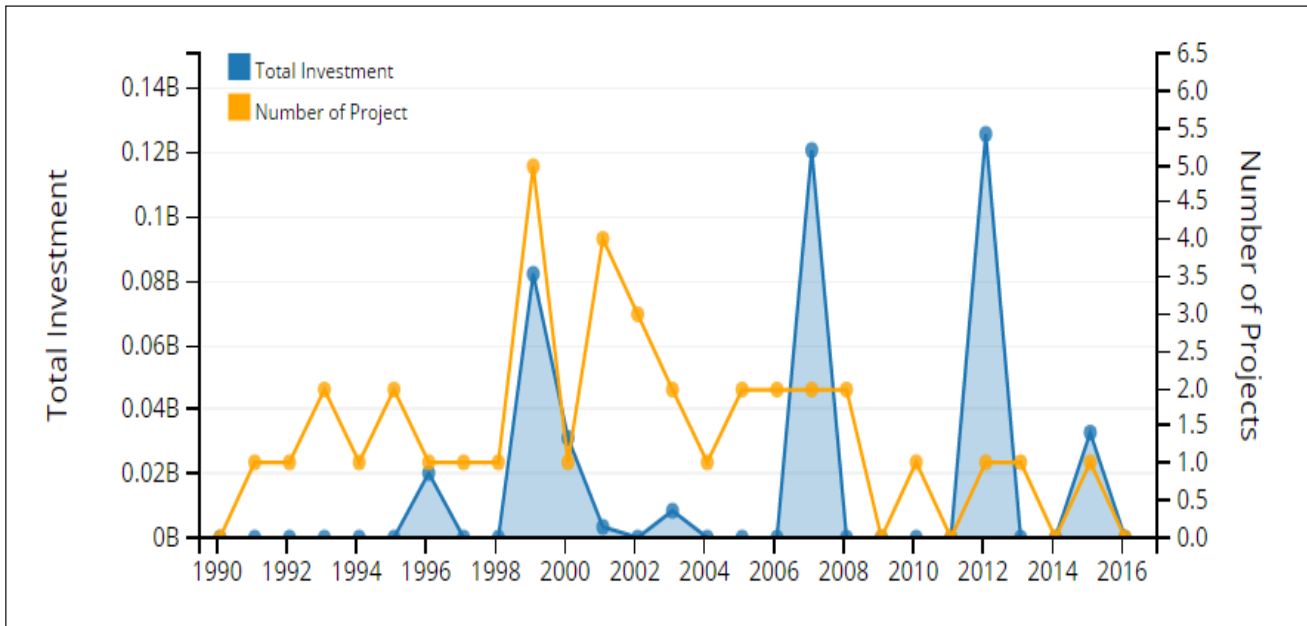
Exhibit 2.7 depicts the total investments and number of projects in the water and sewerage sector in Sub Saharan Africa. The investment trends are not at the pace which is required for ensure access to safe water sources at a faster rate. Thus, it reiterates that , there is a strong case for higher investments in the water sector in Africa, and more number of projects are required for improvement at a faster rate.

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<sup>4</sup>WHO Fact Sheet, Nov 2016

<sup>5</sup>Water, Sanitation and Hygiene (WASH) Program

**Exhibit 2.7: Total Investment and Projects in the Water and Sewerage Sector in Sub Saharan Africa**



Source: World Bank PPI Database, All figures in USD Billions

### Infrastructural Challenges

Development of state of the art infrastructure for the water sector is also a relevant challenge today in order to build and maintain an affordable and accessible water sector. Ensuring infrastructure like pipes, pumps, and storage facilities is vital to ensure sustainable access to safe water sources. In parts of Africa, physical infrastructure issues such as old and leaking pipes, and operational issues such as lack of metering, inadequate billing and collection procedures as well as illegal water connections represent a loss of revenue for the utility, also known as non-revenue water (NRW). Reducing the NRW ratio would not only bring cleaner water to consumers but would also increase financial sustainability of utilities. Energy expenses account for a substantial component of operational cost in the water industry, more so in the present circumstances which entail increased use of treatment and pumping facilities. Developing nations often suffer from a perpetual shortfall of electricity and this proves to be another hindrance in providing universal access to water. The challenge is not only finding more money for sustainable infrastructural investments in this sector, but acquiring the technical know-how to use the resources most

efficiently and managing the institutions effectively is equally important to ensure universal access.

### Limitations in Effective Water Resource Management and Cooperation

Within Africa, the water challenge remains largely unsolved at the national and regional level because of institutional, political and regulatory barriers to water cooperation. Lack of coordination among authorities, stemming from overlapping roles and responsibilities, coupled with lack of harmonization of laws and policies related to the issue leads to avoidable delays in funding and execution of projects successfully.

The primary factors contributing to the prevailing situation of ineffective access and utilisation of water include institutional weaknesses, inadequate attention to technology choice, restrictive maintenance systems, and the lack of supply chain to adequately maintain complex machinery for proper water distribution.

A long term solution could be worked out if countries in Africa boost cooperation in managing cross-border or “trans-boundary” rivers, lakes and ground water and foster greater cooperation for achieving the shared goal

of universal access (in alignment with African priorities e.g. African Water Vision 2025).

### Varied Climate and Natural Hazards

Sub-Saharan Africa has a relatively good supply of rainwater, but it is highly seasonal, unevenly distributed across the region and there are frequent floods and droughts. Drought is the dominant climate risk in Sub-Saharan Africa, and countries such as Kenya, Sudan, Ghana, Malawi, and Ethiopia remain highly susceptible to it. The calamity destroys economic livelihoods and has a significant adverse impact on certainty of availability and quality of water resources. The impact of climate change has caused dramatic hydrological variability highlighting the urgent need for the adaptation of climate-resilient approaches. As is evident from Exhibit 2.8, almost all the countries that are at high risk of mortalities due to drought are from the Sub-Saharan region, underscoring the fragile situation of the continent in the face of a natural calamity such as drought.

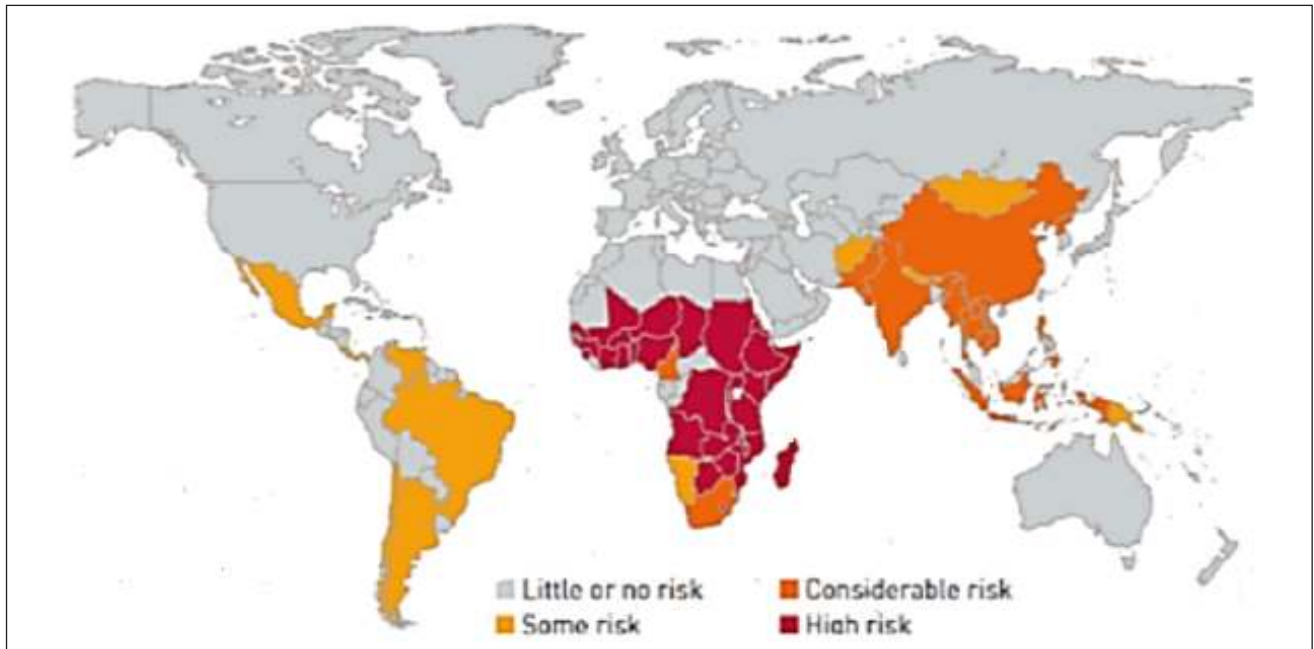
### 2.3 Strategies for investment

Business in this sector can be profitable only if volume of sales are high. Since, access to safe water sources is a basic amenity that can never go out of demand (especially in Africa, which is witnessing growing purchasing power of the middle class), ensuring high volume of sales is not difficult. On the one hand, since water is an essential commodity, the Government should play a key role in facilitating private investments, and where not possible, should take the initial steps to create infrastructure which could be transferred to the private sector at a later stage for management.

#### Ensuring Revenue to Bridge the Funding Gap

Water can be a profitable business and with increased viability it can be up-scaled, eventually making universal accessibility in Africa a reality. For the water sector to be an attractive venture, the supplier needs to recoup its expenditure and break-even in order to maintain the supply systems and meet other overhead costs. The

Exhibit 2.8: Risk of Mortalities due to Drought – A Global Assessment



Source: NASA

supplier also needs to ensure the water that it produces is not lost during transmission and those who use it pay for it.

An effort towards meeting the aforementioned conditions has been noticed in some African countries, albeit on a smaller scale. The introduction of metering enables utilities to generate more income and encourage careful water use. Metering could be either pre-paid or post-paid. Some pre-paid water metering models have been tried in Namibia and South Africa. These enable the consumers to directly pre-budget, monitor and control his/her own water consumption or expenditure. Consumers will, therefore, only pay for what they use and will be spared the inconveniences of settling post-paid bills, which could generally be beyond their immediate financial means. With prepaid meters, tenants can access water whenever they wish, at a fee. Users must have a key card, which is uploaded with 'water credits'. They then present their key card at the water point to access water. Post-use metering is also becoming a popular option, in countries like Senegal. Under the post metering arrangements, water usage is tracked using a water meter and the client is charged for the usage according to the meter readings monitored periodically by the service provider.

The 'Smart Water' metering solution is another probable solution. It enables the automated collection of utility meter data, while manual meter reading leads to high labour costs and missing or inaccurate data. Through sensors installed in water meters, customers can identify water pipeline leakage earlier. Household water meters will automatically report data on a regular basis, reducing fault probabilities and the operating expense. The data gathered can be used to control waste water flows from each property, identify faults across the network and improve health and safety outcomes.

### **Cost recovery by tariffs**

Ideally, tariff structure is designed to ensure that everyone has access to water for basic requirements at a low cost, or free till a certain threshold, but high-

volume users are charged at a steeply graduated tariff plan in order to deter wastage. Cost recovery is an important aspect to promote private participation in the water sector in Africa and other developing regions. Both the private companies and public utilities consider the application of higher water tariffs and user fees as central to stem financial losses, make profits and increase resources for further investment.

Under a dynamic tariff plan for commercial usage, the per kilolitre volumetric cost and service charges are negligible till a minimum threshold requirement. The price per kilolitre and the service charges gradually rise for medium end users. For high end users, the rise in both the rates of tariff is very steep. This serves the dual purpose of a dynamic and progressive tariff plan that cross subsidises the low end users by charging steeper rates to the high end users, and at the same time promotes judicious use of water. A similar tariff plan can be adopted by the private investors to make their venture profitable.

### **Public Private Partnership (PPP)**

PPPs contribute to operational efficiencies consistently, and add to utility performance, resulting in the reduction of non-revenue water<sup>6</sup>, improvement of bill collections and better productivity. Although governments in developing countries typically provide water and sanitation services as public utilities, they often lack enough capital to construct and sustain systems that will meet the full water and sanitation needs of their citizens. It is here that private investment can play a significant role in filling this financing gap.

Unfortunately, private investments for water sector has lagged far behind than for other infrastructure sectors, reflecting in part the absence of private capital contributions and the lack of appetite to carry some of the risks associated with these projects. Attracting innovative investments will require government to subsidize technical assistance and in some cases, provide concessional funding<sup>7</sup>. PPPs could prove to

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<sup>6</sup>Non-revenue water (NRW) is water that has been produced and is "lost" before it reaches the customer. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example through theft or metering inaccuracies).

be an efficient solution that reduces the investment risks, improves efficiency and leads to more inclusive outcomes.

### Investments and FDI Flows in Africa

Table 2.2 summarises investments in Africa in the water sector. It shows the investments of major developmental

agencies such as the World Bank and AfDB for varied projects like flood control, irrigation and water supply. Table 2.3 summarises the global FDI flows into Africa in the water sector. The sector received US\$ 237 Million of FDI inflow, majorly from companies like Hyflux and Abengoa.

#### Box 1: Case Studies In Successful Implementation of Water Projects in Africa

The way forward towards achieving wider access to clean water, is elucidated by the UN as part of the World Water Day - “strengthening institutional capacity and governance at all levels, promoting more technology transfer, mobilizing more financial resources and scaling up good practices and lessons learned.” Some successful case studies in the water sector are discussed below.

##### *Coca Cola*

Each and every day waterborne diseases kills many in Africa. While no single institution can prevent these tragedies, businesses can work with governments, NGOs and civil societies to develop sustainable solutions.

A case in point is that of Coca Cola, which has backed the Replenish Africa Initiative (RAIN) aimed at improving access to clean water for 2 million people in Africa. The company has made a six-year, US\$ 30mn commitment and is currently working in 35 African countries, securing investment in clean water access, improving water and sanitation for school children, replenishing more than 2 bn litres of water each year for communities and nature, and empowering women through clean water access and entrepreneurship.

In the last six years, RAIN has reached more than a million people with sustainable clean water access, helping Africa come closer to the targets set under the UN Millennium Development Goal on water and sanitation. RAIN projects address the specific water issues in target communities by focusing on improving access to water and sanitation and promoting hygiene, establishing or enhancing sustainable water management practices, and promoting the efficient and sustainable use of water for economic development.

##### *Diageo*

Diageo, the global alcoholic beverages company, announced an ambitious strategy for water stewardship called ‘Water Blueprint’. Diageo’s ‘Water Blueprint’ and progress towards set targets, are essential parts of Diageo’s long-term plan, not just in enabling sustainable operations but also in creating opportunities for growth. With water being a pressing business and global issue, the ‘Water Blueprint’ recognises the responsibilities of operating in water-stressed areas and explains how Diageo intends to support the sustainability of water resources on which the company, its employees and customers as well as the broader community rely.

Diageo’s Water Blueprint complements its pan-African Water of Life programme that was initiated in 2006, and which brought safe drinking water to more than 10 million people. The launch of the Water Blueprint strategy helps Diageo focus further on water use in the supply chain, with one of the company’s key targets being to equip its suppliers with the tools to protect water sources in water-stressed areas. The company states that its targets reflect the need to better manage water stewardship and carbon emissions across its whole supply chain.

<sup>7</sup>Concessional funding refers to money lent at below-market rates, generally by foreign governments or multilateral organizations, to developing countries.

**Table 2.2: Select Water Investments in Africa at a Glance**

Country	Investing Agency	Investment Size (in US\$ million)	Project Description
Morocco	EIB	84	Supporting Office National de l'Électricité et de l'eau potable (ONEE) to provide quality water and sanitation services
Morocco	World Bank	138	Large scale irrigation modernisation
Tunisia	France	76	Coastal environment remediation
Egypt	World Bank	138	Sustainable rural sanitation services
Sudan	AfDB-OWAS UA	21	Water sector reforms & institutional capacity
Ethiopia	EIB	45	Urban Water supply
Ethiopia	JICA	11	Water supply in Rift Valley Basin
Rwanda	AfDB-OWAS UA	20	Kigali bulk water supply project
Seychelles	AfDB-OWAS UA	21	Mahe sustainable water augmentation project
Tanzania	AfDB-OWAS UA	144	Arusha sustainable water and sanitation project
Mali	AFD,EU & EIB	56	Kabala drinking water project in Bamako
Burkina Faso	World Bank	80	Urban Water sector project
Senegal	France	56	Flood control projects
Senegal	World Bank	49	Urban water control and Sanitation project
Cote d'Ivoire	France	34	Improving supply of Potable Water in Abidjan
Gabon	World Bank	34	Infrastructure and local development project
Angola	AfDB-OWAS UA	124	Institutional & sustainability support to urban water supply and sanitation delivery
Zambia	AfDB-OWAS UA	50	Lusaka Sanitation Programme

Source: World Bank, AfDB, JICA, EIB website

**Table 2.3: FDI Inflows in water sector in Africa (figures in US\$ millions)**

Investing company	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Hyflux	0	0	0	0	0	468.0	250.6	.0	.0	.0	.0	125.3
Shanghai Saffon Water Service	0	0	0	0	0	0	0	0	0	0	0	0
Befesa Agua	0	0	0	0	0	232.0	0	0	0	0	0	0
Ionics	225.0	.0	0	0	0	0	0	0	0	0	0	0
GE Water & Process Technology	0	0	0	0	220.0	0	0	0	0	0	0	0
Uramin	0	0	0	0	.0	200.0	0	0	0	0	0	0
Acciona Agua	0	0	0	0	183.2	0	0	0	0	0	0	0
SNC Lavalin-Pridesa	0	0	154.4	.0	.0	0	0	0	0	0	0	0
Lydec	0	0	0	0	0	0	0	0	0	0	125.3	0
Biwater	0	0	0	0	0	114.9	0	0	0	0	0	0
Abengoa	0	0	0	0	0	0	0	0	0	0	0	111.9
Waterleau	0	0	0	0	0	0	0	6.8	6.8	10.5	0	0
Shivsu Canadian Clear	0	0	0	0	0	0	20.0	0	0	0	0	0
Chevron Corporation	0	0	0	0	0	13.8	0	0	0	0	0	0
Bannow Exports	0	0	0	0	0	0	0	0	0	0	0	0
Stereau	0	0	0	0	0	0	0	0	0	0	0	0
Total	225		154		403	1,029	271	7	14	17	125	237

Source: ICA Report

### 3. Sanitation in Africa

Sanitation generally refers to the provision of facilities and services for the safe disposal of human waste, the maintenance of hygienic conditions, through services such as garbage collection and wastewater disposal, amongst others. Decent sanitation standards, together with good hygiene and safe water, are crucial for good health of the individual as well as social and economic development. Improvements in one or more of these three components of good health can substantially reduce the rates of illness, the severity of various diseases and improve the quality of life of a large number of people, particularly children, in developing and less developed countries.

At the same time, the economic benefits of improved sanitation remains manifold, and includes lower health system costs, fewer days lost at work or at school through illness or through caring for an ill relative, and convenience due to time savings (i.e. time not spent queuing at shared sanitation facilities or walking for open defecation).

As far as investors are concerned, sanitation has not received much attention, probably since it is mostly perceived as a social service. Hence, a gradual shift is required in the sanitation sector from socialist focused development models to the inclusion of more economic and financial models. The approach towards sanitation needs to be revamped and sanitation has to be seen as a business opportunity. There is little doubt that people intrinsically enjoy cleanliness, and do not want to be looked at, or live in places that are not clean. This desire is a strong change agent that has to be leveraged successfully.

Thus, investment in sanitation could not only generate good returns socially, but also in terms of financial benefit, mainly by productive work time gained from not being ill if either of these goals were achieved. WHO conducted several benefit-costs analyses showing

that water and sanitation interventions grant more economic returns than they cost<sup>8</sup>.

These investments could go a long way in saving lives, improving child health, and ensuring greater dignity, privacy, and personal safety, particularly for women and girls. This calls for developing sanitation service chain, including waste containment (toilets), emptying (of pits and septic tanks), transportation (to sewage treatment facilities), waste treatment, and disposal/reuse, while at the same time ensuring accessibility and affordability for the larger masses.

Given the acute demand and need of having appropriate sanitation facilities, it was given prime importance in the Millennium Development Goals (MDGs) that outlined a target to halve the proportion of the world population without sustainable access to safe drinking water and basic sanitation by 2015. Although the MDG target was not met, but there was tangible progress, given that 68% (which is 9% below the target) of the global population now uses an improved sanitation facility. As seen in Exhibit 3.1, 69 countries have missed the MDG sanitation deadline, many are progressing rapidly towards attaining it for a majority of the population. Of these 69 countries which missed the MDG target, 37 are in Africa.

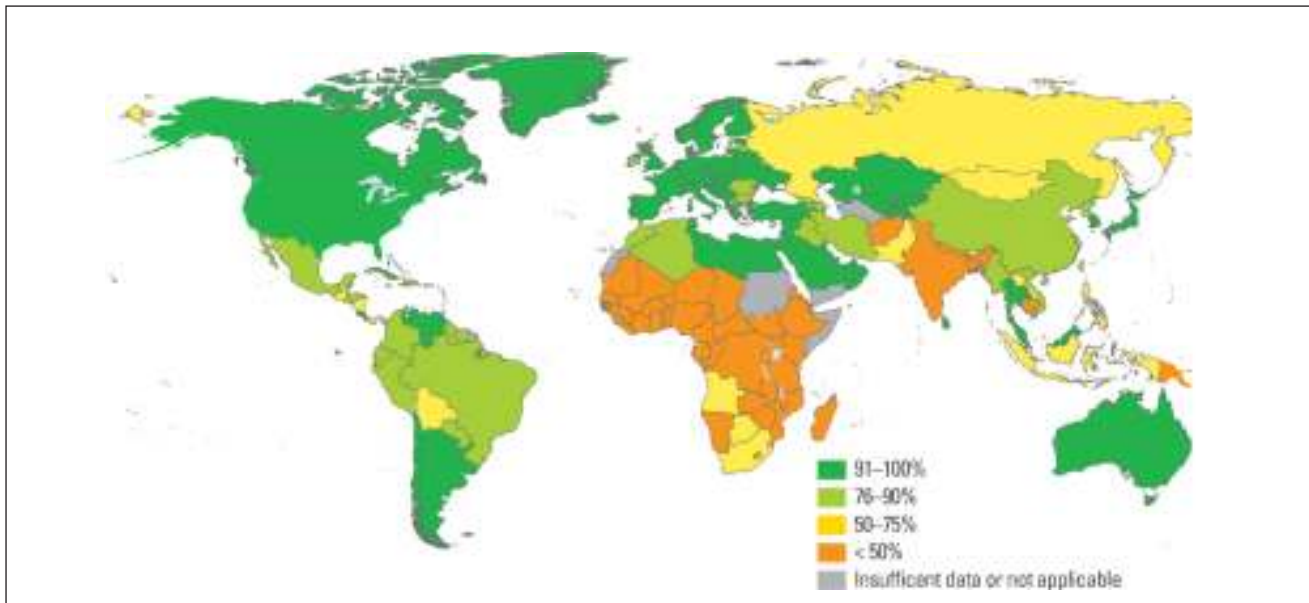
Consequent to the MDG, the Sustainable Development Goal (SDG) were formulated with the aim to bring in equitable access to sanitation for all by 2030. However, this target to meet the SDG in sanitation is overpowering and can only be achieved if the private sector becomes more actively involved in sanitation<sup>9</sup>.

Recognising the importance of sanitation to the private sector and benefits to communities everywhere, the United Nations has made sanitation among its top priorities and has recently launched the 'Call to Action' campaign aimed at ending the practice of open defecation by 2025.

<sup>8</sup>Hutton and Haller 2005, Hutton et al 2007A and Hutton et al 2007B for the UNDP Human Development Report 2006

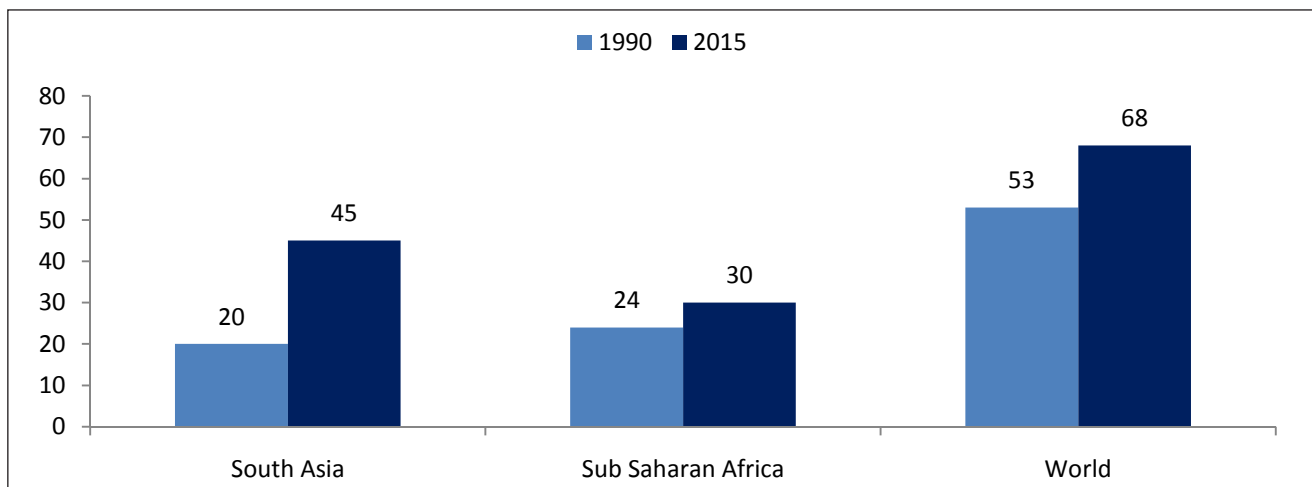
<sup>9</sup>The SDGs are time-bound and quantified targets for addressing extreme poverty in its many dimensions, and they address basic human rights of dignity, health, education, shelter, and security, and are a successor to the MDGs targeted for 2015.

**Exhibit 3.1: Progress towards sanitation MDG: Out of the 69 countries missing the MDG target, 37 are in Africa**



Source: Data derived from Water and Sanitation Program: Report on Investment in Sanitation to Support Economic Growth in Africa: Recommendations to the African Ministers’ Council on Water (AMCOW) and Ministers of Finance, by World Bank Group – Water and Sanitation Program- 2015

**Exhibit 3.2: Increase in population using improved sanitation (in per cent) 1990-2015**



Source: World Bank Data

### 3.1 Case for investing in sanitation

Unfortunately, in Sub-Saharan Africa, both the absolute level and growth of access to sanitation has remained very low. While at one point of time, levels of coverage for improved sanitation were broadly similar in Southern Asia and Sub-Saharan Africa, progress in these regions is now markedly different. In Southern Asia, 20% population had access to improved sanitation facilities, which increased up to 45% in 2015. Sub-Saharan Africa,

in contrast, has made much slower progress in sanitation – its sanitation coverage of 30% in 2015 reflects only a 6 percentage point increase since 1990<sup>10</sup>.

Exhibit 3.2 compares the progress of the African region with South Asia and the world average. It is noteworthy that South Asia had lower access to improved sanitation facility in 1990 than Sub Saharan Africa, but its pace of improvement was faster.

<sup>10</sup>World Bank Data



**Table 3.1: Percentage of rural population in various regions of the World**

Region	2000	2010	2015
East Asia & Pacific	58.8	48.2	43.4
Latin America & Caribbean	24.7	21.5	20.1
Middle East & North Africa	41.4	37.5	35.8
South Asia	69.20	64.76	62.25
OECD members	24.3	21.0	19.7
Euro area	27.4	25.2	24.1
Sub-Saharan Africa	69.2	64.8	62.3
World	53.5	48.5	46.1

Source: World Bank Data; Exim Bank Research

Most of Sub-Saharan Africa's poor people live in rural areas and require considerable development assistance. Poor sanitation facility and poverty are closely related, and is found predominantly in rural parts of the world.

As is observed in Table 3.1, Sub-Saharan Africa has the highest proportion of rural population, and the decline in the proportion is also low compared to the other regions. Rural poverty in many areas of Africa has its roots in the institutional, economic and social constraints that it faces<sup>11</sup>. The low incomes and the rising vulnerability of poor people in rural areas force them to live under dismal sanitation and health conditions.

Economic studies conducted in Africa have shown that impacts resulting from poor sanitation and hygiene cost the economies between 0.9% and 2.4% of annual GDP<sup>12</sup>. These costs are accounted for on the basis of the adverse health effects associated with poor sanitation and water supply, costs of treating these health problems, and the associated loss of productivity that results when individuals are sick and others have to care for them. A comparison of these costs is shown in Exhibit 3.3. Depending on the initial levels of access to sanitation, these costs vary for different countries,

but are significant nonetheless.

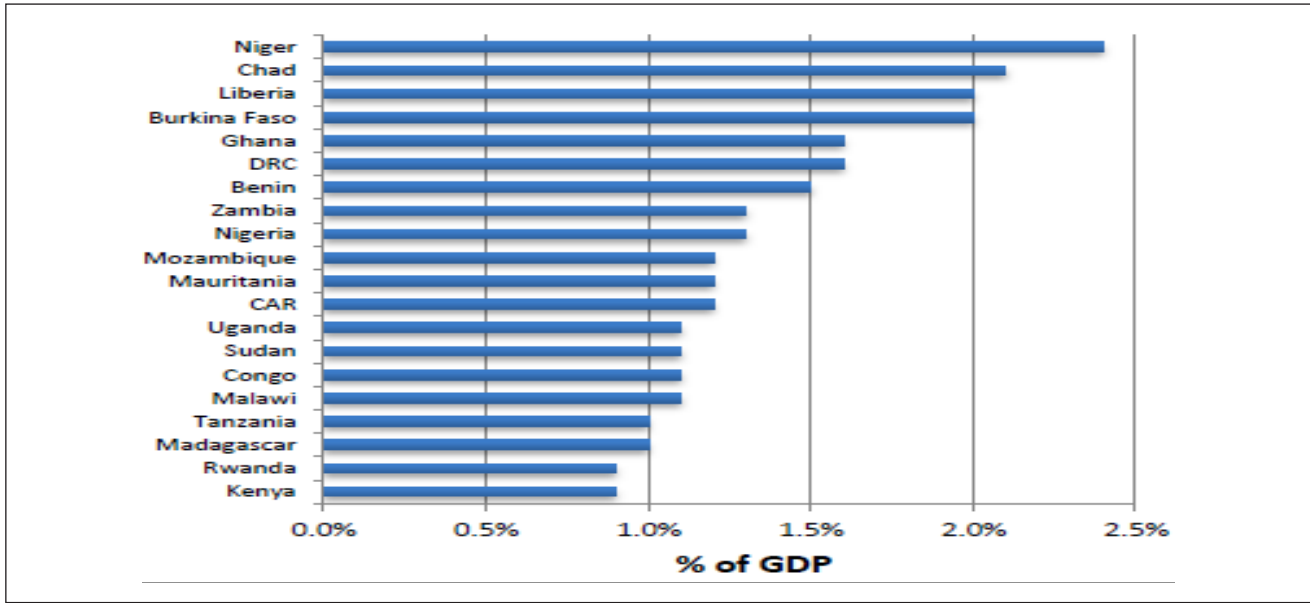
Exhibit 3.4 depicts the percentage of people who have access to sanitation in different regions of the world. In case of Sub-Saharan Africa (SSA), the level of access has not witnessed any significant improvement and thus offers a huge scope for investment and growth. Lack of proper sanitation, along with low access to safe drinking water and other basic amenities leads to a vicious cycle of diseases, unbearable medical bills and poverty. Thus, improvement in economic and social parameters becomes increasingly difficult.

The situation in case of rural areas of SSA is even worse as is evident in Exhibit 3.5. Majority of the population in SSA lives in rural areas having marginal or no access to proper sanitation facilities, thereby posing a health risk not only for themselves but also for the community at large. The access to improved sanitation in rural areas has improved by a mere 4% over the last decade and a half – from 19.13% in 2000 to 23.32% in 2015. Such a slow pace of improvement in having proper access to sanitation facilities has become a significant cause of concern, and highlights the urgent need of augmenting investments in this area.

<sup>11</sup>In almost all countries, the conditions of personal consumption and access to education, healthcare, potable water and sanitation, housing, transport, and communications are far worse for rural poor than for the urban poor. Experience proves that if countries put in place incentive structures and complementary investments to ensure better health, sanitation and education, then poor will benefit doubly through increased current consumption and higher future incomes.

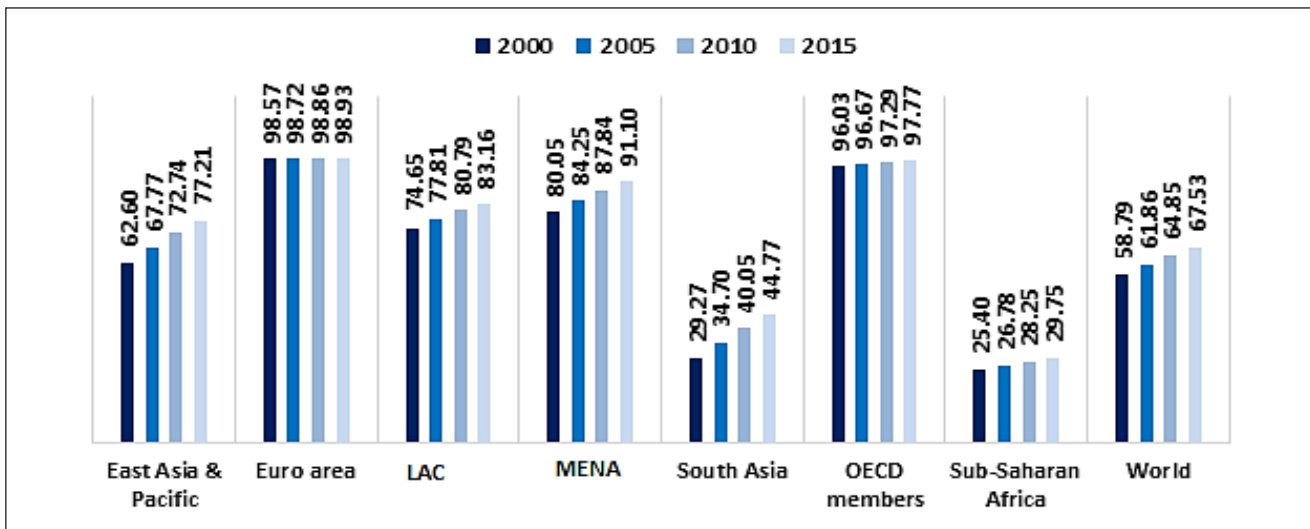
<sup>12</sup>World Bank, Water and Sanitation Program. 2011, 2012.

Exhibit 3.3: Cost (as proportion of GDP) of not investing in improved sanitation for select African economies



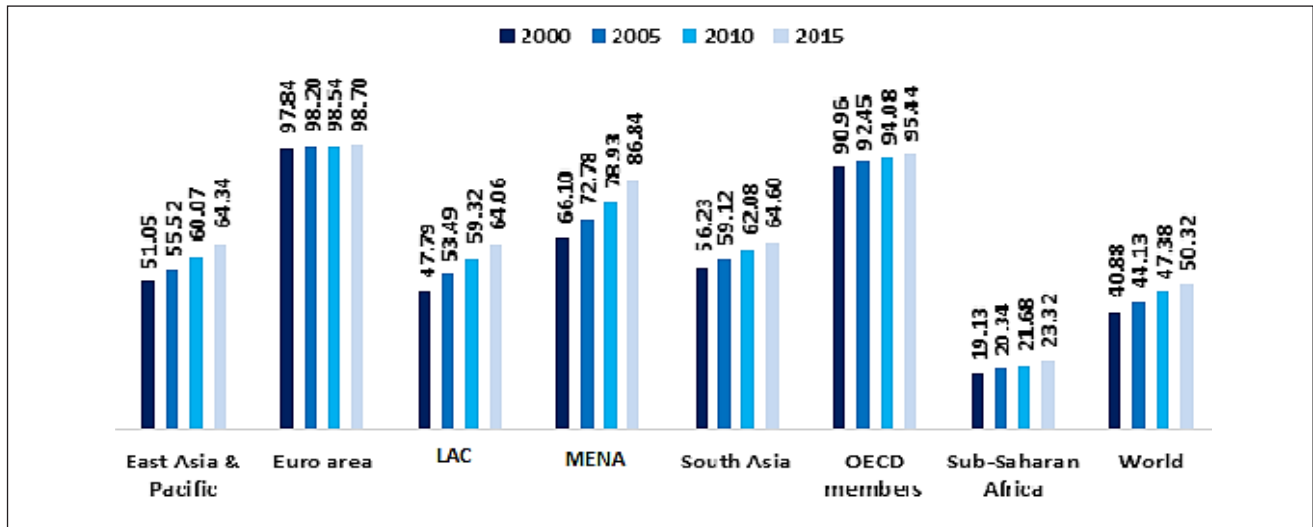
Source: Water and Sanitation Programme (WSP), 2011, 2012

Exhibit 3.4: Proportion of population with access to improved sanitation facilities (in per cent)



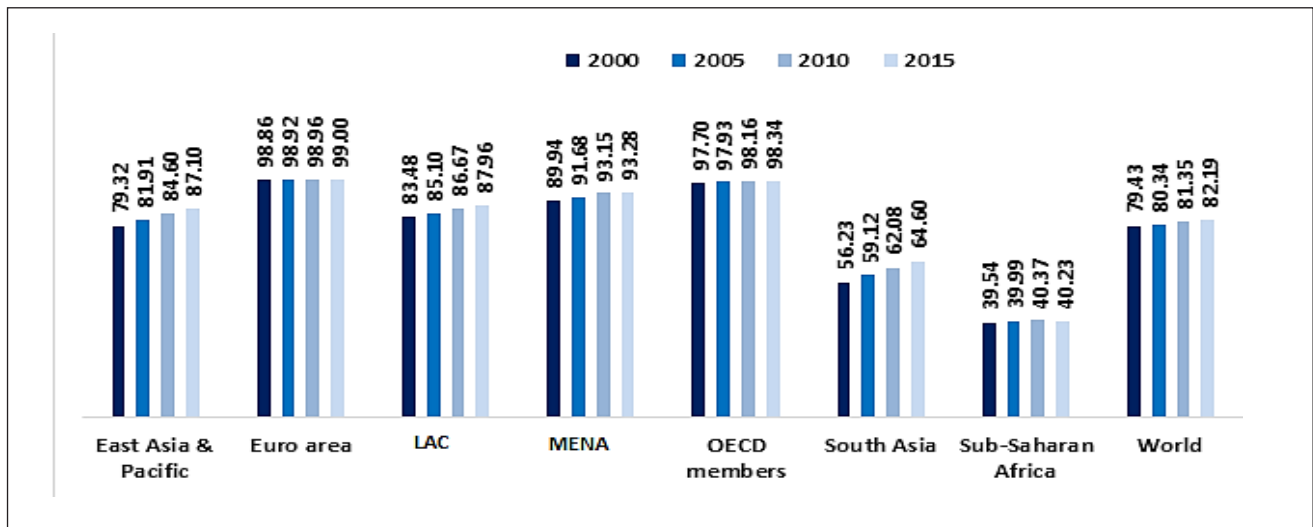
Source: Data derived from World Bank; Exim Bank Research

Exhibit 3.5: Percentage of rural population with access to improved sanitation facilities



Source: Data derived from World Bank; Exim Bank Research

Exhibit 3.6: Percentage of urban population with access to improved sanitation facilities



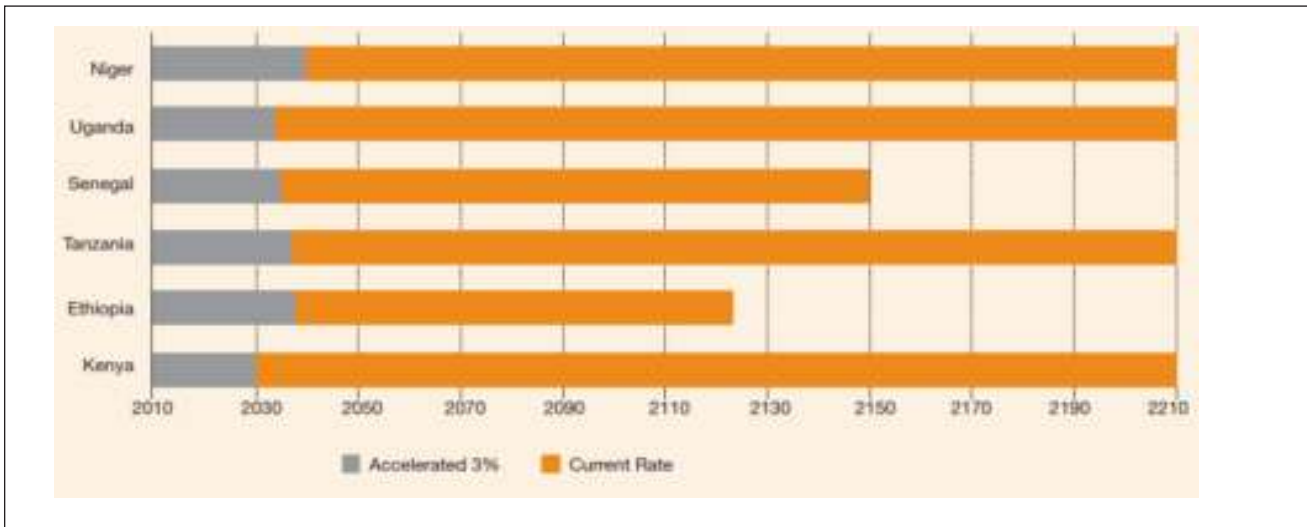
Source: Data derived from World Bank; Exim Bank Research

On the other hand, the urban areas are expected to have better basic amenities like sanitation and health facilities. While access to these amenities in urban SSA is higher than its rural areas, it is still way below the desired level. Further, as seen in Exhibit 3.6 during the 15-year span of 2000 - 2015, even the improvement in access to sanitation has not been promising, and has barely increased by 0.7% – from 39.54% in 2000 to 40.23% in 2015.

A study released by the World Bank under its Water and Sanitation Program for the African Ministers' Council on Water (AMCOW) in 2015, compared the timeline for complete rural sanitation coverage at the existing pace

of investment, and at an accelerated pace by providing a conducive environment with a mix of policy initiatives, PPP models, infrastructure, access to finance and business development services. The results shown in the Exhibit 3.7 depict the urgency and huge scope of private initiatives for enhancing access to proper sanitation. As can be seen, an accelerated pace of investment can have a significant impact by reducing the number of years for achieving complete rural sanitation. In case of countries like Niger, Uganda, Senegal, Tanzania, Ethiopia and Kenya, the time taken to achieve cent percent rural sanitation coverage can be reduced by more than 150 years by accelerated investments and creating the associated enabling framework.

**Exhibit 3.7: Expected Year of 100 percent rural sanitation coverage**



Source: Water and Sanitation Program: Report on Investment in Sanitation to Support Economic Growth in Africa: Recommendations to the African Ministers' Council on Water (AMCOW) and Ministers of Finance, by World Bank Group – Water and Sanitation Program

### 3.2 Challenges in implementation

Affordability in terms of sanitation is typically measured by the share of infrastructure spending in the total household budget and whether it exceeds a set threshold. Economic affordability can be described by an 'affordability index' comparing the monthly water and sanitation bill of a household to its disposable income. While there is no scientific basis of determining the value of such affordability thresholds, based on experience with actual household expenditure patterns and results of willingness to pay surveys, certain thresholds have come to be widely accepted by practitioners. For example, the WHO uses a 5% affordability threshold for water and sanitation services in developed countries.

In transition countries and developing countries, the affordability index is generally higher depending whether the country seeks to reduce subsidies for water. Median households often have to spend 2.5% of their income for water, i.e. over twice what is practiced in industrialized countries. Consequently, the affordability index of poor households is about three times larger (7.5%) because of the low income of very poor households. State practice shows that such high values of the index are generally tolerated. A number of

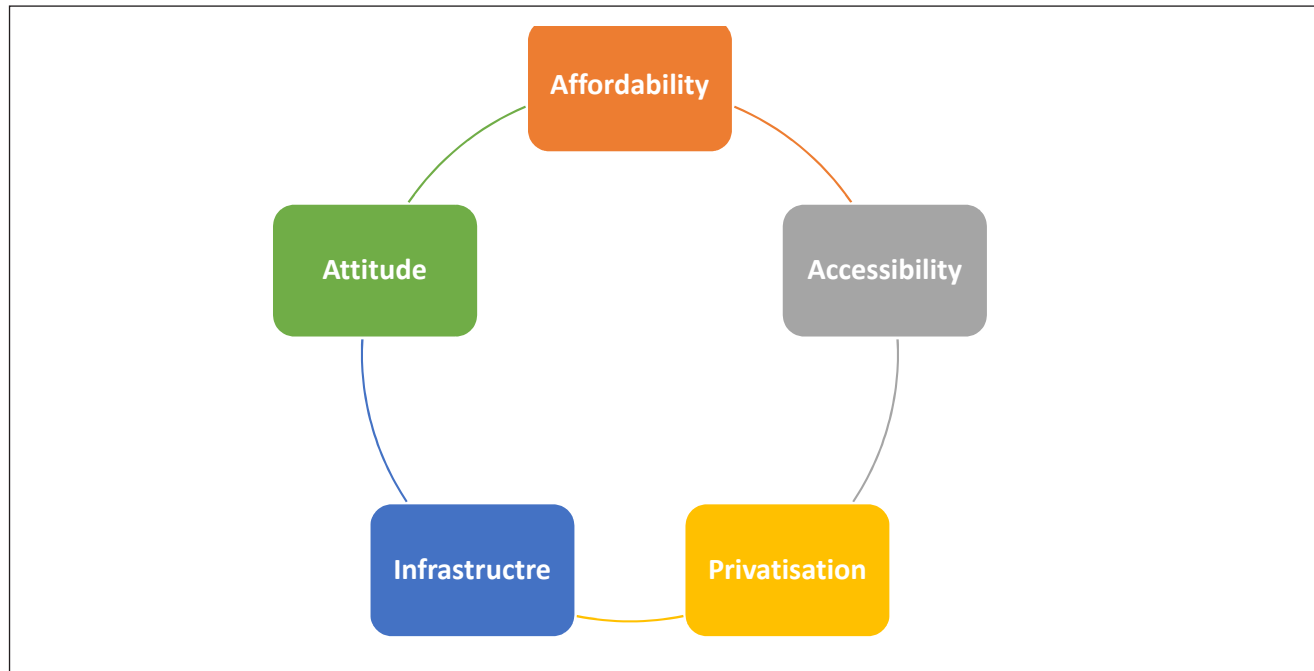
developing States have adopted policies to promote an affordability index for poor households of 3 to 5% and implement measures to reduce the burden of water expenses for poor people<sup>13</sup>.

In Africa, the affordability index for median households is around 2.8% and for poor households connected to public water supply it can easily reach 7.5%. Much higher values of the index have been observed in slums with water supplied by water vendors. In Morocco, for example, the target ratio of 3% for water supply and sanitation of poor households is considered appropriate, and in slums, the ratio is 5%.

In a sector like sanitation, affordability of the product becomes a challenge as it caters to a market segment at the bottom of the pyramid. This sector requires "design to price" principle, i.e. to ensure that the best sanitation (from the consumer's point of view) is made available at the price the consumer can afford. Thus, the only alternative is a less expensive product that is made for the poor, but which is not a poor product. Design innovations that ensure hygiene within the constraints of rural infrastructure is essential if the daily lives of the poor are to be influenced by any sanitation and hygiene initiatives.

<sup>13</sup>Access to drinking water at an affordable price in developing countries; CIHEM

Exhibit 3.8: Challenges for investment



Source: Exim Bank Research

### Accessibility

Although, accessibility and affordability are closely related challenges, the focus here is on physical accessibility of the facility. Physical accessibility to sanitation facility is imperative to improve access to sanitation. The facility must keep in mind the barriers to access for women, children, differently abled, elderly people, or social barriers in terms of race or caste. Also, challenges like long distances to facilities, safety and privacy need to be addressed. Sanitation facilities need to be built in such a way that everyone can use them. Subsidies can be crafted so that they establish and strengthen supply chains. Providing financial support for training masons, shopkeepers and traders can be an effective way of using subsidies to develop the sanitation sector.

### Issues of Privatisation

Expertise of the private sector about marketing, pricing issues or the establishment of supply chains is

central to meeting the challenges facing the sanitation and hygiene sector. But, the private sector will only participate actively only if incentives to do business exist. The public partnership can share the investment risk with the private entity and motivate entry of the private sector. However, privatisation of basic amenities sectors is usually met with a lot of scepticism. The people dread that the profit driven private sector might misuse the highly inelastic<sup>14</sup> demand and charge high prices. Thus, a strong State is needed as a regulator and promoter that is able to channelize the dynamism of the private sector, and ensures sustainable and demand driven solutions.

### Infrastructural Challenge

Sanitation facilities are just the means and not the end to all the issues regarding sanitation. Governments must concentrate on establishing the infrastructure needed to run the sanitation facilities, build efficient sewage networks, and ramp up the waste treatment facilities so

<sup>14</sup>Inelastic means that a 1% change in the price of a good or service has less than a 1% change on the quantity demanded or supplied. Basic necessities tend to be relatively inelastic because they are needed for survival.

that water bodies are not polluted by effluent discharge. Specific tasks include ensuring water availability to the facility; sector planning; building disposal sites; treating sludge adequately; accessing the poorest neighbourhoods, particularly where road networks are inadequate; licensing of private entrepreneurs; and guaranteeing competition between service providers. A good mix of incentives and penalties will have to be applied to ensure that the waste is delivered to formal treatment or discharge sites, with proper sewage facilities.

### **Attitudinal Challenge**

A social mobilisation campaign is required to create the demand for sanitation facilities. There is an urgent need to project sanitation as desirable for reasons of privacy and comfort, and discourage bad sanitation practices as socially undesirable habits. Such behavioural changes take time but are also the strongest drivers of demand for more such facilities and can stimulate innovative sanitation investments that cater to this mass demand. Once this demand is created, an opportunity is created for the private sector to design, make and deliver a solution that fully satisfies this demand at affordable costs.

### **3.3 Strategies for Investment**

#### **Evaluating sources of revenue for investment**

Traditionally, sanitation has been regarded as a centrally sponsored service with little role for the creativity or energy of the private sector. However, achieving a huge goal of universal sanitation access entails a combination of public finance, private capital and tariffs<sup>15</sup>. The typical policy to increase funds to this sector is by increasing the proportional allocation to sanitation from existing budgets and raising tax revenue generation simultaneously. Many Sub-Saharan African countries currently have weak tax revenue collection structure<sup>16</sup>.

While tax revenue in EU countries averages 19% of GDP, developing Sub-Saharan African countries, for which data is available, raised on average only 15.83% of GDP, as in 2015<sup>17</sup>. Increasing tax revenue is essential to close the sanitation funding gap. To take the examples from India, a 0.5% Swacch Bharat Cess is levied in India on all services to generate revenue for the Swacch Bharat (Clean India) Campaign; and the proposed Special Sanitation Tax on commercial establishments like hotels, restaurants, function halls, lawns and hospitals, by Municipal Corporation of Nagpur City in India, could be considered for replication.

However, it is unlikely that low-income countries of Sub-Saharan Africa will be able to greatly increase their tax revenue collection in the near future. Thus, it will be essential to incentivise the private sector and create commercially viable option for them to invest. The role of the public sector could then focus on demand-orientation, market creation and on an enabling environment favouring the private sector to deliver on the supply side. The private sector must be encouraged to become involved other sanitation related activities like pit-emptying, sale of safely composted human waste as fertilizer, generation of methane from biogas toilets, and the operation and maintenance of public toilets.

#### **PPP in Sanitation**

Public Private Partnership (PPP) is an attractive model, but as discussed earlier, there are some challenges. To overcome them, the governments need to provide guarantees to the private investors so that a part of the investment risk is covered. The PPP Model if based on service or management contract basis, might ensure better quality of services. Since private equity and commercial debt are not readily available for sanitation sector, the option of lease or concession type of PPP model might be explored. This model allows a

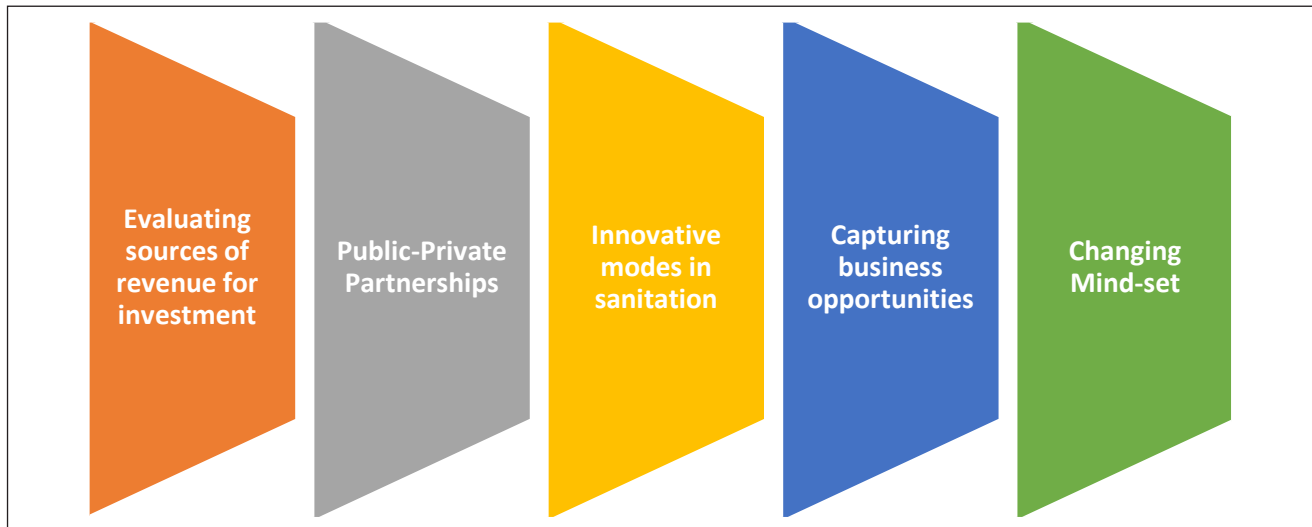
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<sup>15</sup> Hall D & Lobina E (2009) Paying for water and sanitation: the essential role of public finance, and Bisaga I and Norman G (2015) Universal water and sanitation: how did the rich countries do it?

<sup>16</sup>Banerjee SG & Morella E (2011) Africa's water and sanitation infrastructure: access, affordability and alternatives

<sup>17</sup>World Bank (2015) World Development Indicators

Exhibit 3.9: Select strategies to improve sanitation in Sub-Saharan Africa



Source: Exim Bank Research

combination of public financing with the efficiency of the private sector. In this arrangement, unlike a management contract, the operator does not receive a fixed fee for his services from the government, but charges an operator fee to consumers. Thus, there is an incentive to the operator to improve the services and the customer base in order to improve profits. This encourages innovative approaches by the operator to improve the access to sanitation. Since PPP involves extensive governmental engagement, it might lead to increase in access along with quality. But the caveat in the success of both these models lies in the different socio economic setting in which it is implemented and the amount of public attention and participation that it can garner.

### Innovation as a Strategy

Innovation in sanitation facilities is crucial today because the majority of the people who require it, lack affordability, accessibility and a conducive social environment that can facilitate its penetration. This underscores the importance of encouraging and nurturing innovation, which need not be associated only with the technology but could also encompass best practices and models for effective delivery and wider coverage. The onus hence lies on novel ideas that

can overcome all these barriers and provide universal access.

Innovative business practices could include recycling and treating human waste scientifically, so that it can be used as a fertiliser for crops. Proper composting and treatment kills much of the bacteria, and the manure which when generated can be sold at a profit, and can reduce the cost of buying expensive fertiliser and provide organically grown food at the same time.

Kentank and Simtank, produced by Kentainers and Silafrica respectively, are two of a group of African regional manufacturing firms that are currently engaged under the Selling Sanitation initiative<sup>18</sup> and are in the business of manufacturing affordable hardware to increase access to sanitation. SimGas, which turns sewage into energy and Sanergy, which runs a franchise system for toilets in the slums of Nairobi are also examples of innovative business practices in Sub-Saharan Africa. Although, these businesses show promising trends, yet the challenge of identifying more effective solutions remains.

### Capturing Business Opportunities

Sanitation can be a major market-driven activity that grows in response to consumer demands. The

<sup>18</sup>A joint project of International Finance Corporation (IFC) and the World Bank Water and Sanitation Program.

business opportunities in the sector are manifold. For example, consultancy services to the government, advertisement and promotion of sanitation and water, hygiene promotion, advocacy, training and capacity development, procurement of materials and equipment (pipes, pumps, measurements and monitoring devices, etc.), development and commercializing of household appliances such as filters and compact wastewater treatment, planning, design and construction of community and city level sanitation and sewage systems, facilitation of participatory process, monitoring during implementation, provision of expertise, providing (water) and environmental sanitation services (e.g. pit emptying, sludge collection, solid waste collection, etc.), financing and banking, among others.

Activities relating to sanitation facilities include the manufacturing of hygienic slabs, income generation at the point of sale and job creation for builders constructing toilets and latrines. Masons and others dig the pit, lay the slab, connect plumbing or ventilation and construct walls and doors. Demand for sanitation products and services triggered by community-led total sanitation can stimulate socially and economically sustainable sanitation solutions.

All these provides a good opportunity for businesses to tap into the Sub-Saharan African market. The private sector hence is increasingly being viewed as a key development partner. The Sustainable Development Goals - 2030, for example, accords a central role

to private sector investments and public private partnerships, in meeting the agreed-upon goals and targets, including those for improved sanitation.

### **Changing mind-set**

Breaking taboo and creating awareness about importance of sanitation through various media campaigns using various marketing strategies is a key strategy to inculcate consciousness, which in turn will create demand.

There have been some notable efforts, albeit at primary level, taken by some African countries. One of them is The Ghana Water, Sanitation and Hygiene Project (GWASH) which has identified Patience's community of Kyiren, along with the neighbouring community of Adaa, as two of those in major need of assistance in improving their sanitation situation. The interventions in these communities included: a) working with community household to identify those willing to commit to improving their sanitation situation and investing in household latrines; b) training local individuals as artisans skilled in toilet construction and maintenance; c) mobilizing households to acquire the necessary materials to contribute to latrine construction; and d) empowering community members to make wide-spread changes in their hygiene practices and management. Through this, the Ghana WASH Project is strengthening local masons' capacity, building a team of workers who can continue to construct household toilets, and the communities in turn are benefiting in the process.



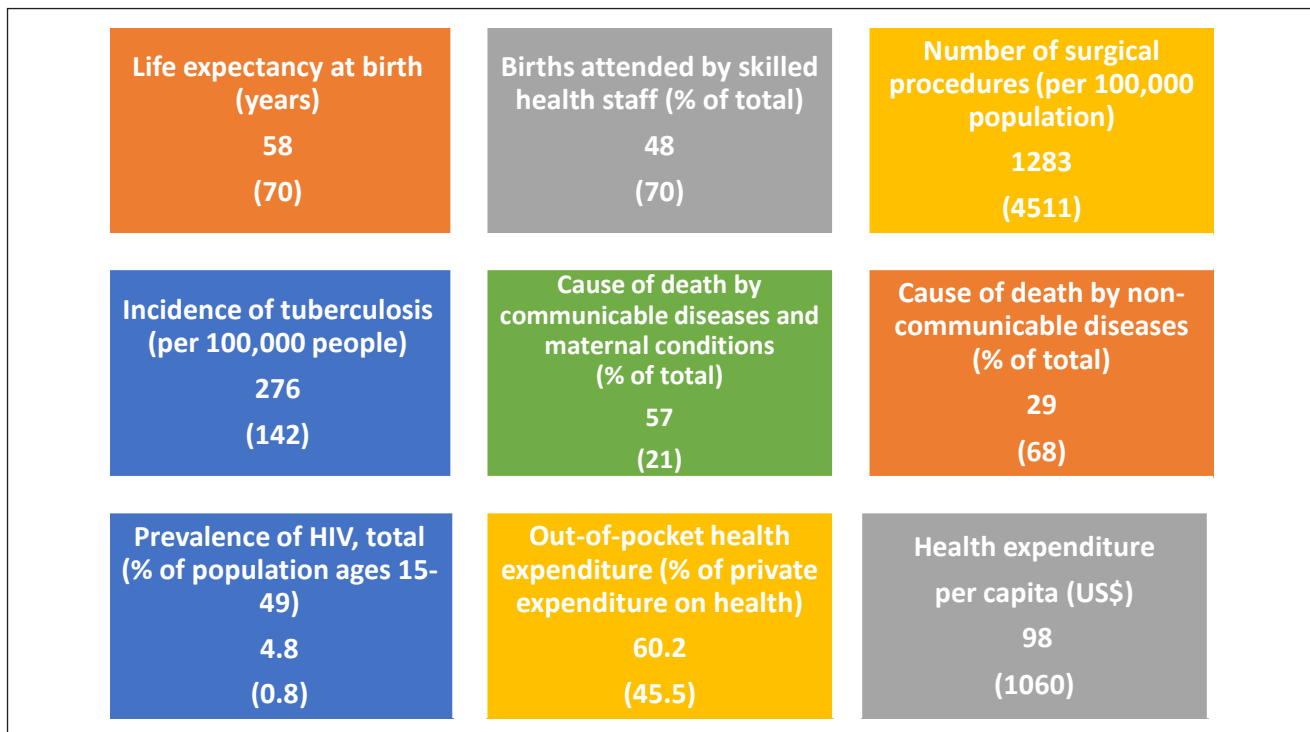
## 4. Healthcare in Africa

Africa has been drawing increasing global attention with the region being home to some of the fastest growing economies – three of the world’s ten fastest growing economies over the last few years 2015-2016<sup>19</sup> are in Africa. The continent also has a young and rapidly growing population of over 1 billion people, more than half of which are below 25 years and nearly two-thirds have a mobile phone. At the same time, Africa has been urbanizing rapidly and about two-fifth of its population now live in cities.

Despite the huge opportunities in Africa, there are various kinds of challenges, both economic and social. One of the fundamental challenges that the continent has to deal with is that of its grossly inadequate

healthcare infrastructure system. Health is one of the largest concerns on the continent. Millions die annually from preventable and curable diseases that would only require a quick shot or some pills for someone in the developed and developing economies. Lack of health education, limited access to basic health supplies, strained government budgets, and insufficient healthcare professionals have made it hard for the continent to improve the health of its people. On most of the health indicators, Africa lags behind the rest of the world not only in terms of absolute figures but also in terms of the rate of progress on these healthcare metrics. This is further exacerbated by spread of either new strains of existing disease or an outbreak of a completely new disease.

**Exhibit 4.1: Sub Saharan Africa’s state of healthcare: Some key metrics (2015)**



\* data in parenthesis shows World average

Source: Data derived from World Bank ; Exim Bank Research

<sup>19</sup>World Economic Forum, 2016

## 4.1 Case for investing in Healthcare

### Life Expectancy at Birth

The life expectancy parameter<sup>20</sup>, which is a crucial indicator of the socioeconomic status of an economy, shows the status Africa being 13 years less than the global average<sup>21</sup>. Most African countries rank among the lowest in the world on life expectancy parameters. The average life expectancy at birth in Africa in 1990 (for both sexes) stood at 52.9, which declined in 2000 to 52.2, and moved up to touch 61.21 years in 2015. Countries like Swaziland, Mozambique, Chad, Angola, Lesotho, and Burundi have life expectancy below 55 years. This is a far cry compared to some countries like Japan which has a life expectancy of 85 years.

However, there is one crucial observation, among the 19 countries which exhibited a higher life expectancy than the average in 2014 (for both the sexes), female life expectancy was higher in all these countries as compared to male life expectancy (refer Annexure 1). In fact, countries like Seychelles, Mauritius, Cape Verde and South Africa show a significant difference between the two genders on this parameter.

### Infant mortality rate

Infant mortality rate is defined as the probability (expressed as a rate per 1000 live births) of a child born in a specific year or period dying before reaching the age of one. A higher infant mortality rate is often considered as detrimental to growth potential. Africa suffers from significantly high numbers of newborn who continue to die at birth. For every 100,000 births, there are approximately 400 deaths in Africa, which is the highest child mortality rate anywhere in the world. Even chances of an African woman dying from pregnancy related causes are 100-times higher than a woman in the developed world.

Despite some progress in many countries, Sub-Saharan

Africa remains the most affected (refer Annexure 2). Countries like Sierra Leone, Angola, Central African Republic, Chad, Democratic Republic of Congo, Guinea-Bissau, Mali, Nigeria, Lesotho, and Côte d'Ivoire are amongst the countries with the highest infant mortality rates in the continent. Countries like Liberia, Mozambique, South Sudan, Malawi, Guinea, and Niger, which were amongst those with the highest infant mortality rates in 1990, have achieved phenomenal success in reducing the rate by more than half by 2014. On the other hand, countries like Sierra Leone, Angola, Central African Republic, and Chad continue to remain amongst the highest in infant mortality rate. Countries which have improved their position throughout the period under consideration, even though they were among the lowest in terms of infant mortality rates even in 1990, include Seychelles, Mauritius, Algeria, Cape Verde, South Africa, Namibia and Botswana.

### Burden of disease

Burden of disease essentially depicts the percentage of the years of life lost by major cause groups. Years of life lost (YLLs) take into account the age at which deaths occur by giving greater weight to deaths occurring at younger ages and lower weights to deaths occurring older ages. The YLLs (percentage of total) indicator measures the YLLs due to a particular cause of death as a proportion of the total YLLs lost due to premature mortality in the population. In this category, 3 major cause groups are identified – communicable (including maternal, neonatal and nutritional conditions); non-communicable diseases; and injuries.

From the data (refer Annexure 3) it is observed that there exist a high proportion of the countries in Africa where the cause of death is largely due to communicable diseases. Amongst the top 10 countries in 2012 with the highest share of their population affected by communicable diseases, 9 figured in the list in 2000 as well (Lesotho was the new addition). Mauritius,

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<sup>20</sup>Indicates the number of years a new-born infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life

<sup>21</sup>World Bank

Cape Verde, and Algeria had the lowest share of their population affected by communicable diseases. This is largely because of the availability of better preventive health care facilities.

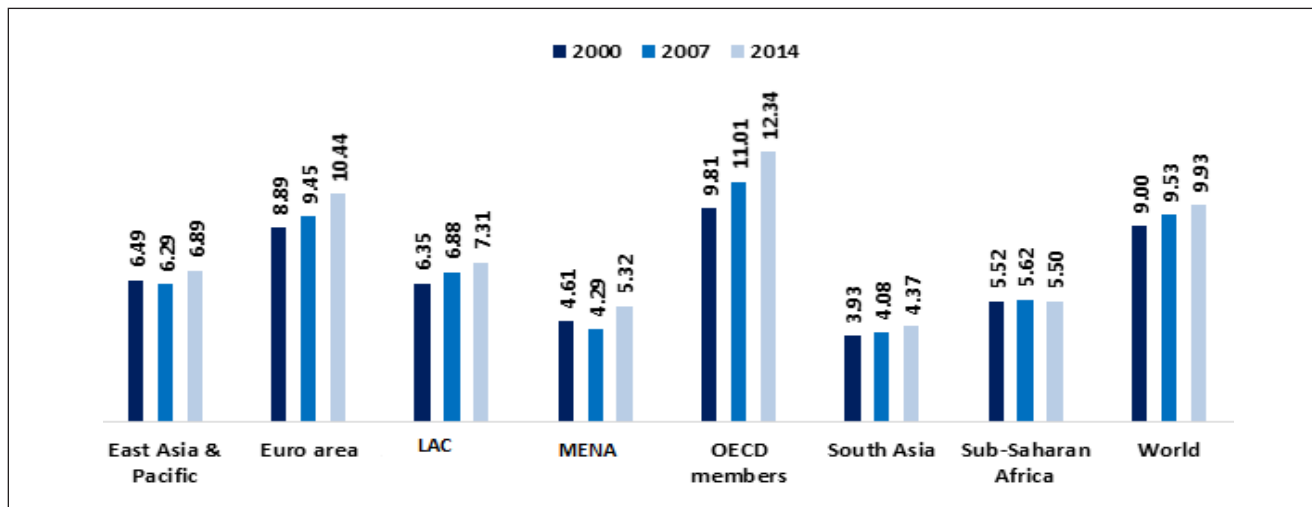
One of the key reasons for communicable diseases accounting for a large share of deaths is the lack of requisite laboratories in Africa. An early detection of the communicable disease is the best way to prevent its spread. Due to inadequate laboratories both in terms of numbers and in terms of facilities, disease control and prevention programs cannot be undertaken. Coupled with this is inadequate staffing, equipment and supplies.

The existing laboratories in Africa can be grouped into two broad categories, clinical laboratories and public health laboratories. Public health laboratories are responsible for providing timely and reliable results primarily for the purpose of disease control and prevention. However, clinical laboratories are responsible for providing accurate diagnosis of

ongoing, recent or past infections for appropriate case management. The focus of the clinical laboratory is individual patient care. However, data generated from both types of laboratories are essential for disease surveillance, control and prevention activities – which remain largely non-existent in most parts of Africa.

Despite the growing threat from emerging and re-emerging diseases, very few laboratories have been able to build the capabilities for diagnosing highly infectious diseases. Due to lack of facilities, countries often have to ship specimens to other regions for confirmation, resulting in delayed responses to outbreaks. This has also been because laboratories have usually been given low priority and recognition in most national health delivery systems, and hence the challenge remains in developing a comprehensive laboratory policy which addresses the key issues. However, going forward, non-communicable diseases are projected to overtake communicable and nutritional diseases as the most common cause of death in Africa by 2030<sup>22</sup>.

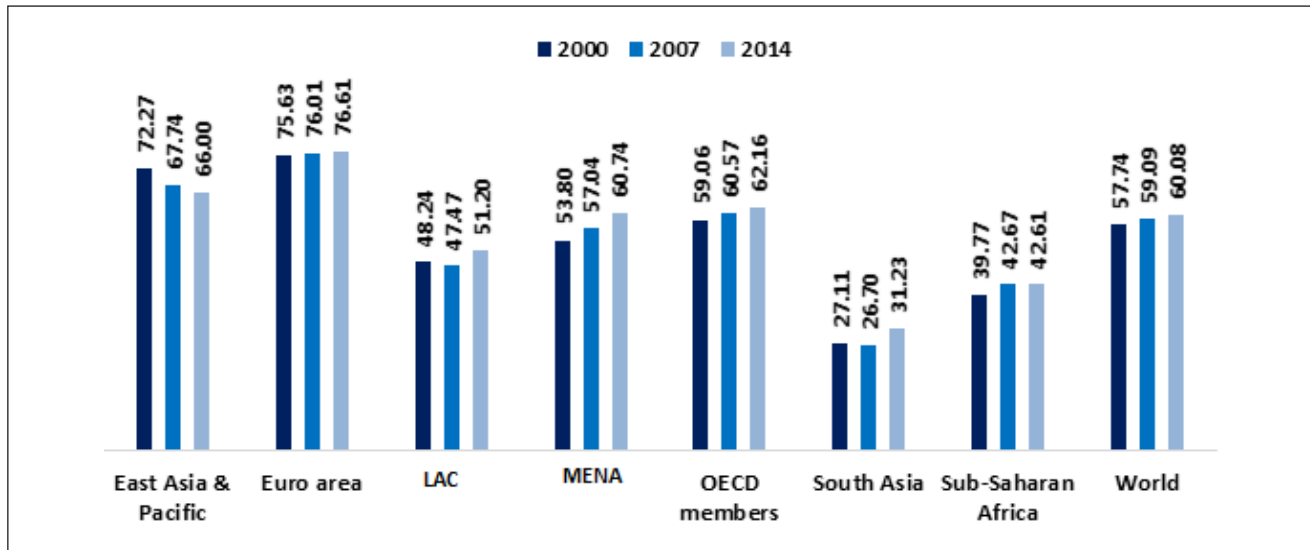
Exhibit 4.2: Region-wise health expenditure as a percentage of GDP



Source: Data derived from World Bank; Exim Bank Research

<sup>22</sup>Novartis

Exhibit 4.3: Public health expenditure (percentage of total health expenditure)



Source: Data derived from World Bank; Exim Bank Research

### Non-communicable Diseases and Conditions

Malaria and other contagious, preventable diseases like HIV, tuberculosis, pneumonia and even leprosy still stand in the way of growth. In fact, 90% of global malaria deaths occur in Africa. Countries like Sierra Leone, Algeria, Mali, Angola, Burkina Faso, Benin, Guinea-Bissau, DR Congo, Equatorial Guinea, and Madagascar have been amongst the top 10 countries having lost sizeable number of its population due to cardiovascular diseases in Africa as in 2012 (refer Annexure 4). On the other hand, countries that appear at the bottom of the list are Mozambique, Mauritius, Kenya, Tanzania, Senegal, Zimbabwe, and Ethiopia. With regard to chronic respiratory diseases, Liberia, Mali, Lesotho, Swaziland, Central African Republic, Equatorial Guinea, Angola, Namibia, Democratic Republic of Congo, and Sierra Leone were found high on the list. Countries which were observed to be relatively much better off in terms of deaths caused due to chronic respiratory diseases were Tanzania, Rwanda, Zambia, and Kenya.

However, data related to diabetes mellitus reveals some stark results. Countries with significant number of deaths of their population occurring due to diabetes mellitus include Mauritius, South Africa, Swaziland, Lesotho, and Sierra Leone. This is despite the fact that

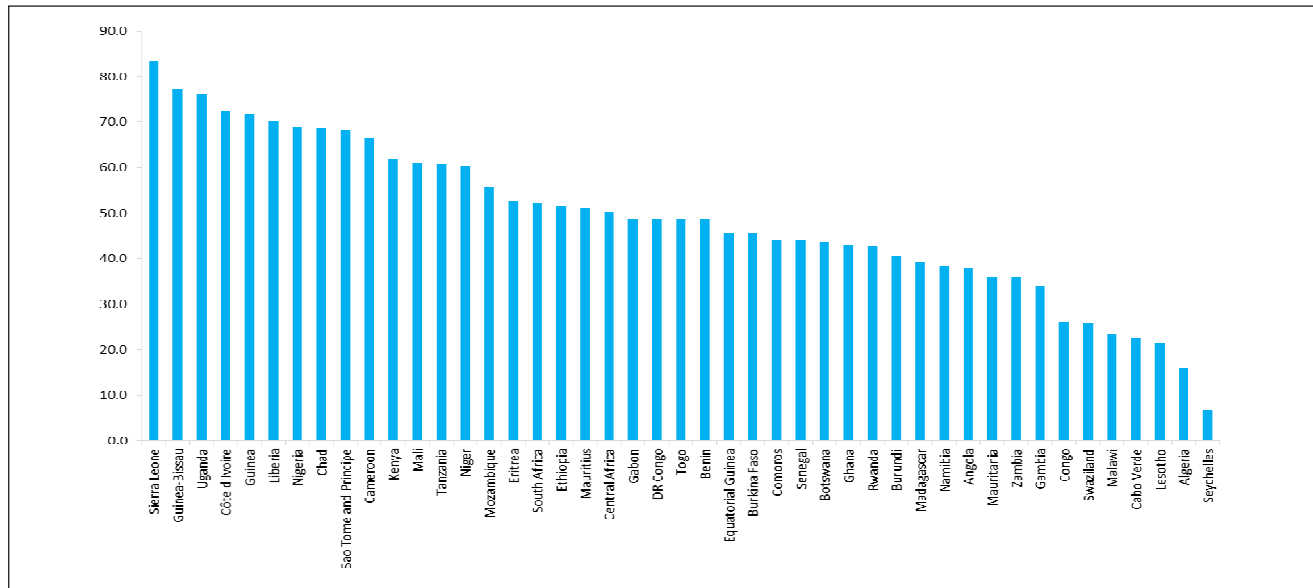
Mauritius and South Africa are considered as having the best medical facilities in the African region. This trend can be largely attributed to the prosperity in the region, given that diabetes is a lifestyle disease – an increase in the disease could be a symptom of growing prosperity, as people are able to afford more processed foods. It is also a sign of a more sedentary lifestyle as more people spend their working days sitting down. African countries which have experienced least amount of deaths due to diabetes mellitus are Central African Republic, Zimbabwe, Cape Verde, and Madagascar.

Amongst the non-communicable diseases, the cause of cancer is not very well defined. In Africa, countries which have been prone to malignant neoplasms (cancer) are Zimbabwe, Kenya, Burundi, Uganda, Madagascar, and Rwanda.

### Density of Healthcare Centres

Hospital infrastructure is crucial in the socio economic structure of a country. In fact, the density of hospital can be an indication of the availability of inpatient services. An analysis of the data for total density of hospital per 100,000 population reveals that Guinea-Bissau has the highest numbers at 56.45, far ahead as compared to the distant second Gabon at 3.53. Countries like Tunisia, Kenya, Ghana, Botswana, Seychelles, Mauritius,

**Exhibit 4.4: Private expenditure on health in Africa as percentage of total health expenditure: 2014**



Source: Data derived from WHO; Exim Bank Research

South Africa, and Egypt show a ratio of 2.33, 1.47, 1.36, 1.29, 1.08, 0.96, 0.67 and 0.62 hospitals per 100,000 population, respectively. (Annexure 5)

Some of the other facts and figures are also not very encouraging. The number of specialist surgical workforce in Africa at 1.7 per 100,000 people as compared to world average of 30.5<sup>23</sup> also shows the primitive healthcare scenario in Africa. A severe shortage of nurses and midwives means that over two thirds of women in Africa have no contact with health personnel following childbirth. Therefore, Africa accounts for more than half of the world’s maternal and child deaths.

**Challenges in implementation**

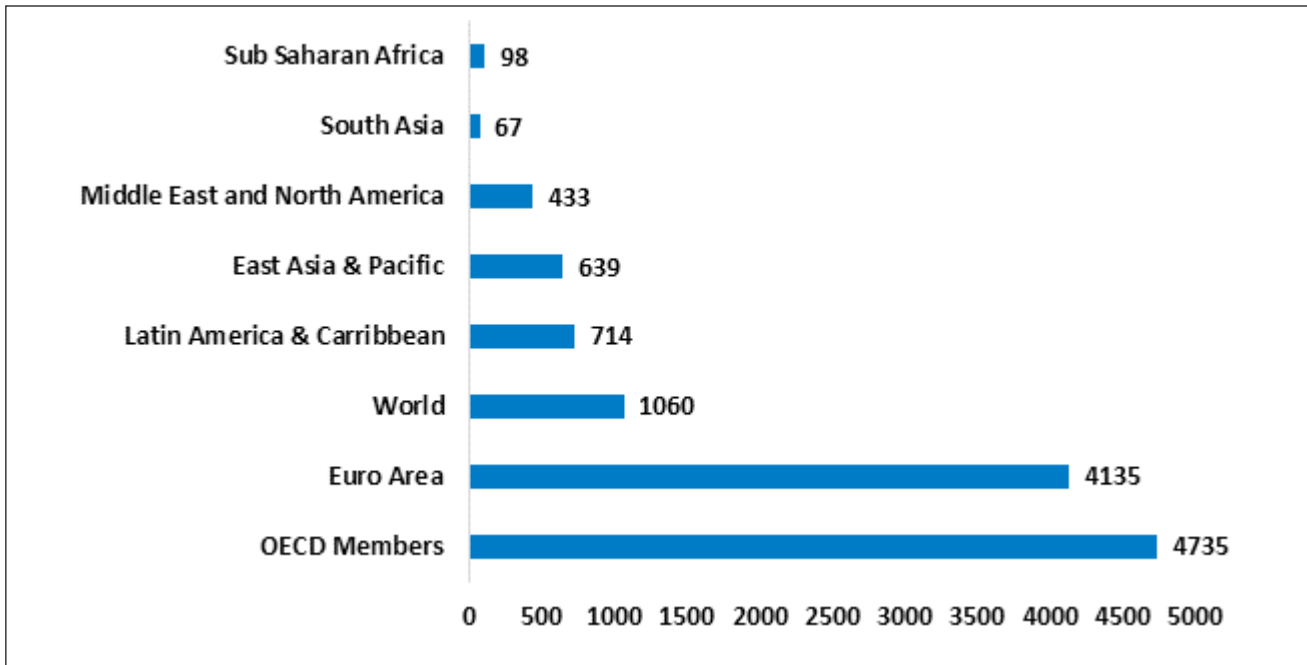
However, as in many parts of the developing and less developed countries, those living in urban areas are more likely to receive better healthcare services than those in rural or remote regions. Many communities in the rural region lack clean water and proper sanitation facilities. This means that illnesses caused by poor

hygiene, such as cholera and diarrhoea, are common in some African countries. Knowledge and skill based manpower is largely unavailable. Supplies are another problem as hospitals and clinics in some African countries lack basic equipment and have inadequate supplies of medicines.

Disruption to daily life and damage to facilities caused by conflict, in some countries, have also disrupted the healthcare delivery. In the past, outbreaks of sleeping sickness have been closely associated with civil unrest in Uganda, Angola and the Congo. The movements of population also spread disease. One of the latest diseases to have caught the attention of African population is diabetes. In Africa, the prevalence of diabetes has more than doubled from 3.1% to 7.1% during 1980 to 2014, as the average world’s diabetes share increased from 4.7% to 8.5% during the same time period. In fact, in terms of number of people with diabetes, Africa has witnessed a 6-fold increase from 4 million to 25 million during the same period.

<sup>23</sup>World Bank

Exhibit 4.5: Region wise health expenditure per capita - 2014 (figure in US\$)



Source: World Bank Data; Exim Bank Research

The financing system in Africa is as deficient as the healthcare delivery system that it supports. The total health expenditure (sum of public and private health expenditure covering the provision of health services, family planning activities, and nutrition activities, but does not include provision of water and sanitation) as a percentage of GDP in 2014 in Sub-Saharan Africa was 5.6% as compared to the World average of 10%. While the average health expenditure as a share of GDP for the world has moved up by 1 percentage point during the 15-year period from 2000 to 2014 that of Africa has increased by a just 0.1 percentage during the same period.

Even more disheartening is the fact that this share in Africa has been declining consistently from 2009. This state of affairs has largely been a factor of inadequate funding of healthcare by the government – public health expenditure (which consists of recurrent and capital spending from government budgets, external borrowings, grants, and social health insurance funds) as a percentage of total health expenditure in 2014 for Sub-Saharan Africa stood at 42.4% as compared to the World average of 60.1%, which is significantly below all

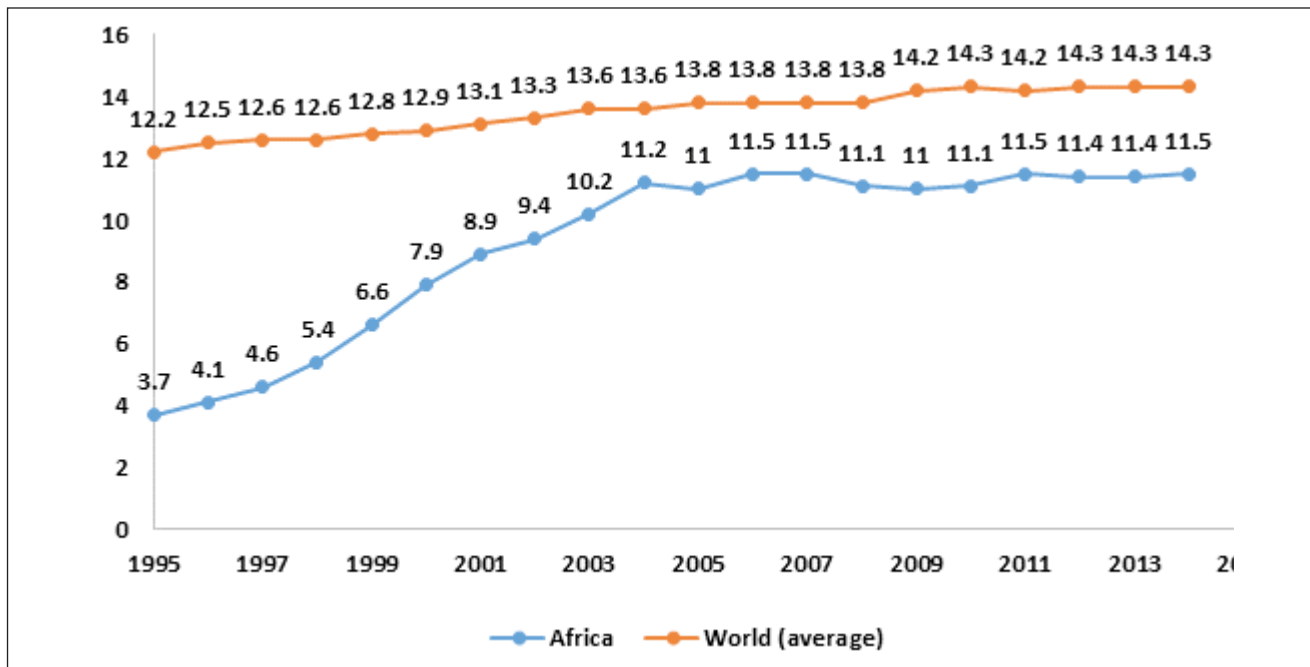
other regions in the world. In most of the developed countries, the Governments provide social security under which health services are covered.

As a result, the private expenditure on health in Africa as a percentage of total health expenditure seems apparently higher. With limited Government support, Africans are incurring a significant amount of health expenditure on their own.

The per capita health expenditure (current US\$) of Sub-Saharan Africa since the turn of the century has increased by three times from US\$ 32.57 in 2000 to US\$ 96.98 in 2014. During the same period, the average per capita health expenditure for the world increased almost by two and half times from US\$ 491.11 to US\$ 1060.56. While in terms of growth, this progress may appear appreciable, there is still a long way to go for many African countries in terms of absolute values, especially when compared to other regions of the world.

It is but true that Africa is a conglomeration of 54 countries, most of which are landlocked; however, the healthcare solutions to most of the challenges

Exhibit 4.6: General Government expenditure on health (as a percentage of total Government expenditure)



Source: Data derived from WHO; Exim Bank Research

in the continent are similar in nature. The pillars of Africa’s healthcare solutions can broadly be classified as improvements in health service delivery, human resource, healthcare financing, technology, governance, and supply chain. Considering the massive challenges facing Africa’s healthcare systems, concentrating on developing systems and procedures around these will certainly enable the continent to develop a viable healthcare system.

The need for a robust healthcare delivery system is accentuated given that there has been a slow and steady growth of urban middle class, who are willing to pay for better treatment in Africa. This eventually creates the potential to open the door to the private sector, which is starting to explore opportunities working in partnership with donors and governments to provide better healthcare facilities, and increased access to medicine at an affordable price.

As Governments in Africa are acknowledging the importance of preventive methods over curative action and becoming more conscious of the healthcare lacunae, new models of care are being designed. This, in turn, is empowering communities to make their own healthcare decisions. At the same time, some countries

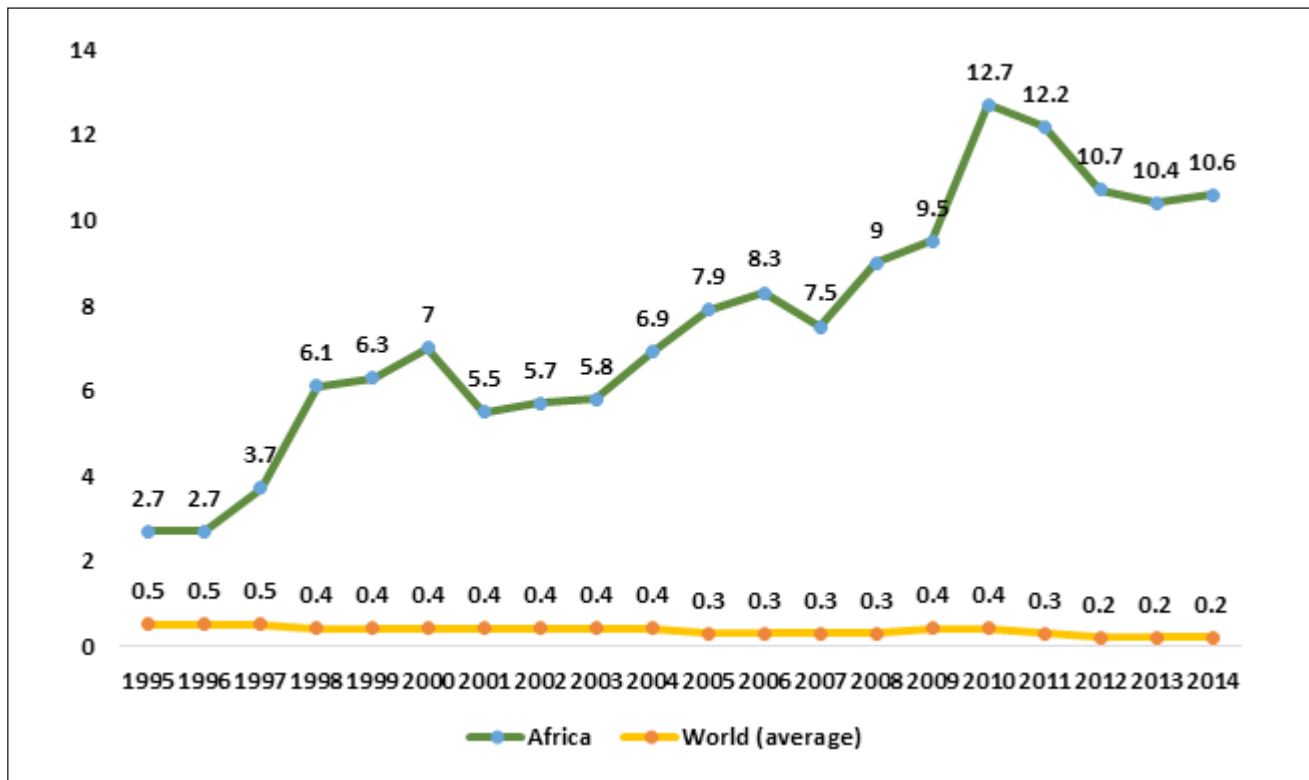
are experimenting with different forms of universal health provision.

In some African countries, there are positive frameworks of regulations that are being brought in, although enforcement still remains a major challenge. In order to engage with a new set of investors, African nations must mould the regulatory system towards attracting investments from the private sector, besides encouraging the involvement of civil society organisations.

Reforms in the healthcare financing are well under way in the African continent. A number of countries (Burkina Faso, Mali, Niger and Sierra Leone) are opting for subsidized or free healthcare, particularly for pregnant women and children below five. Some countries have introduced health insurance schemes with the objective of reducing out of pocket spending of the population.

Countries such as Ghana, Rwanda and South Africa have introduced universal healthcare coverage. In Ghana, for example, health insurance enrolment has significantly reduced the out of pocket payments and protected the households against exorbitant expenditure.

Exhibit 4.7: External resources for health as percentage of total expenditure on health



Source: Data derived from WHO; Exim Bank Research

All African countries committed, in Abuja Declaration in 2001, to spend at least 15% of their public budget on health. Although only a few countries have succeeded in meeting this commitment, other African countries are exhibiting political will to achieve this commitment.

External resources for health account for 10.4% of total health expenditure in Africa, which is a much higher proportion than anywhere else in the world (world average is just 0.2%). In some countries like Malawi, Mozambique, and DR Congo, external resources accounted for more than 50% of country’s health expenditure in 2013. With the global meltdown, international donors are likely to cut down aid for healthcare. The Governments in Africa need to develop equitable and sustainable health financing

system to meet their healthcare expenditure, and generate internal resources for their healthcare development agenda.

The working population in Africa is expected to grow. The growth in young population and likely change in their lifestyle may lead to growth in lifestyle related diseases such as obesity, cancer and cardiovascular illness. According to some estimates, by the year 2050, the aged population will account for nearly 13% of Africa’s total population. The fastest growths of old age population will be in North Africa where the proportion of elderly citizens will be double that of Africa as a whole. It is estimated that by 2060, one-third of North Africa population will be above 60 years.

Set against this background, it will not be out of place



to assert that Africa's healthcare systems which today is at a nascent stage, provides tremendous opportunity for healthcare investors to create new and innovative business models for different geographies in the continent. The private sector involvement across the healthcare chain in Africa will be extremely crucial for improving the health outcomes in the continent over the next decade and beyond. The private sector has been playing an increasingly important role in health financing in Africa. In Sub-Saharan Africa, about half of spending in all types of income categories, from the poorest to the richest, comes from the private sector. Of this, about 72% is out of pocket expenditure, with the remainder coming from risk pooled<sup>24</sup> and other sources. In some countries like Angola and Mali, all private expenditure is direct payments from households. A study by the International Finance Corporation (IFC) has estimated the market for healthcare in Sub-Saharan Africa at about USD 35 bn in 2016.

Poor health of the workforce could impact GDP per capita negatively, by reducing both labour productivity and the relative size of the labour force. As Africa is emerging as a growing region, the health of the region becomes a vital component to help achieve and sustain high economic growth. Thus, it is pertinent for the region to provide a strong focus on the sector. One of the means of doing so would be to attract greater investments to this sector. The potential for foreign investors in this sector remains significant.

#### **FDI Investments in the African Health Sector**

The FDI inflows to Africa have picked up very strongly in the last few years, encouraged by ebbing political

instability and other business constraints like corruption and bribery. The promising trend was also evidenced by the Transparency International Corruption Perception Index in 2014, which ranked 35 African nations ahead of Russia and six ahead of Italy, in terms of clean business practices.

The combination of a growing middle class interested in health care provision and the rising incidence of non-communicable diseases like diabetes, cardiovascular conditions and respiratory ailments, have led to a strong demand for healthcare services. Thus, a myriad of opportunities have opened up for profitable health care business investment. This has also been because of a renewed focus on community-based prevention and lifestyle changes, like campaigns to control smoking, alcohol, unwanted pregnancies and obesity. Such drives carry enormous reciprocal benefit to society when applied to the entire population, and the private enterprises can play a strong role in making such programs scalable.

The table 4.1 depicts the FDI trends in the healthcare sector in Africa between the time periods of 2003 to 2017. India has emerged as the second largest investor in the sector, with cumulative investment of USD 280.7 millions. Egypt has received the maximum inflows amongst the North African nations, while Tanzania has been a favorite in the Sub Saharan area. The major investing companies from India include the Apollo Hospitals Group and the Healthcare Global Enterprises Table 4.2 summarises major companies investing in healthcare sector in Africa.

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<sup>24</sup>A risk pool is one of the forms of risk management mostly practiced by insurance companies. Under this system, insurance companies come together to form a pool, which can provide protection to insurance companies.

**Table 4.1: CAPEX investments (in US\$ mn) in Africa in the healthcare sector between January 2003 and January 2017**

Destination	UK	India	USA	Saudi Arabia	France	UAE	Italy	Japan	Qatar	Malaysia	Total
Egypt	-	2.7	90.0	127.7	-	-	-	-	8.8	-	229.2
Tanzania	49.4	72.9	-	-	-	-	-	-	-	-	122.3
Kenya	101.5	2.7	2.7	-	-	-	-	-	-	-	106.9
Ethiopia	-	2.4	100.0	-	-	-	-	-	-	-	102.4
Mauritius	-	72.7	-	-	-	-	-	-	-	-	72.7
Uganda	-	61.1	-	-	-	-	-	-	-	-	61.1
Zimbabwe	49.4	-	-	-	-	-	-	-	-	-	49.4
South Africa	49.4	-	-	-	-	-	-	-	-	-	49.4
Tunisia	-	-	-	-	-	-	-	49.4	-	-	49.4
Swaziland	-	-	49.4	-	-	-	-	-	-	-	49.4
Benin	-	-	-	-	49.4	-	-	-	-	-	49.4
Chad	-	-	-	-	-	-	49.4	-	-	-	49.4
Mozambique	49.4	-	-	-	-	-	-	-	-	-	49.4
Malawi	-	-	-	-	-	49.4	-	-	-	-	49.4
Rwanda	-	44.9	-	-	-	-	-	-	-	-	44.9
Zambia	-	2.4	-	-	-	-	-	-	-	12.0	14.4
Nigeria	-	10.7	2.7	-	-	-	-	-	-	-	13.4
Morocco	-	-	-	-	1.5	-	-	-	8.8	-	10.3
Ghana	-	5.3	2.7	-	-	-	-	-	-	-	8.0
Algeria	-	-	-	-	5.2	-	-	-	-	-	5.2
Burundi	-	2.9	-	-	-	-	-	-	-	-	2.9
<b>Total</b>	<b>299.1</b>	<b>280.7</b>	<b>247.5</b>	<b>127.7</b>	<b>56.1</b>	<b>49.4</b>	<b>49.4</b>	<b>49.4</b>	<b>17.6</b>	<b>12.0</b>	<b>1,188.9</b>

Source: Data derived from fDI Markets; Exim Bank Research

**Table 4.2: Major companies investing in the healthcare sector in Africa between January 2003 and January 2017**

Project Date	Parent Company	Source Country	Destination Country	Capital Investment (US\$ mn)
Apr 2014	American Hospital Management	USA	Egypt	90
Feb 2014	Ethio-American Doctors	USA	Ethiopia	100
Jun 2012	Madras Institute of Orthopaedics and Traumatology (MIOT Hospitals)	India	Rwanda	40
Oct 2011	Apollo Hospitals Group	India	Tanzania Nigeria Ghana Ethiopia Zambia	79.6
Oct 2010	Healthcare Global Enterprises (HCG)	India	Ghana Nigeria Burundi Uganda Rwanda Tanzania	17.52
Jul 2008	MKP Group	Malaysia	Zambia	12
Mar 2008	Apollo Hospitals Group	India	Mauritius	70
Dec 2003	Ceva Sante Animale	France	Algeria	2.5

Source: Data derived from fDI Markets; Exim Bank Research

### 4.3 Strategies for investment

#### ***Cooperation with African Health Establishments in Training Healthcare Professionals***

One of the most important and primary task is to create human resource for the healthcare sector in Africa. Limited availability of qualified healthcare professionals in several parts of Africa, which includes not only doctors or surgeons, but also nurses, and para-medical staff, have been a huge cause of concern. In fact, the rural areas bear the actual brunt of these shortages as countries struggle to attract and retain enough medical staff to provide health services in remote locations.

According to WHO estimates, the current workforce in some of the most affected countries in sub-Saharan Africa needs to be scaled up by as much as 140% to attain international health development targets such as those in the Millennium Development Goals. Training and development of skilled people is the key to unraveling the potential of healthcare opportunity in the continent.

#### ***Cooperation with African Economies in Technology Infusion in Healthcare Facilities***

When it comes to the influence of technology in health care in the African continent, seemingly small victories can lead to vast improvements, especially when the continent finds itself significantly challenged due to lack of healthcare facilities and scarcity of skilled manpower.

In the last decade or so, communication for health purposes has shifted from the largely manual or physical documentary method to digital communication, and as a result, has helped dissemination of information across the world. Doctors in many parts of the world are now able to collaborate as often and as quickly as they want with other medical doctors in other parts of the world through the use of ICTs. For example, while examining a patient, a doctor might be able to send an electronic x-ray to a leading expert in another country who could readily interpret and provide more details of the disease or condition, as well as send feedback to the doctor all within a few minutes.

IBM played a critical role in Africa during the Ebola crisis. IBM's Africa research lab, in collaboration with

Sierra Leone's Open Government Initiative, developed a system that enabled the citizens to report Ebola-related issues and concerns via texts or voice calls. It provided insight to the government about the day-to-day experiences of communities directly affected by Ebola to help improve its strategy for containing the disease. Tapping supercomputing and analytics capabilities via the cloud, the IBM was able to rapidly identify correlations and highlight emerging issues across the entire data set of messages. Because the SMS and voice data are location specific, IBM was able to create opinion-based heat-maps which correlate public sentiment to location information. For example, it brought to light specific regions with growing numbers of suspected Ebola cases that require urgent supplies such as soap and electricity, as well as faster response times for body collection and burials. The system has also highlighted issues with the diagnosis of Ebola, leading the Sierra Leone government to approach the international community to request more testing facilities and equipment.

#### ***Cooperation in Building Core Healthcare Infrastructure***

The financing of healthcare in Africa earlier remained as a patchwork of meagre public spending, heavy reliance on foreign donors and large dependence on out-of-pocket contributions and user fees that place the greatest burden on the poorest members of the society. At the same time, as the global economy grapples with the after-effects of slowdown, the financing profile of healthcare in Africa is likely to change, as flow of international funds decline, constraining the already limited capacity for budgetary allocation to the sector. On the other hand, the healthcare demand profile of Africa is changing with the growth of an urban middle class, which is willing to pay higher price for availing of better healthcare services. As has been evident through the discussions in the earlier sections of this Study, the Government's participation towards creating healthcare infrastructure in Africa is likely to remain limited. This provides an opportune moment for greater investments by the private sector into the African healthcare sector. Indian hospital majors, who have gained significant experiences in running hospitals under the PPP framework, could be ideal partners for Africa's healthcare infrastructure needs.

## 5. India-Africa Cooperation

The strong sense of political affinity and commonality between India and Africa dates back to several decades when people of both regions were engaged in an incessant struggle to gain independence from colonial rule. Today, India and Africa are rapidly growing developing regions in the world.

Africa is the continent of the future. India is a major emerging economy. As the global economy continues to recover only slowly, India and Africa together may well become the engines of growth for the entire world. India can contribute its capital, skills and technological capabilities to sustain Africa's growth. Africa in turn can support India's growth through mutually beneficial resource partnerships and easier access to each other's expanding markets. Africa is already one of India's fastest growing markets and investment destinations. This trend is likely to continue.

Notwithstanding the opportunities, Africa, as it stands today, is besieged by lack of basic social facilities which is an imperative for achieving equitable growth. In this context, capacity building support by India will remain an important element of the cooperation between these two regions. India can share its knowledge, resources, technology and provide support to the nations in the African continent in areas like water, sanitation, and health management and infrastructure creation. India has evolved through similar situations and its experience could be of great relevance to African nations.

### 5.1 Select Success cases in India in Water Management

Given India's contemporary experience in tackling the challenge of access to water and its traditionally warm relations with Africa, it becomes a logical ally in partnering the continent and sharing its experience. Considering that India has achieved the MDG target of reducing the population (by 50%) without access to safe water by 2015, and is striving towards achieving hundred percent access, Indian interventions in Africa can not only provide a greater thrust to this sector but

also provide the much needed expertise and innovation to improve access in the African settings. With the rapid growth of the Indian economy over the last two decades, an increase in the role of private investments in India's growth story and given that Africa is now among the fastest growing regions in the world, the scope of robust cooperation between India and Africa has now widened and this advantage can be leveraged to the benefit of both the regions.

In order to reach basic development standards for water, Africa needs an estimated US\$ 50 bn in annual investment<sup>25</sup>.

India's proximity to East Africa offers potential for developing joint infrastructure projects across the Western part of the Indian Ocean. According to Transparency International's 2013 study 'Transparency in Corporate Reporting', Indian companies have the highest ranking among BRICS nations in terms of anti-corruption measures and accountability owing to domestic disclosure requirements. This shows the credibility of the Indian firms and strengthens the scope of collaboration.

Export-Import Bank of India (Exim Bank) made a commitment for the extension of the Lake Victoria pipeline to Tabora, Igunga and Nzega in Tanzania. Since the area is poorly served by current infrastructure, the objective is to increase the water production and distribution capacity of the Upper Ruvu water supply system from 82 million litres per day to 200 million litres per day and supply more water to the Dar-es-Salaam region.<sup>26</sup> On completion, the project will provide the township 100% access to water, and the extension is expected to benefit 89 villages within a 12km radius of the pipeline.

The Table 5.1 below summarises the development assistance provided by India in different African countries in the water sector.

<sup>25</sup>Source: PIDA TWRM Outlook 2040

<sup>26</sup>This project was executed by three Indian companies, namely, WAPCOS Ltd., Va tech WABAG & Megha Engineering and Infrastructure Ltd.

**Table 5.1: Exim Bank LOCs in Water Sector in Select African Countries**

Country	Amount of Credit (in US\$ mn)	Purpose
Sierra Leone	30.00	Rehabilitation of existing facilities and addition of new infrastructure to supply potable water
D.R.Congo	25.00	Installation of hand pumps and submersible pumps
Mauritania	21.80	Potable water project (US\$ 4.896 mn) and Milk Processing Plant (US\$ 11.30 mn)
Tanzania	178.13	Water supply schemes to Dar-es-Salam
Mozambique	19.72	Rural drinking water project extension
Zimbabwe	28.60	Up-gradation of Deka Pumping Station and River Water Intake System in Zimbabwe
Sierra Leone	30.00	Irrigation Development in Tomabum, Sierra Leone
Sierra Leone	15.00	Expansion of the ongoing projects for rehabilitation of existing potable water facilities in four communities in Sierra Leone
Ghana	30.00	Rehabilitation and Up-gradation of Potable Water System in Yendi, Ghana
Tanzania	268.35	Extension of Lake Victoria Pipeline to Tabora, Igunga and Nzega
Tanzania	92.18	Rehabilitation and improvement of water supply system in Zanzibar
Malawi	23.50	Construction of a new water supply system from Likhubula river in Mulanje to Blantyre

Source: Govt of India LOC Statistics, EXIM Bank Research

### Select Success Cases in India in Water Management

#### ***Tata Water Mission***

The Tata Water Mission is a programme initiated by the Tata Trusts to tackle the water crisis with a multi-pronged approach. Under the programme, the Trusts support innovative initiatives that seek solutions to water-related issues. The three core areas under innovation that the programme supports are technology innovations, innovative financing models and innovative behavioural change communication models. The programme has been implemented in eight states including Gujarat, Uttarakhand, Rajasthan, Jharkhand and Odisha, through a multi-stakeholder partnership model.

#### ***Achieving Continuous Water Supply in Karnataka***

In the cities of Hubli, Belgaum and Gulbarga in Karnataka, the private operator Veolia increased water supply from the supply frequency level of once every 2 to 15 days for 1–2 hours, to 24 hours per day for 180,000 people

(12% of the population of the 3 cities) within 2 years (2006–2008). This was achieved by carefully selecting and ring-fencing demonstration zones (one in each city), renovating the distribution network, installing meters, introducing a well-functioning commercial system, and effective grassroots social intermediation by an NGO, all without increasing the amount of bulk water supplied. The project, known by its acronym as KUWASIP (Karnataka Urban Water Sector Improvement Project), was supported by a US\$ 39.5 million loan from the World Bank. It constitutes a milestone for India, where no large city so far has achieved continuous water supply.

#### ***Microcredit for Water Connections in Tamil Nadu***

In Tiruchirapalli in Tamil Nadu, the NGO Gramalaya, established in 1987, and women self-help groups, promote access to water supply for the poor through microcredit. In addition to the obvious benefits of access to safe water, this initiative also allows women to spend more time with their children, earn additional

income, and sell surplus water to neighbours. This money contributes to their repayment of the Water Credit loan that allowed the setup in the first place. The initiative is supported by the US-based non-profit Water Partners International.

### ***The Jamshedpur Utilities and Services Company***

The Jamshedpur Utilities and Services Company (JUSCO) provides water and sanitation services in Jamshedpur, a major industrial centre in East India that is home to Tata Steel. Until 2004, a division of Tata Steel provided water to the city's residents. However, service quality was not adequate with intermittent supply, high water losses and no metering. To improve this situation and to establish good practices that could be replicated in other Indian cities, JUSCO was set up as a wholly owned subsidiary of Tata Steel in 2004.

Efficiency and service quality improved substantially over the following years. One quarter of residents received continuous water supply (although the average supply remained at only 7 hours per day) in 2009. As the share of metered connections increased, the number of customers increased; and the company recovered its operating costs plus a portion of capital costs. Identifying and legalising illegal connections was an important element in the reduction of non-revenue water. The utility prides itself today of the good drinking water quality it provides and encourages its customers to drink from the tap. The utility also operates a wastewater treatment plant that meets discharge standards. The private utility pays salaries that are higher than civil service salaries and conducts extensive training programs for its staff. It has also installed a modern system to track and resolve customer complaints. Furthermore, it conducts independent annual customer satisfaction surveys. JUSCO's vision is to be the preferred provider of water supply and other urban services throughout India. Together with Ranhill Malaysia, it won a 25-year concession contract for providing the water supply in Haldia City, West Bengal.

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<sup>27</sup>Union Ministry of Rural Development launched this scheme in 2002. The proposals involve participation of the locals and panchayat in monetary and supervisory roles, like having mini-pipe water supply, digging bore wells, water harvesting and rejuvenation of water bodies.

### ***Swajaldhara***

The program, called Swajaldhara, decentralises service delivery responsibility to rural local governments and user groups<sup>27</sup>. Under this approach, communities are being consulted and trained, and users agree up-front to pay a tariff that is set at a level sufficiently high to cover operation and maintenance costs. It also includes measures to promote sanitation and to improve hygiene behaviour. The national program follows a pilot program launched in 1999.

According to a 2008 World Bank study in 10 Indian states, *Swajaldhara* results in lower capital costs, lower administrative costs and better service quality compared to the supply-driven approach. In particular, the study found that the average full cost of supply-driven schemes is ₹38 (56.5¢ US) per cubic meter, while it is only ₹26 (38.6¢ US) per cubic meter for demand-driven schemes. These costs include capital, operation and maintenance costs, administrative costs and coping costs incurred by users of malfunctioning systems. Coping costs include travelling long distances to obtain water, standing in long queues, storing water and repairing failed systems. The poor functioning of one system sometimes leads to the construction of another system, so that about 30% of households surveyed were served by several systems. Since water users have to pay lower or no tariffs under the supply-driven approach, this discourages them to opt for a demand-driven approach, even if the likelihood of the systems operating on a sustainable basis is higher under a demand-driven approach.

## **5.2 Select Success cases in India in Sanitation Management**

India and Africa both have limited resources and face common health and sanitation based problems. India is probably better developed in terms of its industry and biotech capacity, manufacturing abilities as well as medical care facilities in terms of hospitals and doctors.

Joint investments in this sector would be profitable since there are common priorities, and sharing resources would dilute the risks while improving the benefits. Shared sanitation concerns, disease profiles, similar environmental challenges, including outcomes of climate change, make the cooperation between India and other developing countries of the tropical and subtropical belt of Africa crucial<sup>28</sup>.

In the sanitation sector, both India and Africa face similar challenges. According to World Bank data, only 17% of the Indian population had access to sanitation in 1990, which has gone up to 40% in 2015. Although it is not an exemplary progress, yet it is relevant, since in 1990, 24% population in Sub Saharan Africa had access to sanitation, which has increased to just 30% till 2015.

A cooperative framework to tackle the issue would indeed go a long way in devising a feasible solution for the sanitation issue. In this regard, Indian technology and innovation may be more suited to the needs of African countries. India itself was a large aid recipient till early 1990s, and the scope of Indian cooperation with African countries then was limited. Both India and Africa are now rapidly evolving economies with a dynamic private investment environment. Thus, the scope of robust cooperation between India and Africa has now widened and this advantage needs to be leveraged for the benefit of both the regions.

India has successfully introduced a number of sanitation programs – some are in the public sector, whilst some are in the private. Successful private initiatives in sanitation in India and other countries can be studied to devise a favourable private investment model in Africa. Few interesting examples of successful models in India's sanitation program are discussed below:

#### **Case Study 1: Water and Sanitation Pool Fund**

The Water and Sanitation Pooled Fund (WSPF) in Tamil Nadu issued a pooled bond to facilitate access

to long-term domestic capital markets for small and medium Urban Local Bodies (ULBs) to finance water and sanitation services. The WSPF functions as a special purpose vehicle to specifically help small urban local bodies finance their water and sanitation services by raising capital market resources on a pooled basis. This enabled a grouping of 13 ULBs to overcome high transaction costs and mobilize funds through a single bond issuance. Debt was repaid from project cash flows and from general ULB revenues. A multi-layered credit enhancement package was designed in order to extend the maturity of the bond and increase investor confidence.

The different credit enhancement mechanisms included a debt service reserve fund capitalized by the state government, creation of individual ULB escrow accounts, a local debt service reserve fund, a State revenue intercept mechanism, and a partial credit guarantee from USAID.

A similar initiative has been financed through the Kenya OBA fund. Nairobi Water Supply Company has successfully established similar arrangements to expand water and sewerage services in poor areas, and similar initiative can be promoted in other countries of Africa.

#### **Case Study 2: Rural Sanitary Marts**

An interesting initiative is the Marketing Sanitation initiative in West Bengal by means of Rural Sanitary Marts (RSM) in Mednipore. A rural sanitary mart is a place that manufactures and sells all of the relevant components for building low-cost latrines. It offers a range of options designed to suit the pockets of all villagers. All options are water-sealed, like squatting plates, pans, and traps. Sanitary marts offer all kinds of items – soap, bleach, brushes – which relate to the improvement of hygiene and behavioural practices. Sanitary marts also provide a focal point in the campaign to promote the construction of latrines. They are staffed by local people, and are trained at district or State level to generate awareness,

<sup>28</sup>For example, the recently announced partnership of Indian Council of Medical Research (ICMR) with Thailand's Health Intervention and Technology Assessment Program (HITAP).

to stimulate demand, to offer after-sales help to users, and to train others in the manufacture and installation of the product. Sanitary marts are self-sufficient entities – part NGO and part private business – making modest profits and using revenue to pay incentives to village motivators who bring in new latrine customers. There are now more than 300 sanitary marts throughout West Bengal, co-ordinated by sanitation cells at district and State level. They are meeting the demand for sanitation in a far more efficient way than even local government ever could. As a beneficial spin-off from the sanitation programme, they are providing valuable employment to thousands of young local people, especially women. The Rural Sanitation Programme in West Bengal represents a remarkable collaboration between State government, UNICEF, local NGOs, and village communities. This program has already attracted visiting teams from around the world. Whatever the local circumstances, it should always be remembered that delivery cannot happen without demand, and the success of this campaign lies in creating a demand so strong that functional supply networks are operating in the remotest regions of Midnapur, and even the rural poor are paying for these products.

### **Case Study 3: The Sulabh Story**

Sulabh is an NGO in India that provides sanitation facility to 12 million people by means of “Community Toilet Complexes” (CTC), while charging a small fee for the same. The CTCs levy a small user fee, demonstrating that even poor people are willing to pay to use a clean toilet. The technology is simple - the waste is washed off with 1–2 litres of water into one of two tanks, where the water slowly seeps off and leaves solid dung. Sulabh’s CTCs are backed by a workforce of 60,000 paid “social workers”, who see to it that the toilets look clean and inviting to the 12 million daily customers. Sulabh runs over 6,000 community centres all over India. Sulabh normally constructs and maintains the CTC for public use on a pay-for-use basis. Local or other sponsoring authorities provide the lands and funds for construction of these public toilets-cum-bathing facilities.

Another innovation is the biogas installation at Sulabh headquarters in Delhi. The waste is slushed into a closed fermenting tank, and gas is piped away for lighting or cooking purposes, or for driving a water pump supplying the CTC. However, although such an installation might be simple, it does raise the investment costs for toilets, and the savings on energy from the gas are not enough to compensate for this capital outlay. The elasticity of prices for the primary service to toilet users is limited, therefore government support is crucial to carry it forward. The replication of the model in Africa could be possible with the willingness and motivation of the local authorities to invest into the construction of CTCs. Given the commercial viability of this project, as evidenced in India, a similar project could be implemented under India’s development assistance schemes.

### **Case Study 4: Healthy Habit of Handwashing**

The market for soap products is quite developed in high income economies and displays stagnant growth, thus global companies are looking towards developing countries or emerging markets. And promoting the use of soap for proper hand washing should be a promising business idea for the soap industry. But the major marketing challenge lies in tapping the huge rural market of the poor people in the other parts of the world. Hindustan Lever Limited (HLL) in India has set up a deliberate rural marketing strategy to reach out to over 700 million rural customers. Instead of centralising logistics by focussing on supermarkets, HLL has set up a decentralised system of about 7,000 redistribution stockists covering about one million retail outlets. The distribution network of HLL directly covers about 50,000 villages, reaching about 250 million consumers.

To address the issue of affordability, HLL has realised that sales are depressed as long as the pockets of the poor remain empty and now tries to raise the incomes of rural families by incorporating rural self-help groups (SHG) into the marketing channel as “direct-to-home distributors”. The model consists of groups of 15–20 villagers below the poverty line taking micro-credit from



banks, using the cash to buy HLL products, and then sell these products directly to consumers. HLL's "Lifebuoy "health and hygiene education program "Lifebuoy Swasthya Chetana" is the single largest rural health and hygiene educational programme ever undertaken in India. It aims to educate people about basic hygienic habits, and covers 15,000 villages in 8 states. The vision of this on-going project is to make hygiene a habit and invoke demand for sanitation. It shows a successful collaboration between local authorities and private enterprise with a noble aim to improve sanitation access.

#### **Case Study 5: Swatch Bharat Abhiyan**

India successfully generated awareness through promoting Swatch Bharat Abhiyan with the help of popular celebrities. For example, to generate higher public interest, the "Swatch Bharat Campaign" of the Indian Government is promoted by public figures. Community monitoring and evaluation and awards and monetary incentives can be given to successful villages, to boost community participation. The innumerable incentives of using improved facilities like safety, privacy, health, environment and economic benefits and probably clean energy if biogas septic tank is used, needs to be emphasised and imbibed into the social mind-set in a way that proper sanitation becomes a part of everyday life.

#### **Case Study 6: Nirmal Gram Puruskar**

Nirmal Gram Puruskar Initiative is a Government of India award that is given to acknowledge and encourage villages that undertake efforts to improve sanitation conditions. The award encourages innovative approaches for creating awareness about health

hazards of lack of sanitation through dialogues, self-help groups, rallies and community toilets, to achieve decent sanitation levels.

#### **5.3 Select success cases in India in Helathcare Management**

Africa has limited healthcare capacities, but is highly burdened with diseases. Many African nationals visit India to avail of affordable healthcare services offered by Indian hospital groups. Many African nations are looking at Indian expertise to create healthcare capacities in their respective countries and also to serve as regional healthcare hubs.

With the changing profile of healthcare financing in Africa, private sector could emerge as the major player in providing healthcare services. African governments and healthcare experts will most likely look at PPP model as the most efficient way of extending high quality healthcare. Some of the Indian healthcare players have already developed capabilities to establish and operate hospitals and clinics abroad, and the same could be suitably replicated in Africa.

Indian hospital groups could thus play a new role, often working in partnership with the African governments. Establishment of hospitals in Africa under the India's Development Economic Assistance Scheme shall help India build a better relationship with the African nations. India could also extend cooperation in the areas of skill development, technology infusion (ICT interface) in the healthcare sector, documentation of traditional knowledge, manufacturing of generics, institution building and help support the evolving policy and regulatory framework for the healthcare sector in Africa.

### Case Study 1: Manipal University

India can be an excellent source for countries in Africa to help set up educational facilities in the field of medicine. Apart from training individuals as doctors, there exists plenty of scope for Africans to be trained in nursing and other paramedical facilities by Indian entities. There are already examples wherein Indian medical institutes have gone overseas to set up base. Manipal University has opened up campuses for study of medicine in many parts of the world. The Melaka Manipal Medical College was opened in Malaysia in 1997 and currently almost 30% of doctors registered with the Malaysian Medical Council are students of this institute. Prior to that, in Nepal in 1994, the Manipal College of Medical Sciences

(MCOMS) affiliated to Kathmandu University with a 900 bed hospital at Pokhara was established. The College is the result of collaboration between the Manipal Group and the Government of Nepal. Manipal University has also set up a branch campus at the Knowledge Village, Dubai, in collaboration with the ETA Network of Education and Training, offering Bachelor's and Master's Degree Programmes. Besides these, Manipal University has also set up the American University of Antigua, AUA-Manipal Affiliation, which is the only medical school in the Caribbean that is integrated with a hospital. Similar endeavours could be made by Indian companies in establishing educational institutions in the fields of medicine.

#### Box 2: Apollo Hospital Group in Overseas Market

Apollo Hospitals Group has 64 hospitals, over 2200 pharmacies, over 100 primary care and diagnostic clinics, 115 telemedicine units across 9 countries, health insurance services, global projects consultancy, 15 academic institutions and a research foundation with a focus on global clinical trials, epidemiological studies, stem-cell and genetic research.

Apollo Hospitals, Dhaka was launched through the association between Apollo Hospitals Enterprise Limited and STS Holdings Limited. STS Holdings Limited has its presence in the educational and healthcare sector in Bangladesh. Apollo Hospitals, Dhaka is the only 'JCI Accredited' 450-bed multi-disciplinary super-specialty tertiary care hospital in Bangladesh, providing comprehensive health care with the latest medical, surgical and diagnostic facilities. These services are provided by expert medical professionals, skilled nurses and technologists using state-of-the-art technology. Apollo Hospitals, Dhaka is a showcase highlighting the synergy of medical technology and advances in IT through paperless medical records.

Apollo Hospitals Group has also established a state-of-the art tertiary care hospital in Dar-es-Salaam, Tanzania, in partnership with the National Social Security Fund (NSSF), Tanzania, and the Ministry of Health and Family Welfare, Government of Tanzania. Under this partnership, NSSF shall provide the infrastructure required for the hospital and support all local logistics requirements. Under this arrangement, the Ministry of Health and Family Welfare of the Government of Tanzania will be monitoring clinical quality of the healthcare delivery.

Apollo Hospitals Group has made a committed foray into the African continent. The Group has engagements (both ongoing and in pipeline), with many countries and in various forms, such as MoUs with the Ministries of Health, the Private Sector, Local partners and Insurance. The Apollo Global Projects Consultancy has been undertaking hospital consulting assignments in Africa (Nigeria, Ghana, Seychelles etc) and working closely with the Governments towards augmenting the standards of healthcare services. Annually, around 35,000 patients from Africa seek advanced tertiary care at Apollo's facilities in India. The Group's Consultants and Specialists periodically conduct camps and outreach programmes in about 20 countries in Africa. With tele-medicine networks in Nigeria, Ghana, Tanzania and Zambia, Apollo plans to further expand the tele-medicine network to cover the entire continent.

### Case Study 2: Traditional Knowledge Digital Library

Traditional systems of medicine is a crucial knowledge that is required to be preserved so that both the current and future generations continue to benefit from it. In many African countries, traditional health care services are provided through custom and culture prescribed under a particular philosophy, e.g. *ubuntu or unhu*. It has been observed that norms, tradition and culture, which are the cornerstones of clinical practice of traditional medicine, are the major reasons for the acceptability of traditional health practitioners in the community they serve.

India too has major forms of traditional medicine systems - Ayurveda, Siddha, Unani and Homeopathy, which are based on their own pharmacopoeias, and are time tested, and are followed by a large population in the country. There is also well regulated formal education system for the Indian systems of medicine. For example, the century old Banaras Hindu University which is one of Asia's largest residential Universities,

offers the subject under the Faculty of Ayurveda, bringing in an integration of ancient Indian medical knowledge and modern medical sciences. India has also established separate Medical Councils for these systems. The Governments in Africa could consider introducing a similar formal education on Africa's *ubuntu or unhu* in African universities.

India has recently created and compiled 292,662 traditional medicine entries in five international languages, namely, English, French, German, Spanish and Japanese under the Traditional Knowledge Digital Library (TKDL). It contains entries in a patent application format. This digital library has been able to prevent grant of patents based on traditional knowledge in large number of cases. Maintaining such a repository has helped protecting Indian traditional systems of medicine through international patents system because of prior evidence in the TKDL. India's experience in introducing TKDL can be replicated in Africa while helping the traditional *ubuntu or unhu* to be tapped better, and protected simultaneously.

#### Box 3: Dr Agarwal's Eye Clinic

Dr. Agarwal's Eye Hospital Limited incorporated in 1994, is the only listed eye care hospital in the country. The Hospital is engaged in conducting continuous training and research and development programs and has over a period, developed an excellent team of highly skilled ophthalmic specialists and surgeons, to assist in its growth. The hospital plans to establish state-of-the-art world class one stop super specialty hospital for complete eye care solutions.

Currently Dr. Agarwal's Eye Hospital is operating in 8 states/provinces in India (with 46 Centres), 9 countries in Africa & Indian Ocean Regions (14 Centres) and South East Asia (Cambodia) (1 Centre). Countries with presence in Africa are Uganda, Mauritius, Rwanda, Mozambique, Madagascar, Seychelles, Zambia, and Nigeria. In Mozambique for example, it has conducted more than 200 eye screening programs for employees of corporate, senior citizens, and school students, besides training aspiring optometrists. In association with Ministry of Education and Ministry of Health, Dr Agarwal's Eye Hospital has conducted Child Vision Check Project involving screening of 100,000 school students below the age of 15 years. The Clinic has also, in association with Universidade Lurio, trained two optometrist with advanced diagnostic equipment like FFA,OCT, HFA, etc.

The company adopts joint venture model with local doctors to establish its network of hospitals, including those in foreign countries. This model mitigates two challenges: firstly, the money required for investment is reduced with the participation of a local partner; and another is the manpower requirement comes down with the local partner being a doctor. However, the hospital group trains the local partner and makes them understand the system being followed by them. The local partners / doctors are trained to conduct latest Glued IOL Surgery, and not the older technology available. The network also follows hub and spoke model to cater to the patients, with a set of clinics catering to patients in diagnosis and testing. These clinics serve as spokes and pass-on the patients for surgeries to the hospital serving as a hub in the region.

### Case Study 3: Telemedicine

India has already made significant progress in attaching Africa to its telemedicine program in the last few years. However, a lot more could be done by India to attend to the healthcare challenges of Africa, utilizing ICT framework. With the application of mobile phones, new skills could be taught to traditional birth attendants with limited training and connect them to a referral process for complicated births. These can also help to reduce maternal and child mortality rates. Greater penetration of telemedicine can also help in sharing information and educate population on safe sex, birth control, and healthcare. With greater mobile penetration in Africa, it

has become an important channel for reaching out to a large number of the population. Today, even people in remote villages of Africa without electricity may have a cell phone or share one as a family. India's telemedicine facility to African countries has a great potential to improve access to patients, allowing physicians and health facilities to expand their reach beyond distances and reaching to millions of needy patients. Airtel has partnered with Medanta Healthcare to provide affordable world-class healthcare services in Kenya. With India's expertise in IT and telecom and proven ability in telemedicine, going forward, African nations could significantly benefit from India's cooperation in the field of telemedicine.

#### Box 4: Fortis Healthcare

As its first healthcare venture in Africa, Fortis had joined hands with a diversified Mauritian Industrial Group named CIEL. Fortis formed a JV to run Clinique Darné, one of the oldest, yet most modern hospitals in Mauritius. Clinique Darne is the largest private hospital on the island. The hospital has been rechristened Fortis Clinique Darné since January 2008, and has a capacity of 112-beds and is fully equipped with 4 operation theatres, a cardiac catheterization Lab, a 13-bedded Critical Care Unit, a 2-bedded isolation intensive care unit (IICU) and 15 day-care beds.

After the successful venture in Mauritius, Fortis extended the arrangement to operate and manage 4 hospitals in Uganda and Nigeria.

Fortis has also collaborated with a Democratic Republic of Congo based private company with business interests in cargo aviation to establish a state of the art 100 bed, multi-specialty hospital in the capital city of Kinshasa. The hospital is equipped with the best imaging and latest medical equipment and will be operational by November 2016. The engagement of clinical and non-clinical talent for the hospital is in progress and personnel will be trained at various Fortis healthcare facilities, in India, before deployment to the Congo facility.

Today, Fortis Healthcare is a leader when it comes to providing Advisory Services to hospitals and healthcare centers around the world. Fortis brings innovation and implementation of the latest medical technology to establish healthcare facilities for a smoother patient experience.

#### **Case Study 4: Drug Manufacturing**

In some pockets of the continent, predominantly in North Africa and in South Africa, the status of local manufacturing of pharmaceutical products has gained some foothold. For example, Egypt and Tunisia produce most of their national requirements for essential medicines. Morocco, the second largest African pharmaceutical producer after South Africa, has 40 pharmaceutical industrial units supplying 70% of domestic demand and exporting 10% of their production, particularly to neighbouring African countries. Significant production capacity is being slowly developed and enriched in Tanzania, Kenya, Uganda, Ethiopia, Ghana, and Nigeria.

While there are a few Indian companies that have been forming joint ventures or wholly owned subsidiaries for manufacturing pharmaceuticals in Africa, the number is quite low as compared to the size of the African market. The number of pharmaceutical companies interested in manufacturing medicines and serving the domestic market continues to remain low because of the anticipation of lower returns from such ventures. The possibility of manufacturing of large scale low cost drugs in Africa has the potential to enhance intra-Africa business prospects and better integrate regional supply chains and expand the economies of scale. This would also make larger investments attractive. Currently, many Indian pharmaceutical companies including Cipla (Algeria); Ranbaxy (Egypt, Morocco, Nigeria, South Africa), Cadila (Ethiopia, Rwanda, South Africa), Hester Biosciences (Ethiopia, Kenya, Tanzania), Dr. Reddy's (Nigeria), Anjaneya Lifecare (Tanzania, Uganda), amongst others – have establishments in Africa either as suppliers or through direct investments.

Countries in Africa can also come together and create a fund to undertake drug discovery with foreign partnerships, and undertake an initiative on the lines of the Open Source Drug Discovery (OSDD), which was started by India. African countries can also engage with India under the OSDD for finding drugs for diseases prevailing in the continent.

#### **Case Study 5: Polio Immunization**

On 27 March 2014, the World Health Organization (WHO) declared India a polio-free country with no case of disease having been reported in the last three years. This has been a remarkable achievement by the Government of India, especially because of the sheer numbers involved. Given that the children below the age of five years in India comprise about one-quarter of India's population, it amounts to dealing with approximately 300 million children.

In 1978, the Government of India for the first time had initiated the vaccination program to eradicate poliomyelitis (polio), in the country, by vaccinating all children under the age of five years against the polio virus. By 1984, it was successful in covering around 40% of all infants in the country. In 1985, the Universal Immunization Program (UIP) was launched by the Government to cover all the districts in the country. This program led to a very significant increase in coverage from 40% up to 95%. The number of reported cases of polio also declined from 28,757 during 1987 to 3,265 in 1995 – a significant drop, given the fact that the Government was dealing with large number of children below the age of five years in the country. With a goal of achieving 100% eradication of polio amongst children in the country, the Government of India launched the renowned "Pulse Polio Program" in 1995.

India's Success in 'Polio' Immunization is worth emulating in Africa for various communicable and non-communicable diseases.

#### **Case Study 6: Medical Insurance**

A path breaking initiative in health insurance under PPP has also been successfully implemented in India, which can be replicated in African countries as well. Narayana Health in India designed possibly the world's cheapest comprehensive health insurance named Karnataka Yeshasvini healthcare scheme, supported by the Government of Karnataka for the poor farmers of the State in 2003. Through the scheme, a farmer could have health insurance for a token sum of Rs 5 (US\$ 0.08)

per month then, today the token amount has increased to Rs 18 (US\$ 0.27) and still the farmers insured can avail of benefits comprising a variety of surgeries, including heart surgeries. Till now, over four million people have benefitted from these schemes.

#### **Case Study 7: Cooperation in Building Core Healthcare Infrastructure**

Today, in India, most of the new healthcare facilities are largely in the private sector, and in areas where Government intervention is paramount. For example, in Maharashtra, the Government has been outsourcing lab tests or diagnostic services through a PPP model. A Mumbai-based Enso Healthcare Private Limited (Ensocare), has bagged the INR 1.50 billion, 10-year contract to provide diagnostic services at 22 government hospitals in the State in partnership with GE Healthcare.

Ensocare has set up advanced diagnostic facilities, including CT scanners, magnetic resonance imaging, digital radiography systems etc., at 22 government hospitals. These testing facilities will operate round the clock, and offer services at the government-prescribed rates. The centres will offer the services free of cost to below poverty line patients, and at one-third or one-fourth the rates charged in other diagnostic centres. These centres will be able to offer lab services at low rates because of the sheer volume of patients they would be handling, estimated about 2.2 million in a year. Separately, Chhattisgarh too has begun outsourcing diagnostic services at its government hospitals and has built in a 'bonus and penalty' model. The labs delivering the reports within 24 hours in 95% of cases will get one additional year in its contract term while those failing will lose one year.

#### **Box 5: Shalby Hospitals**

Shalby Hospitals has been one of the leading multi-specialty tertiary care healthcare institutions in Western India, providing world class treatment for all types of diseases at the most affordable rates.

Shalby Hospitals has been aware of the critical requirement that exists in Africa in the healthcare sector and the important role that it can play in mitigating it. Amongst the Indian healthcare companies, the Ahmedabad based Shalby Hospitals has been a forerunner in promoting medical tourism amongst the populace of Africa. Operating in Africa for over 12 years with its OPD clinics, expert doctor visits & camps and community penetration through local associations and partnerships, this healthcare Group has been making deep inroads in to the healthcare domain of Africa, quite satisfactorily.

Shalby claims to have operated over 25000 international patients mainly from Africa and Middle East regions. The group also enjoys the reputation of the largest Joint Replacement Centre in the World by performing over 65000 joint replacement surgeries, so far.

Key success factors in the Shalby model include extensive post-surgical care, regular visits by its doctors, and hence, the trust that it enjoys in Africa with comprehensive patient care over the past decade. International patients enjoy special privileges and comforts with respect to cultural following, food habits, dedicated hospital wing etc. at this hospital group.

In the African Continent, this healthcare group has put up OPD Centres and consulting camps across countries like Kenya, Tanzania, Malawi and Ethiopia, covering major cities like Addis Ababa, Nakuru, Nairobi, Eldoret, Kisumu, Mwanza, Mombasa, Arusha, Zanzibar, Dar-Es-Salaam, Blantyre. Infact the Shalby Clinic at Nairobi offers telemedicine facilities to various countries in the African continent.

Beginning with Total Knee Replacement (TKR) and Hip Replacement (THR), this multi-specialty healthcare provider from India has been treating many African patients for other critical treatments as well. People of Africa and African Origin now visit Shalby India for oncology surgery, spine surgery, joint replacements, advanced dental cosmetics & implantology, IVF and many more.

**Opportunities for Public Private Partnership in Healthcare in Africa**

In the context of healthcare PPP in Africa, the opportunities for private players in PPP model could be broadly classified into:

- a) Building and construction of healthcare infrastructure;
- b) Management and operations of healthcare infrastructure;
- c) Undertaking training programmes and capacity building; and
- d) Financing solutions.

PPP in health sector would typically range from simple outsourcing of support services (such as catering or laundry) to the more complex design, build, and facilities

management of hospitals. In order to make the PPP model in healthcare a success, it is important to define whether the beneficiary would avail of the services free of cost, and if so how the cost would be compensated to the private players. This could be met, either by the host country Government or cross-subsidized by the revenue earning model. It is also essential for the host country Government, as a regulator, to determine the tariffs for the various services provided by the private players. This is critical if the model has an agreement to cross-subsidize poor patients. The regulator’s role in a PPP context is also very crucial. The regulations should play a neutral role and address issues such as consumer rights protection, exit options for the private sector, speedy decision making mechanisms etc.

**Table 5.2: Select interventions that could be undertaken by the Governments for Effective Healthcare Delivery**

Interventions	Description
Contracting out	Government contract with private providers (non-profit and for-profit) to deliver health services
Licensing and accreditation	Governments can extend licensing and accreditation systems to include provisions for private sector providers
Regulation	By updating and harmonizing laws, policies, regulations, and procedures, governments can authorize private provision of services and products by certain health professionals in specific settings
Provider of networks and franchises	Networks and franchisees group the health care providers under an umbrella structure or parent organization
Public-Private Partnerships	Private providers and businesses join with the Governments, international organizations, or non-profits to address social needs
Social marketing programmes	Use commercial marketing techniques to make subsidized products available more widely. The programmes can distribute and promote products such as contraceptives, oral rehydration salts, and insecticide-treated bed nets.
Training and continuous education for private providers	A variety of training techniques-including direct training, long-distance learning, continuous medical education, and detailing-can improve the knowledge and skills of private healthcare providers
Vouchers	Government can give vouchers to target populations to subsidize the price of health services and products, which makes them more affordable and more likely to be used
Insurance	Government-funded insurance, commercial insurance and mutuelles <sup>29</sup> (community-based pool financial risk) across large population groups.

Source: O’Hanlon 2009; Lagomarsino and Singh Kundra, 2008; reproduced from Partnerships with the Private Sector in Health, “Centre for Global Development

<sup>29</sup>In West Africa, mutual health organizations (MHOs), or mutuelles, are voluntary organizations that provide health insurance services to enrollees. MHOs are owned, designed and managed by the communities they serve. Households pay an enrolment fee and regular premiums into a pooled fund to cover their use of a defined benefits package and the MHO reimburses providers out of the pooled fund for services. MHOs generally are not for profit organizations that are based on notions of mutual aid and solidarity. MHOs can provide additional sources of revenue mobilization and financial protection for households, increase financial access to care, and promote equity

### **Box 6: Public Private Participation – Lesotho Hospital**

The Lesotho Hospital is a viable case study of PPP Model in Africa, which could be considered suitably in various countries in Africa. In 2006, the Government of Lesotho (33% - partnering with the Development Bank of Southern Africa, the International Finance Corporation, and the World Bank) joined hands with the private sector (Tsepong Consortium – 66%) to improve the quality of its citizens' healthcare. The Tsepong Consortium include Netcare SA Healthcare Group, Excel Health (promoted by Lesotho-based doctors), Afri'nnai (promoted by Bloemfontein based doctors), a Women Investment Company (Basotho-based women group), and D-10 investments (promoted by Lesotho Chamber of Commerce).

Under this Public-Private Integrated Partnership (PPIP) model, the Queen Mamohato Memorial Hospital (QMMH) in Lesotho has been transformed into a state-of-the-art 425-bed National Referral Hospital. PPIP is a special form of PPP, designated to achieve significant and sustainable improvements to health systems at national or sub-national levels through both capital investment and service delivery.

The Lesotho healthcare PPP structure is first of its kind in Africa, and one of the few such projects worldwide. The key principles of this PPIP model are: Design, Build, Operate and Deliver (DBOD) model; Long term shared investment; Risk transfer; and Government ownership of assets.

**Capital Cost:** Private operators in similar PPPs have historically opted for direct-cost-plus-margin payments until patient profiles and disease patterns could be established, because they have been reluctant to commit to a fixed cost for clinical care. Under this model, the Government of Lesotho made significant upfront payment (USD 58 mn) for hospital construction and construction site preparation, so as to reduce the risk profile of the project. The Development Bank of Southern Africa (DBSA) financed approximately USD 95 mn, and the Tsepong Consortium contributed approximately USD 500,000 in equity towards capital expenditure.

**Annuity Payment:** As the modernized healthcare facility would revert to the Government ownership at the end of the contract term (18 years), ultimately guaranteeing government ownership of the facilities, the Government of Lesotho has also agreed to make annual unitary payment of approximately USD 30 mn, which will reimburse Tsepong's (hospital group in South Africa) capital and operating expenses. As the private operator will be incurring expenses until the hospital construction was complete (after the revenue starts flowing), a grant of USD 6.25 mn from the World Bank's Global Partnership for Output Based Aid (GBOPA) was arranged as part of PPIP contract.

**Commitment from Private Sector:** Under this model, the private operator is responsible for delivery of all clinical services, including recruitment of doctors, nurses and other health professionals, and provision of all medical equipment and all pharmaceuticals necessary for clinical services delivery. In addition to the modernised facility, which will operate as the national referral hospital as well as the district hospital for the Greater Maseru area, the private operator will be responsible for the refurbishment, re-equipping, and operation of three primary healthcare clinics at Qoaling, Mabote and Likotsi in the Greater Maseru area. The new structure will allow the operator to: a) manage a mini healthcare-network, and b) filter and treat less-severe cases at the clinic level, freeing up as much hospital capacity as possible. The arrangement also includes a clinical training component to improve the availability of well-trained healthcare professionals.

Under the PPIP model, the private operator aims to provide 'cost neutral' healthcare delivery to the patients, who would continue to incur the same out of pocket payments, usually zero or minimal, as they did in the public health delivery, but in a dilapidated and poorly run public facilities.

**Monitoring of Performance:** To ensure that there will be value for money, the Government of Lesotho had appointed an independent monitoring agency to ensure that the operator (Tsepong) achieves the required level of services and quality stipulated in the agreement. The agreement also includes penalty mechanisms related to facilities management, equipment maintenance, and other non-clinical services delivery. The mechanism includes independent certification of delivery.



### 5.4 Financial Cooperations Mechanism

A safe and sustainable water supply, basic sanitation and good hygiene are fundamental for a healthy, productive and dignified life. However, one of the major hurdles in mitigating the challenges faced in Africa with regard to these sectors, has been the need for finance.

The inability of obtaining funds by firms for these socially oriented projects at competitive costs have often been cited as a strong deterrent to investments in these social sectors, especially developing and less developed economies. The main hurdle however remains the return on investments on these projects. To some extent, strengthening capacity building, promoting an enabling environment, and developing suitable policy frameworks can help in mitigating the steep transaction costs in underdeveloped economies of Africa.

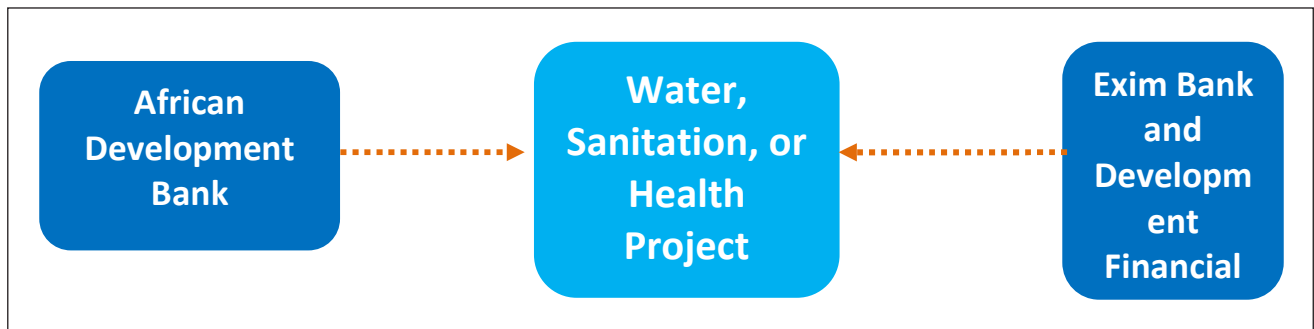
Water and sanitation ODA disbursements (spending) increased from US\$ 6.3 to US\$ 7.4 billion from 2012 to 2015. However, aid commitments for water and sanitation have declined since 2012 from US\$ 10.4 billion to US\$ 8.2 billion in 2015. Due to the multi-year nature of commitments, if commitments continue to decrease, it is likely that future disbursements would also decrease. Considering the greater needs to make progress towards universal access to safely managed

WASH services under the SDG targets, the possibility of future reductions in aid disbursements is at odds with global aspirations.

This Study provides select models which could be explored by various development financial institutions in India and Africa, along with multilateral development banks (namely AfDB), and various sovereign and parastatal bodies to work together in these social sectors. These, however, would require a full-fledged support of the private entities, who could be duly supported for venturing in such industries.

#### Model 1

Co-financing is an important instrument of multilateral development banks like AfDB. It allows them to mobilize additional financing in cooperation with third parties, and optimize the cost-effectiveness of programmes and projects. AfDB along with regional development banks in Africa like BDEAC (Development Bank of Central African States), PTA Bank (Eastern and Southern African Trade and Development Bank), EBID (Ecowas Bank For Investment And Development, or with development financial institutions like Exim Bank in India, DBSA (Development Bank of South Africa), etc. amongst others can come together to co-finance large scale projects.

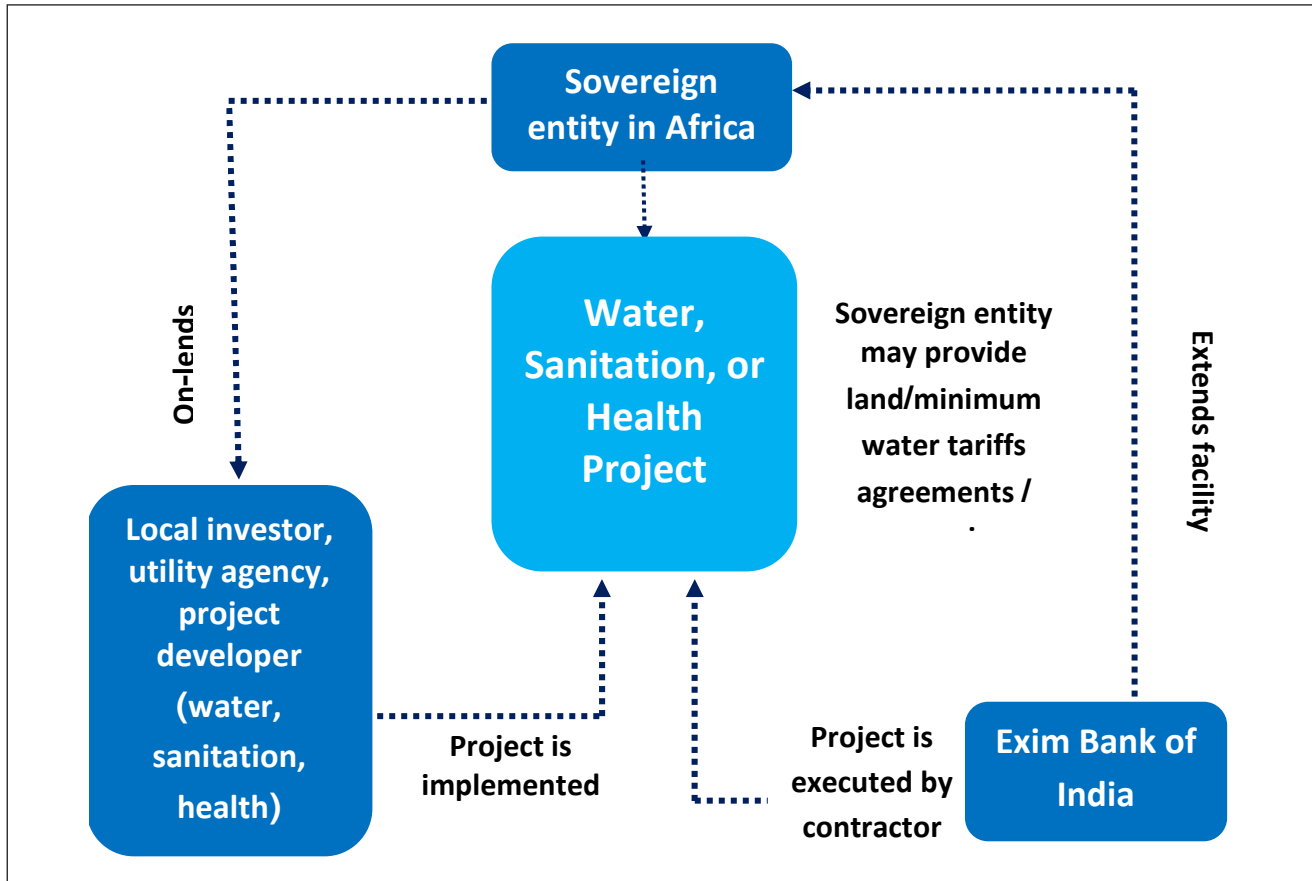


Source: Exim Bank Research

**Model 2**

In this case, a local investor puts up a project for which it requires funding assistance. Exim Bank can extend a facility to the borrower (a sovereign entity) in an African country where the project is proposed to be set up. The

sovereign borrower then on-lends to the local investor, for implementing the project. The local investor, utility agency, etc. may draw revenue either from the cash flow of the project or pay in tranches as agreed upon, to service the debt received from the sovereign entity.

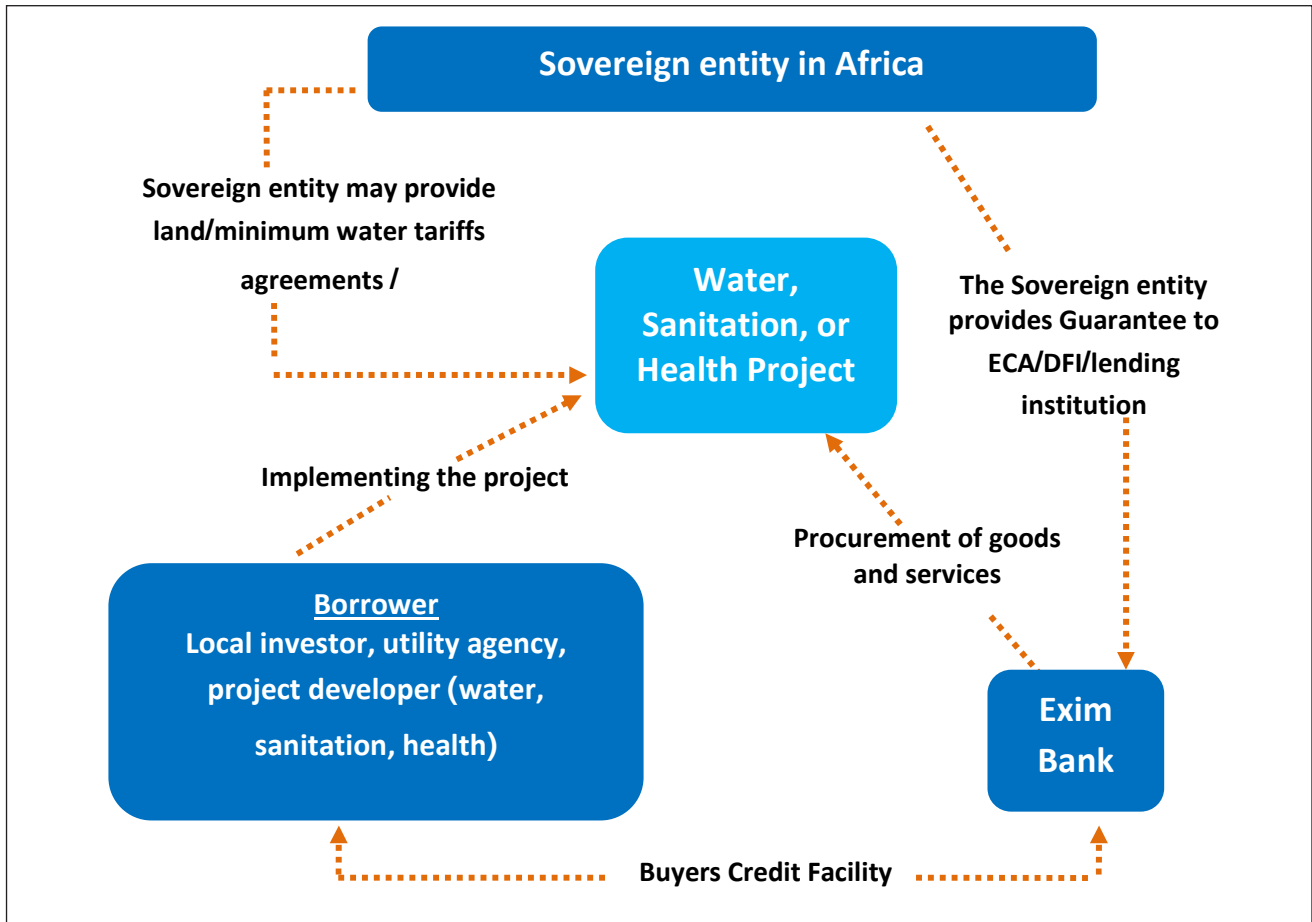


Source: Exim Bank Research

**Model 3**

Under this model, the overseas buyer/importer, i.e., an investor, utility agency, project developer (water, sanitation, health) in Africa can directly avail of a financing facility from Exim Bank/DFI in Africa. In order to make the project bankable and mitigate the risk, a

sovereign entity from the project country can provide a guarantee on behalf of the investor, utility agency, project developer (water, sanitation, health). The facility can be made available for development, upgrading or expansion of water, sanitation or health facilities as also for financing of new public or private projects.

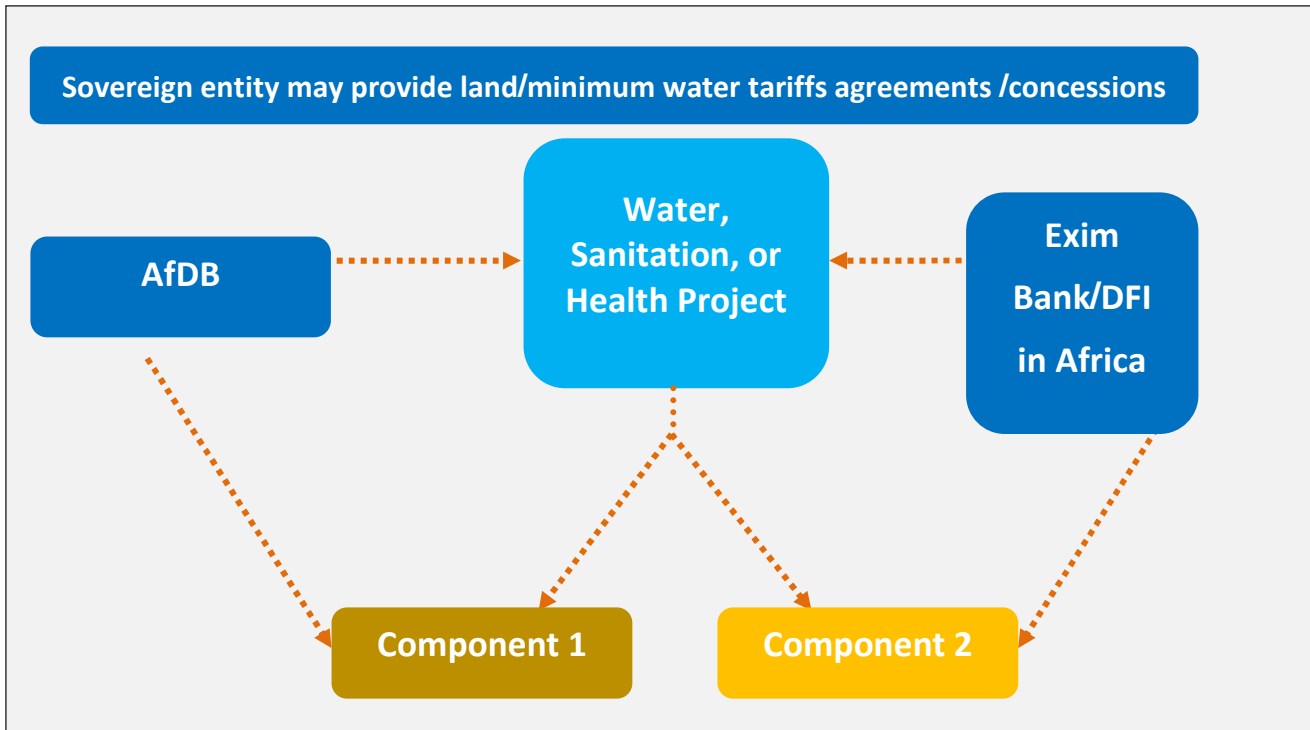


Source: Exim Bank Research

**Model 4**

Co-financing can either be parallel-financing or joint-financing. When the financial institution funds a project on a parallel basis (which refers to several components or contracts of a project) with other financiers, the financial institution’s rules and procedures for

procurement apply to its specific component or contract. In this model, AfDB, Exim Bank and a DFI from Africa may take up different components of the project at varying terms with the objective being to execute and complete the project – water, sanitation, or health as the case may be.



Source: Exim Bank Research

## Life Expectancy at Birth in African Countries (number of years)

	1990	1990	1990	2000	2000	2000	2012	2012	2012	2015	2015	2015
	Both sexes	Female	Male	Both sexes	Female	Male	Both sexes	Female	Male	Both Sexes	Female	Male
<b>Africa Average</b>	<b>52.9</b>	<b>54.8</b>	<b>51.1</b>	<b>52.2</b>	<b>53.7</b>	<b>51</b>	<b>59.4</b>	<b>60.9</b>	<b>57.8</b>	<b>61</b>	<b>64</b>	<b>60</b>
Algeria	68	69	66	70	71	68	72	73	70	75	77	73
Mauritius	70	74	66	72	75	68	74	78	70	74	78	71
Seychelles	69	75	64	72	77	67	74	78	69	73	78	68
Cabo Verde	66	68	63	70	73	66	74	78	71	73	75	72
Sao Tome and Principe	61	63	59	63	65	61	67	69	65	67	69	65
Senegal	57	59	56	57	59	56	64	66	63	67	69	65
Namibia	63	64	62	57	57	57	67	69	64	65	68	62
Rwanda	48	50	46	46	47	46	65	66	63	65	67	62
Madagascar	51	53	50	58	59	57	64	65	62	65	67	64
Ethiopia	45	48	42	51	53	50	64	65	62	65	67	63
Gabon	61	63	60	59	60	59	63	64	62	65	66	64
Eritrea	48	50	46	45	54	39	63	66	61	64	66	62
Comoros	56	58	54	59	60	57	62	63	60	64	65	62
Botswana	65	66	65	47	47	48	62	63	61	64	67	62
Malawi	45	46	43	44	44	45	59	60	58	64	61	58
Mauritania	58	60	57	60	62	59	63	65	61	63	65	62
Niger	43	43	43	50	50	50	59	59	59	62	60	55
Ghana	57	58	55	58	59	57	62	64	61	61	63	61
Liberia	42	46	39	51	52	50	62	63	60	61	62	60
Zambia	43	47	40	41	43	40	57	58	55	61	61	58
Guinea	47	48	46	51	52	50	58	59	57	59	63	61
Burkina Faso	50	51	48	49	50	49	58	59	57	59	65	63
Zimbabwe	62	64	60	42	42	42	58	60	56	59	61	59
Uganda	47	49	44	45	46	44	57	58	56	59	60	58
Mali	46	46	46	48	48	48	57	57	57	58	60	59
Equatorial Guinea	48	49	46	50	52	49	55	57	54	58	63	59
South Africa	62	66	59	59	62	55	59	62	56	57	64	60
Burundi	49	51	48	48	50	46	56	57	54	57	61	57
Cameroon	54	56	53	51	52	50	56	57	55	56	58	59
South Sudan	42	44	41	49	50	47	55	56	54	56	57	55
Guinea-Bissau	49	52	47	52	53	51	54	56	53	55	59	55
Mozambique	43	45	41	47	49	46	53	54	52	55	57	54
Nigeria	46	47	45	47	48	47	54	55	53	53	57	55
Angola	43	45	41	46	47	44	51	52	50	53	53	53
Chad	45	47	43	46	47	45	51	52	50	52	48	50
Lesotho	61	62	59	48	49	47	50	52	49	50	57	54
Swaziland	61	61	62	48	49	48	54	55	52	49	59	57

\* coloured boxes indicate the top 10 countries in the respective year

\*\* Data is available for 47 countries out of 54 in Africa; all are latest available

Source: Data derived from WHO database; Exim Bank Research

## Infant Mortality Rate in African Countries (per 1000)

Country Name	1990	2000	2010	2013	2015
Angola	133	128	110	102	96
Benin	108	90	62	56	64
Botswana	39	54	40	36	35
Burkina Faso	103	96	70	64	61
Burundi	103	92	61	55	54
Cape Verde	48	29	23	22	21
Central African Republic	115	113	103	96	92
Chad	116	106	94	89	85
Comoros	88	73	63	58	55
Ethiopia	122	90	51	44	41
Gabon	60	56	43	39	36
Ghana	80	65	55	52	43
Guinea	140	103	71	65	61
Guinea-Bissau	133	109	85	78	60
Kenya	64	69	52	48	36
Lesotho	70	81	77	73	69
Liberia	165	119	60	54	53
Madagascar	98	71	44	40	36
Malawi	143	103	53	44	43
Mali	131	116	83	78	75
Mauritania	78	76	70	67	65
Mauritius	20	16	13	13	12
Mozambique	158	114	72	62	57
Namibia	50	49	38	35	33
Niger	138	101	66	60	57
Nigeria	126	113	82	74	69
Rwanda	93	108	44	37	31
Sao Tome and Principe	70	58	40	37	35
Senegal	71	69	47	44	42
Seychelles	14	12	12	12	12
Sierra Leone	158	141	114	107	87
South Africa	47	52	35	33	34
South Sudan	150	110	71	64	60
Swaziland	55	80	63	56	45
Togo	90	77	61	56	52
Uganda	107	89	51	44	38
Zambia	115	100	64	56	43
Zimbabwe	50	61	59	55	47

Source: World Bank Data; EXIM Research

\* red coloured boxes indicate the top 10 countries with the highest infant mortality rates; and the green coloured boxes indicate the 10 countries with the lowest mortality rates during the year

## Burden of Diseases- Percentage of Population losing life by major cause groups

	2000	2000	2000	2012	2012	2012
	Communicable	Injuries	Non communicable diseases	Communicable	Injuries	Non communicable diseases
Central African Republic	85	5	9	80	8	12
Chad	82	7	11	80	7	13
Niger	85	5	10	77	8	15
Malawi	87	4	9	76	7	17
Zambia	83	8	10	75	11	14
DR Congo	81	8	11	75	10	15
Lesotho	78	8	14	74	10	15
Angola	82	7	10	74	10	17
Zimbabwe	86	5	9	74	9	17
Guinea-Bissau	80	6	14	74	8	18
Mozambique	78	9	13	73	11	16
Nigeria	80	7	12	73	10	16
Sierra Leone	78	7	15	73	8	19
South Sudan	79	8	13	72	11	17
Swaziland	77	8	15	72	10	17
Kenya	82	7	11	72	10	18
Congo	79	8	14	72	9	19
Mali	80	6	14	72	9	19
Togo	78	7	15	71	9	20
Guinea	80	6	13	71	9	20
Mauritania	76	8	16	70	9	21
Burundi	76	12	12	69	12	19
Ethiopia	79	10	12	69	11	20
Burkina Faso	82	6	12	69	10	21
Cameroon	78	7	15	69	9	22
Côte d'Ivoire	79	7	14	69	9	22

Liberia	81	6	13	69	9	22
Uganda	82	8	10	68	13	18
Tanzania	79	8	13	68	12	20
Equatorial Guinea	74	8	17	68	11	21
Gabon	73	8	18	68	9	23
Gambia	74	8	18	67	10	23
Benin	78	7	16	67	9	24
Senegal	78	6	15	67	9	24
Botswana	86	5	9	66	11	23
Comoros	69	10	21	63	12	25
Madagascar	73	9	18	63	12	26
Ghana	75	6	19	63	9	28
Rwanda	80	8	12	62	14	24
Eritrea	44	45	11	62	12	26
South Africa	64	11	25	62	10	28
Namibia	75	8	17	60	13	27
Cabo Verde	48	10	41	33	12	55
Algeria	32	16	52	24	12	63
Mauritius	11	11	77	11	11	78

Source: World Bank Data; EXIM Research

\* red coloured boxes indicate the top 10 countries with the highest infant mortality rates; and the green coloured boxes indicate the 10 countries with the lowest mortality rates during the year



## Mortality rate for Non-Communicable Diseases (per 100 000 population): 2012

Country Name	Cardiovascular diseases	Chronic Respiratory diseases	Diabetes mellitus	Malignant neoplasms (cancer)
Algeria	396.6	28.4	67.1	80.6
Angola	374.6	74.4	42.2	89.6
Benin	372.5	42.6	48.1	89.6
Botswana	323.7	30.7	60.3	86.5
Burkina Faso	373.7	48.3	59.9	91.7
Burundi	311.6	45	38.9	134.1
Cabo Verde	249.9	49.3	22.9	63.1
Cameroon	285.7	37.5	52.3	73.4
Central African Republic	244.4	79.5	23.5	81.5
Chad	306.6	50.9	44.8	88
Comoros	329.6	44.9	45.2	100.7
Congo	334.5	54.7	33.9	70.5
Côte d'Ivoire	336.1	46.5	53.9	111.3
DR of the Congo	359.6	61.4	33.3	108.1
Equatorial Guinea	357.6	76.3	39.8	73.4
Eritrea	327.3	42.5	44.4	88.4
Ethiopia	161.6	54.8	24.5	86.1
Gabon	241.7	51.1	29.9	54
Gambia	299.6	38.6	48.6	64.8
Ghana	340.6	32.3	39.5	79.3
Guinea	313.4	42.7	43.5	93
Guinea-Bissau	370.5	48	51.3	87.4
Kenya	205	19.5	34.9	140.9
Lesotho	306.7	91.9	74.1	73.1
Liberia	248.4	125.5	36.9	91
Madagascar	352.3	43.2	22.6	127
Malawi	336.5	40	30.1	103.5
Mali	395.7	102.5	54.6	97.1
Mauritania	262.6	32.1	40	66.1
Mauritius	207.3	36.9	171	82.3
Mozambique	213.5	44.5	33.5	97.1
Namibia	302.9	63.1	58.2	61.9
Niger	317.7	44.3	41.7	55.9

Nigeria	266.5	36.8	47	106.7
Rwanda	261.7	25.6	34.6	124.3
Senegal	198.6	44.9	56.5	73.6
Sierra Leone	436	61.1	69	86.2
South Africa	298.3	52.3	94.3	108.7
South Sudan	249.9	44.3	37.6	113.1
Swaziland	295.8	89.5	74.8	84.9
Togo	307.4	37.2	43.2	99.8
Uganda	263.8	38	43.1	133.6
Tanzania	202.9	27.5	49.7	94.9
Zambia	271.7	23.8	39.3	105
Zimbabwe	197.1	53.8	23.1	223

\* red coloured boxes indicate the top 10 countries; and the green coloured boxes indicate the least 10 in the respective category in the respective year

\*\* Data is available for 45 countries out of 54 in Africa; all are latest available

Source: Data derived from WHO database; Exim Bank Research

## Hospital Infrastructure: 2013

Country	Total density per 100 000 population: Hospitals	Total density per 100 000 population: Health centres	Total density per 100 000 population: District/rural hospitals	Total density per 100 000 population: Provincial hospitals	Total density per 100 000 population: Specialized hospitals
Benin	0.41	5.45	0.25	0.05	0.11
Botswana	1.29		0.79	0.35	0.15
Burkina Faso	0.31	11.89	0.25	0.00	0.05
Burundi	0.50	5.01	0.32	0.15	0.03
Cote d'Ivoire	1.71	11.83	1.16	0.45	0.10
Cabo Verde	1.00	3.81	0.60	0.00	0.40
Central African Republic	0.48	1.99	0.28	0.11	0.09
Chad	0.65	0.00	0.50	0.15	0.01
Comoros	0.68	1.63	0.27	0.27	0.14
DR Congo	0.45		0.43	0.02	
Egypt	0.62	0.25	0.50		0.12
Eritrea	0.36	0.88	0.25	0.09	0.02
Ethiopia	0.22	0.00	0.19		0.03
Gabon	3.53	2.21	2.45	0.72	0.36
Gambia	0.70	1.68	0.38	0.22	0.11
Ghana	1.36	9.13	1.30	0.03	0.03
Guinea	0.37	3.52	0.26	0.09	0.03
Guinea-Bissau	56.45	32.98	25.64	0.00	30.81
Kenya	1.47	5.99	1.41	0.04	0.02
Liberia	0.37	1.05	0.35		0.02
Libya	2.64	1.68	1.60	0.55	0.50
Madagascar	0.47	0.27	0.33	0.11	0.03
Malawi	0.40	2.30	0.23	0.14	0.03
Mali	0.46	5.71	0.39	0.05	0.03
Mauritius	0.96	0.16	0.16	0.40	0.40
Namibia	1.91	2.30	1.30	0.17	0.43

Niger	0.55	4.97	0.43	0.06	0.06
Senegal	0.16	0.54	0.16		
Seychelles	1.08	5.39			1.08
Sierra Leone		1.21			
South Africa	0.67	0.55	0.53	0.12	0.03
Sudan	1.35	3.68	0.64	0.67	0.03
Swaziland	0.80	0.64	0.16	0.48	0.16
Togo	0.60	10.94	0.51	0.00	0.09
Tunisia	2.33		1.19	0.86	0.27
Uganda	0.40	3.92	0.36	0.04	0.01
Zambia	0.45	8.33	0.30	0.12	0.03
Zimbabwe	0.52	9.41	0.37	0.08	0.08

\*\* Data is available for 38 countries out of 54 in Africa; all are latest available

Source: Data derived from WHO database; Exim Bank Research

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