Why Sanitation and Water Supply are Important to Growth and Development in Sudan

A significant investment increase is required in Sudan in order to achieve the WSS MDGs.

This briefing note for the Sudan Ministry of Finance shows that **water supply and sanitation (WSS) need urgent attention**. Failure to finance water and sanitation is costing the country a notable portion of its GDP. Scientific studies show that access to **sanitation and water not only improve quality of life, but also bring tangible health, environmental and economic benefits, and contribute to poverty reduction.** The rate of return of spending on sanitation and water can exceed other public investments such as in infrastructure, transport, health or education. While data are still incomplete, this briefing note demonstrates that even a little **spending on water supply and sanitation reaps enormous rewards**.

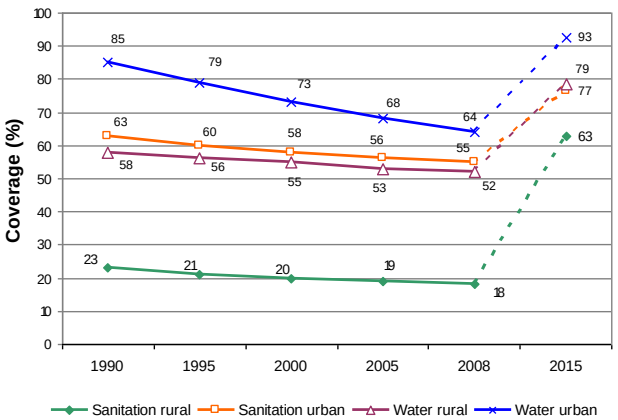
Sanitation and water supply coverage in Sudan requires attention

According to data compiled by the WHO/UNICEF Joint Monitoring Program (JMP)[a], progress to achieve the WSS target in Sudan is off-track. Based on the most recent coverage data in 2008, Sudan has seven years to raise sanitation coverage from 55% to 77% in urban areas, and from 18% to 63% in rural areas[b]. Statistics are not currently available from JMP for Southern and Northern Sudan separately. As shown in the Figure, water and sanitation coverage has been steadily declining in Sudan, due to civil conflict in the South as well as lack of maintenance and replacing of existing systems. According to sector documents, the only indicator showing improvement in Northern Sudan since 1990 has been urban sanitation, rising from 53% (1990) to 63% (2006).

However, **even if Sudan meets the MDG target in both rural and urban areas, 37% of the rural population and 23% of the urban population would still be without access to improved sanitation**.

Access to drinking water has also declined since 1990 from 58% to 52% in rural areas and from 85% to 64% in urban areas. Considerable re-investment is required to put water access back on track, with MDG targets 79% coverage in rural areas and 93% in urban.

Sudan's decline in sanitation and water coverage between 1990-2008, and progress required to achieve the MDGs (dotted line).



Money spent on sanitation and water pays dividends

Based on the average cost of a latrine and water supply, it is estimated that Sudan requires a **total expenditure of SDG 5.7 billion (US$2.5 billion) to meet the water and sanitation MDG targets, of which SDG 4.2 billion (US$ 1.8 billion) is for sanitation**. This equates with roughly SDG 144 (US$ 63) per capita over a 10 year period, or SDG 14 (US$ 6) per capita annually[c].

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[a] JMP data are presented as it reflects global monitoring of the MDGs and standardized definitions, while it is recognized that each country has its own targets and data.

[b] The rural – urban **target** breakdowns presented here are not official JMP, but are used to indicate what progress is needed in rural and urban areas separately to meet the overall MDG target.

[c] This sum will be met from a mixture of sources which include households as well as the government and donor budgets. Also, budgeting has to take into account program costs (program establishment, population sensitization, monitoring, evaluation) which can be significant, but have been excluded here due to lack of data.

Investment needs in Sudan are sizable, especially compared to current spending[d]. Sudan will need to significantly increase investments in order to improve water and sanitation. However, **investment in water and sanitation not only provides basic services, but also reaps benefits well beyond the water and sanitation sector**. Investments in water and sanitation in fact are investments in health, education, the environment and poverty reduction.

Failure to invest can be costly in the long-run

The cost of WSS investment is off-set by the benefits that accrue in other sectors.

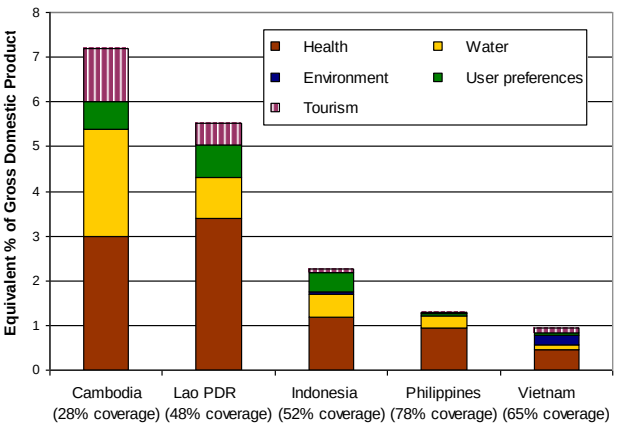
Economic research on water supply and sanitation is not commonly done, therefore findings must be borrowed from other countries. A World Bank country environmental analysis conducted in Ghana has shown that health costs resulting from poor water, sanitation and hygiene cost the country the equivalent of ***2.1% of annual Gross Domestic Product (GDP)***. The indirect effects of malnutrition – to which poor water and sanitation contribute 50%, according to WHO - cost even more than the direct effects, taking the total health cost to ***5.2% of annual GDP in Ghana***. An important contributor to this figure is child mortality: in Sudan WHO estimates 16,400 deaths of children under five caused by diarrheal disease in the year 2004. Further, studies demonstrate that poor water and sanitation significantly contribute to malnutrition which leads to lower school productivity and work productivity from impaired cognitive function and learning capacity. Rates of moderate and severe stunting and underweight are high in children under five in Sudan, at 40% and 27%, respectively.

As well as valuing health-related productivity and loss of life associated with inadequate WSS, other economic impacts have been valued for countries other than Sudan. These costs include treatment seeking for illness; time to access unimproved drinking water and sanitation; and water pollution. The latter includes the cost of water treatment to ensure the safety of hauled and piped water, or access to safer but more distant water sources.

Not every country has the luxury of a full economic impact study on poor sanitation. World Bank studies from Southeast Asia show the non-health costs of poor sanitation are comparable with the health costs, contributing SDG 46 (US$ 20) of the total annual SDG 73 (US$ 32) per capita losses in Cambodia, and SDG 34 (US$ 15) of the total annual SDG 78 (US$ 34) per capita losses in Lao PDR (see figure). **The results are indeed alarming: the total economic losses associated with poor sanitation are equivalent to *7.2% of annual GDP in Cambodia*** and ***5.4% of annual GDP in Lao PDR***.

The graphic shows the equivalent cost, as a proportion of annual GDP, of not investing in improved sanitation in 5 countries of Southeast Asia. (in brackets, sanitation coverage in 2006)

Source: World Bank



As well as the direct household effects of poor sanitation, poor water and sanitation can also have larger scale effects. First, it can affect business and play an influential role in where ***foreign businesses*** invest their money. Second, it can impact on ***foreign tourists*** choosing Sudan as their holiday destination. Emerging evidence from Asia suggests that a country's reputation of poor environment, polluted water and an unhealthy workforce can affect the earning power of foreign currencies, and hence hinder economic growth. Perhaps more importantly in Sudan, as the effects of **climate change** are felt – with increased predictions of extremes such as flooding and droughts – it will become even more important to invest in resilient WSS systems to ensure the availability and safety of the water supply, as well appropriate sanitation options that do not further stress water supplies nor pollute dwindling water resources.

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[d] From 2002-2006 in Sudan, spending on water and sanitation averaged SDG 90 million (US$ 40 million) annually from National and State Water Cooperation, and SDG 29 million (US$ 12.6) annually from UNICEF on emergency services.

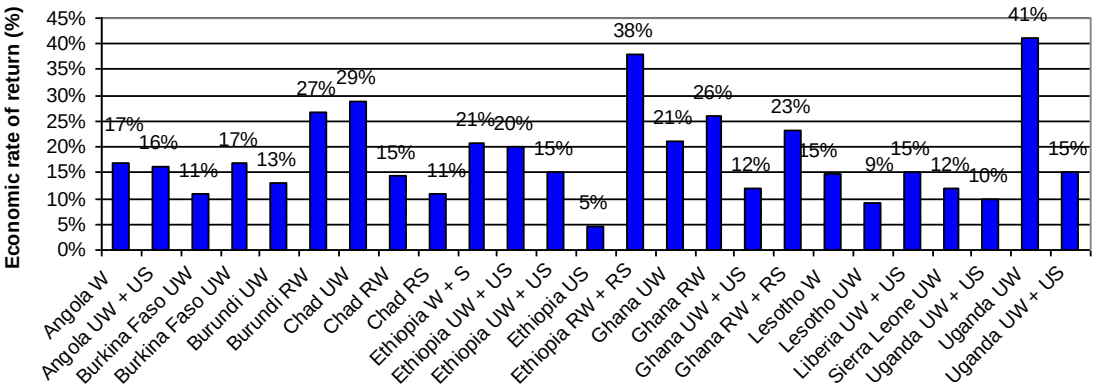
WSS services can yield a major return on investment

Sanitation and water projects in neighboring countries have a 5-38% economic rate of return.

Economic returns on water and sanitation projects are highly favourable. For project appraisals carried out for the World Bank and African Development Funds in neighboring Chad and Ethiopia, the ***economic rate of return*** of rural and urban water supply and sanitation projects were assessed. In Chad the rate of return varied from ***11-15%*** for the national rural water supply and sanitation program, to ***29%*** for urban water services rehabilitation. In Ethiopia, urban water supply and sanitation projects ranged from ***15-21%,*** while rural water supply and sanitation yielded a return of ***38%.*** Projects in other African countries show similar return (see Figure).

Global ***benefit-cost studies*** on water supply and sanitation for Africa, including the value of health improvements and time savings, estimated the benefit per currency unit invested was estimated at a return of ***5.5*** currency units or ***6.6*** for sanitation alone. While the results of these studies demonstrate a strong case for increased investment in water and sanitation, in fact, **these studies actually underestimate economic benefit as they include diarrheal disease only, thus excluding other positive health effects of improved water and sanitation**.

The graphic shows a high Economic Rate of Return on sanitation and drinking water projects.



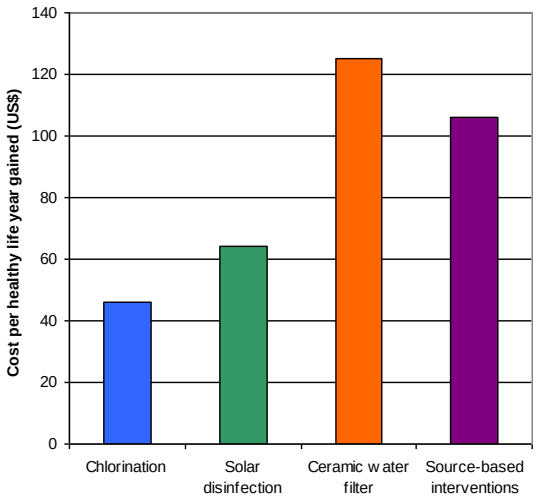
Key: W – Water; S – Sanitation; R – Rural; U - Urban **Source: Development banks**

The health returns on investment in WSS are considerable

Investing in sanitation and water can help Sudan tackle its basic economic challenges as well as improve health.

If health impacts are valued in units of Healthy Life Years (HLY) – defined as 'a year of life lived in full health' – they can be compared with other health interventions. In Africa, the cost of basic water and sanitation was estimated at SDG 1,224 (US$ 534) per Healthy Life Year gained. Add 'water treatment at the point-of-use' and the cost reduces to SDG 555 (US$ 242) per HLY gained. When a cost per Healthy Life Year is below the GDP per capita of a country**, the intervention is deemed a cost-effective use of health budgets**. **In Sudan, where GNI per capita is SDG 2,590 (US$ 1,130), the cost per Healthy Life Year of SDG 1,224 (US$534) is a strong argument for investing in basic water and sanitation,** even more so for the SDG 555 (US$ 242) per HLY cost when including point-of-use treatment.

In another Africa study (see graphic) rates of health return on different interventions to improve water quality were measured and cost per HLY ranges from SDG 105 (US$ 46) to SDG 286 (US$ 125). These rates of health return are similar to other preventive health interventions such as for malaria and HIV/AIDS.



An important role of government is to catalyze private investment.

Households are willing to pay for services when they see a benefit

Economic research indicates that households, even poor ones, are willing to pay for reliable and quality WSS services. World Bank studies in Ghana in the early 1990s estimated the average willingness to pay per month per household was roughly SDG 3.4 (US$1.50) for each of water and sanitation services, which equates to a combined ***annual willingness to pay of SDG 160 (US$ 70)*** in today's values. Given the mean time to drinking water sources reported in the Southern Sudan Household Health Survey is 43 minutes, major time and economic savings can still be made. Furthermore, willingness to pay is enhanced when water supply has benefits beyond general household uses, in revenue-generating activities such as a small-scale household business or agriculture (irrigation). **Evidence from willingness-to-pay studies demonstrate that government investments in ensuring services are available leverage household investments. When reliable services are available, households are willing to invest themselves.**

Intangible aspects of water and sanitation are crucial in household decision making

Other benefits of improved water and sanitation rarely captured in economic studies are 'intangible' impacts, so-called because they are difficult to measure. These aspects may include dignity, comfort, privacy, security, and social acceptance. An undeniable basic need is to have a near-by, safe and private place to defecate, and this is especially true for women, the elderly, the sick and also children. As well as facilities at home, water and sanitation at schools can improve school enrolment, attendance and completion, and at the workplace can increase female participation in the urban workforce. **Hence water and sanitation promote social equality and economic growth.**

Conclusions and recommendations

Spending on water and sanitation is not only politically popular and socially beneficial, but it **makes good economic sense**. **and contributes importantly to the achievement of other MDG targets. Sanitation and water interventions deliver economic returns of at least 5 times on investment, commonly with an annual rate of return of 20% or more.** Furthermore, **WSS services are basic services that are demanded by the population, with often strong willingness to pay for these services -- when services are reliable.** As decisions are made to increase investments, an efficiency comparison of alternative water and sanitation policies, programs and technologies can assist the government to respond better to the needs of its population. Going forward, policy makers are recommended to address:

- **POLICY:** While noting that both South and North Sudan have developed or are developing WASH policy documents, it is recommended to **implement policies that lead to increased public and private spending** on water and sanitation services, especially sanitation, where progress is slowest. This includes a focus on increased population demand through sensitization and marketing campaigns, which will result in increased household investments.
- **SUSTAINABILITY:** Ensure funds and mechanisms for **adequate operations and maintenance** in order to sustain services and maximize cost-effectiveness of investments.
- **SCALING-UP:** Focus scaling-up efforts on the **most affordable and sustainable services** that are demanded by the population and that have proven health and environmental benefits. Also, implement the actions as stipulated in "Khartoum Declaration" made in July 2009 signed by six Ministers for North Sudan to enhance scaling up process.
- **TARGETING:** Provide additional support to increase **access to the poorest and most vulnerable households.**
- **MAXIMIZING EFFICIENCY:** Improve WSS delivery to the population and seek to maximize **efficiency gains through large scale implementation**.

References are available from UNICEF