

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

This briefing note for the Chadian 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**.

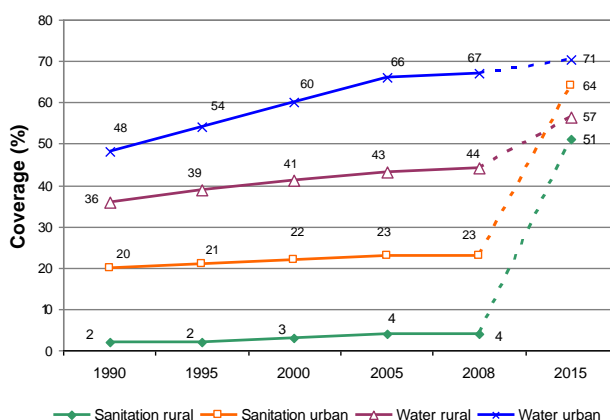
Sanitation and water supply coverage in Chad requires attention

According to data compiled by the WHO/UNICEF Joint Monitoring Program (JMP)^a, progress to achieve the sanitation target^b in Chad is off-track. Based on the most recent coverage data in 2008, **Chad has seven years to raise sanitation coverage from 23% to 64% in urban areas, and from 4% to 51% in rural areas**. The JMP does not count 'shared facilities' towards achievement even if they are of an acceptable technology. If shared facilities in Chad are assumed to provide safe, convenient access to sanitation, thus a further 19% of the urban population are covered, and Chad would be more on track to achieving the urban sanitation MDG target.

However, **even if Chad meets the MDG target in both rural and urban areas, 49% of the rural population and 36% of the urban population would still be without access to improved sanitation**.

Access to drinking water, on the other hand, is on-track to meet the MDG target in urban areas. In rural areas, progress is needed from 44% (in 2008) to 57% coverage. Even if Chad meets its MDG water target in rural areas, it will still have 36% of its rural population without improved drinking water.

Chad's progress towards the sanitation and water MDGs 1990-2008 and progress required to achieve the MDGs.



Money spent on sanitation and water pays dividends

Based on the average cost of a latrine and water supply, it is estimated that Chad requires a **total expenditure of FCFA 420 billion (US\$ 900 million) to meet the water and sanitation MDG targets, of which FCFA 340 billion (US\$ 740 million) is for sanitation**. This equates with roughly FCFA 41,500 (US\$ 90) per capita over a 10 year period, or FCFA 4,150 (US\$ 9) per capita annually^c.

^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.

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

Investment needs in Chad are sizable, especially compared to current spending. Chad will need to significantly increase investments in order to improve water and especially sanitation. To meet the MDG target, spending is still needed to maintain, operate and replace existing services. 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

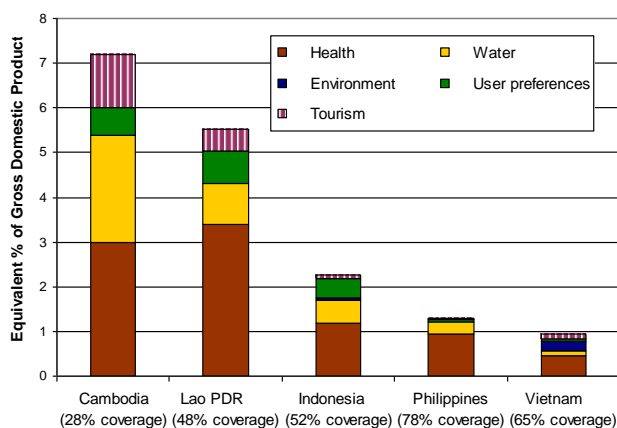
Economic research on water supply and sanitation is not commonly done, therefore findings must be borrowed from other countries. A World Bank country environmental analysis conducted in Ghana has shown that health costs resulting from poor water, sanitation and hygiene cost the country the equivalent 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 Chad WHO estimates 12,400 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 Chad, at 41% and 37%, 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 Chad. 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 FCFA 9,300 (US\$ 20) of the total annual FCFA 14,800 (US\$ 32) per capita losses in Cambodia, and FCFA 6,900 (US\$ 15) of the total annual FCFA 15,700 (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 impact on **foreign tourists** choosing Chad as their holiday destination. Second, it can affect business and play an influential role in where **foreign businesses** invest their money. 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. Furthermore, 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.

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

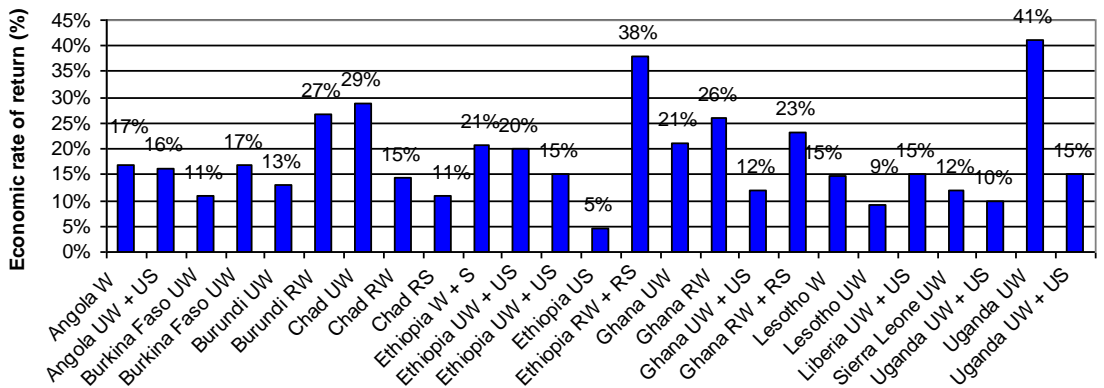
WSS services can yield a major return on investment

WSS projects in Chad are expected to have at least 11% economic rate of return.

Economic returns on water and sanitation projects are highly favorable. From the World Bank, project appraisals were conducted for N’Djaména water services rehabilitation project, with an estimated **economic rates of return** of **29%**. A support given by the African Development Funds for the rural programme on water supply and sanitation measured economic rates of 11-15%. Project appraisals also demonstrate that rural WSS projects are efficient - in Ghana, for example, the Millennium Challenge Corporation estimated an average return of **21%** on 11 rural water and sanitation projects. Rates of return for sanitation projects alone show rates of return of **16%** in Angola, **21%** in Ethiopia, **11%** in Chad and **15%** in Uganda (see Figure below).

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

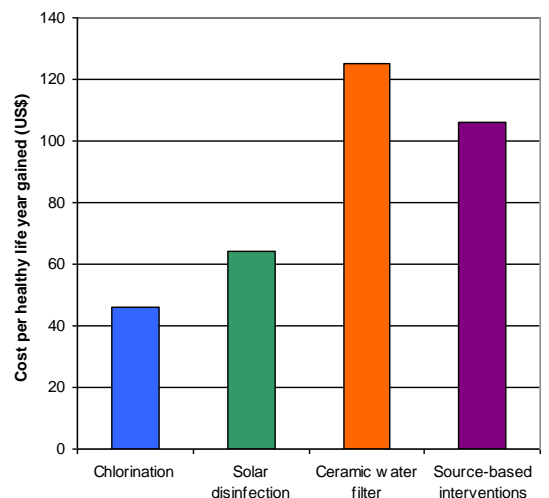
The health returns on investment in WSS are considerable

Investing in sanitation and water can help Chad 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 US\$ 510 per Healthy Life Year gained. Add ‘water treatment at the point-of-use’ and the cost reduces to US\$ 208 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 Chad, where GNI per capita is FCFA 245,000 (US\$ 530), the cost per Healthy Life Year of FCFA 240,000 (US\$ 510) is a strong argument for investing in basic water and sanitation interventions**

considering that WSS bring many more benefits than just health benefits. Even stronger arguments can be made for including point-of-use treatment, which reduces the cost per HLY to under FCFA 100,000 (US\$ 208).

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 FCFA 20,000 (US\$ 46) to FCFA 60,000 (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 FCFA 700 (US\$1.50) for each of water and sanitation services, which equates to a combined **annual willingness to pay of FCFA 32,000 (US\$ 70)** in today's values. 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**. Economic evidence supports that meeting and going beyond MDG targets to achieve universal water and sanitation coverage not only improves quality of life, but also bring tangible health, environmental and economic benefits. Improving access to sanitation and water **contribute 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:** 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 those that have proven health and environmental benefits.
- **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.**