



BACKGROUND PAPER 13 (PHASE I)

Climbing the Ladder: The State of Sanitation in Sub- Saharan Africa

SUMMARY

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JUNE 2008

Africa's Infrastructure | *A Time for Transformation*

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About AICD



This study is a product of the Africa Infrastructure Country Diagnostic (AICD), a project designed to expand the world's knowledge of physical infrastructure in Africa. AICD will provide a baseline against which future improvements in infrastructure services can be measured, making it possible to monitor the results achieved from donor support. It should also provide a better empirical foundation for prioritizing investments and designing policy reforms in Africa's infrastructure sectors.



AICD is based on an unprecedented effort to collect detailed economic and technical data on African infrastructure. The project has produced a series of reports (such as this one) on public expenditure, spending needs, and sector performance in each of the main infrastructure sectors—energy, information and communication technologies, irrigation, transport, and water and sanitation. *Africa's Infrastructure—A Time for Transformation*, published by the World Bank in November 2009, synthesizes the most significant findings of those reports.



AICD was commissioned by the Infrastructure Consortium for Africa after the 2005 G-8 summit at Gleneagles, which recognized the importance of scaling up donor finance for infrastructure in support of Africa's development.



The first phase of AICD focused on 24 countries that together account for 85 percent of the gross domestic product, population, and infrastructure aid flows of Sub-Saharan Africa. The countries are: Benin, Burkina Faso, Cape Verde, Cameroon, Chad, Côte d'Ivoire, the Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Sudan, Tanzania, Uganda, and Zambia. Under a second phase of the project, coverage is expanding to include as many other African countries as possible.



Consistent with the genesis of the project, the main focus is on the 48 countries south of the Sahara that face the most severe infrastructure challenges. Some components of the study also cover North African countries so as to provide a broader point of reference. Unless otherwise stated,



therefore, the term “Africa” will be used throughout this report as a shorthand for “Sub-Saharan Africa.”



The World Bank is implementing AICD with the guidance of a steering committee that represents the African Union, the New Partnership for Africa’s Development (NEPAD), Africa’s regional economic communities, the African Development Bank, the Development Bank of Southern Africa, and major infrastructure donors.



Financing for AICD is provided by a multidonor trust fund to which the main contributors are the U.K.’s Department for International Development, the Public Private Infrastructure Advisory Facility, Agence Française de Développement, the European Commission, and Germany’s KfW Entwicklungsbank. The Sub-Saharan Africa Transport Policy Program and the Water and Sanitation Program provided technical support on data collection and analysis pertaining to their respective sectors. A group of distinguished peer reviewers from policy-making and academic circles in Africa and beyond reviewed all of the major outputs of the study to ensure the technical quality of the work.



The data underlying AICD’s reports, as well as the reports themselves, are available to the public through an interactive Web site, www.infrastructureafrica.org, that allows users to download customized data reports and perform various simulations. Inquiries concerning the availability of data sets should be directed to the editors at the World Bank in Washington, DC.



Summary

Nearly all countries in Sub-Saharan Africa are likely to miss the Millennium Development Goal for access to improved sanitation. As of 2006, coverage of improved sanitation as defined by the Joint Monitoring Program managed by the United Nations Children's Fund (UNICEF) and World Health Organization (WHO) and responsible for tracking progress toward the goals stood at 31 percent. The target for 2015 is 63 percent.

A sanitation ladder

Sanitation can be provided at several levels that may be represented as rungs on a ladder. At the bottom of the ladder are those who lack any kind of sanitation facility and must still resort to open defecation. The first rung of the ladder is provided by the traditional latrines, which refers to various kinds of pits for disposal of excreta. Thereafter, improved latrines come —comprising SanPlat, VIP latrines and basic pits with slabs—all of which ensure more hygienic separation of excreta from the immediate living environment. The final rung of the ladder is the flush toilet, which may be connected either to a septic tank or to a water-borne sewer network. Each successive rung of the ladder represents a higher unit cost but a correspondingly lower level of health risk.

The Joint Monitoring Program counts the top two rungs of the ladder as improved sanitation for purposes of measuring progress toward the MDG target. But, in practice, drawing a line between improved and unimproved forms of sanitation is not easy, owing to the wide variety of installations bundled together under these basic labels. Classification of traditional latrines is particularly difficult. A key issue is the extent to which a traditional latrine can or, with some modification, could provide improved sanitary protection. In addition, the boundary between traditional and improved latrines is somewhat porous, because the extent to which latrines deliver the intended health benefits depends on the way they are used. Even very basic latrines can provide protection if measures are taken to cover them, empty or replace them in a timely fashion, and ensure that, once removed, sludge is properly treated and disposed of. Users must also wash their hands after using the latrine. Conversely, even improved latrines can sometimes fail to provide sanitary protection if they are not properly used.

Throughout the world, the development of water-borne sewage networks generally lags substantially behind the evolution of the piped-water networks on which they depend. In Africa, only 40 percent of the urban population enjoys private connections to piped water networks, and this already places a very low ceiling on the potential for water-borne sewerage.

Indeed, the prevalence of water-borne sewage systems is extremely low in Sub-Saharan Africa. Among utilities serving the largest cities, only half report operating a sewage network at all. In middle-income countries such as Namibia and South Africa, and in the exceptional case of Senegal, these utilities provide a high level of sewerage coverage. However, the more typical situation—in countries such as Côte d'Ivoire, Kenya, Madagascar, Malawi, Lesotho, and

Uganda—is that even where sewer networks exist they reach barely 10 percent of the population in the service area. Little more than half of those with piped water also have flush toilets, in most cases connected to septic tanks rather than sewers.

Onto the bottom rung

Sanitation in Sub-Saharan Africa essentially consists of on-site sanitation of the types just described (table A). About half of the population—urban and rural alike—rely on traditional latrines. About 30 percent of the population continues to practice open defecation, this share being even higher in some countries. Improved modalities reach no more than 20 percent of the overall population. Curiously, the prevalence of improved latrines is no greater than that of septic tanks, even though there is a significant cost differential between the two.

Table A Patterns of access to sanitation

	Open defecation	Traditional latrine	Improved latrine	Septic tank
Urban	8	51	14	25
Rural	41	51	5	2
National	34	52	9	10

Source: AICD DH/MICS Survey Database, 2007.

A clear urban-rural divide emerges. In rural areas the bulk of the population still practices open defecation, and improved sanitation remains negligible. In urban areas, about 40 percent the population has access to improved modalities, with septic tanks much more common than improved latrines; fewer than 10 percent of urban dwellers practice open defecation. A typical pattern of urban sanitation is the practice of sharing sanitation facilities among multiple families—more than 40 percent of households report sharing their toilet facilities with other households.

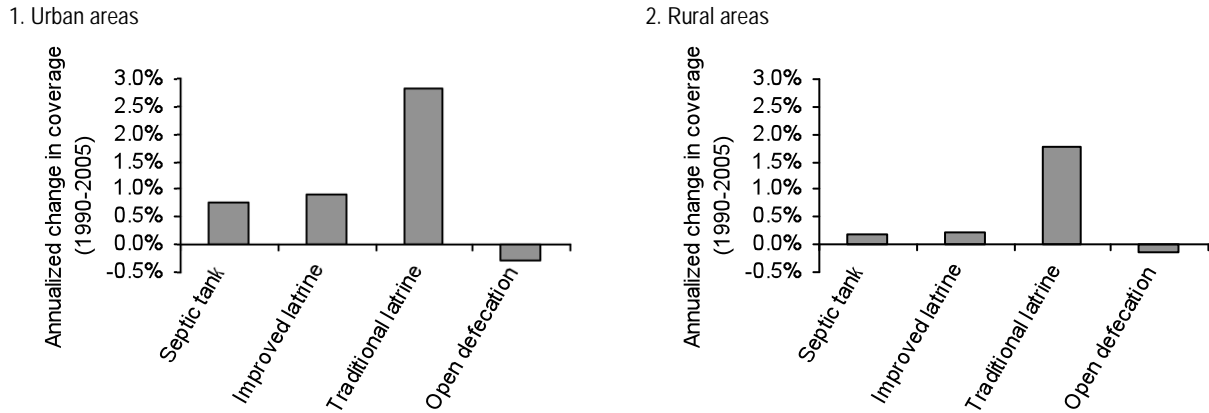
Patterns of sanitation access vary dramatically across the socioeconomic spectrum. Traditional latrines are by far the most egalitarian form of sanitation, accounting for about 50 percent of households across the income range. Conversely, the pattern of access for improved latrines tracks that for septic tanks very closely, suggesting that (despite their lower cost) improved latrines remain something of a luxury, having not penetrated the middle of the income distribution. In particular, improved latrines are virtually nonexistent in the poorest half of the population; even in the richest strata, they account for 20–30 percent of households.

Not only are traditional latrines the most common sanitation modality in Sub-Saharan Africa, they are also by far the fastest growing. In recent years, they have been reaching an additional 2.8 percent of the population each year in urban areas and an additional 1.8 percent in rural areas, more than twice the rate of expansion of flush toilets and improved latrines put together (figure A). As might be expected, the expansion in traditional latrines is concentrated in the poorer half of the population, that in improved latrines and flush toilets in the richer half.

While the overall picture is bleak, there have been some important success stories in recent years. Because the target articulated in the Millennium Development Goal for sanitation focuses

on the top improved options, the rapid expansion of traditional latrines does not always appear clearly in the policy discussion. Another piece of good news is that open defecation has finally begun to decline in Sub-Saharan Africa, however modestly.

Figure A Rate of expansion of different sanitation modalities



Source: AICD DH/MICS Survey Database, 2007.

Several countries have succeeded in moving at least 3 percent of their populations across any particular rung of the sanitation ladder each year (figure B). At the bottom end of the ladder, countries such as Côte d’Ivoire, Ethiopia, Uganda and the Democratic Republic of Congo are switching more than 3 percent of their population each year into the use of traditional latrines. Ethiopia is making the most rapid progress in reducing open defecation, moving more than 2 percent of its population away from this practice each year. A second group of countries—comprising Burkina Faso, Madagascar and Rwanda—is succeeding in upgrading more than 3 percent of the population each year into some type of improved latrine. Finally, at the top end of the ladder, Senegal (and only Senegal) has achieved a comparable pace of expansion for septic tanks.

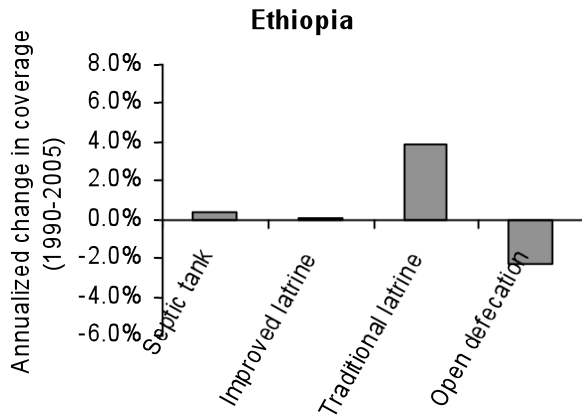
Patterns of practice across country groups ... and appropriate policy responses

Beyond this picture, the anatomy of the sanitation challenge differs markedly across different groups of Sub-Saharan countries, and also across urban and rural settings within individual countries (figure C).

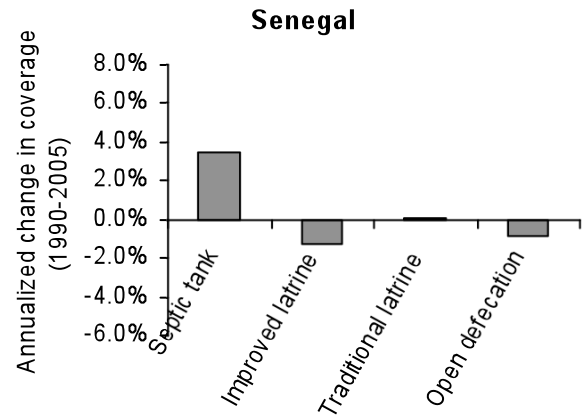
In urban areas, one discerns three distinct types of country. The largest group relies primarily on traditional latrines for urban sanitation. In the second group, improved latrines prevail, but traditional latrines still constitute a large share of sanitation. The third, small group of countries exhibits a bimodal pattern of access: close to half of the population have septic tanks, while the other half continue to rely on traditional latrines, and there is virtually no middle ground in the form of improved latrines.

Figure B Successful examples from up and down the sanitation ladder

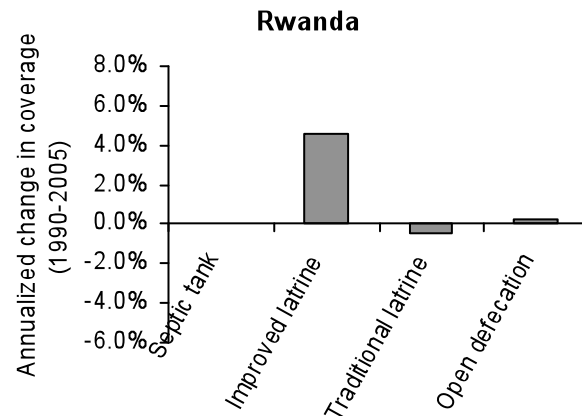
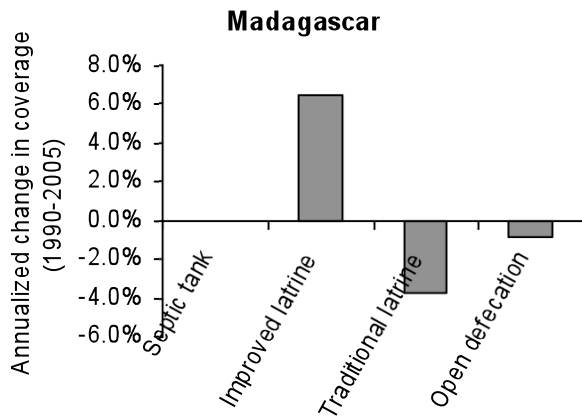
1. Ethiopia: Getting on to the bottom rung (below)



2. Senegal: Mainstreaming septic tanks



3. Madagascar and Rwanda: Upgrading latrines



Source: AICD DH/MICS Survey Database, 2007

In rural areas, the three typologies are somewhat different. First, there is a group of countries in which open defecation is still practiced by the vast majority of the rural population. In the second and largest group of countries traditional latrines are the dominant sanitation mode in rural areas. A third group of countries has achieved significant coverage of improved latrines in rural areas, even though the majority still relies on traditional latrines or practice open defecation.

The implications of these major differences in the pattern of access to sanitation are that policies must be tailored to each setting. Policymakers should avoid concentrating efforts on rungs of the sanitation ladder above the realities of their societies. If the ultimate objective is to provide universal access, investments should target people who can move to the next rung of the ladder and in particular those at the bottom, leaving more expensive options to households with the resources to take them up.

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Where open defecation remains prevalent, promoting appropriate sanitary behavior is critical for two reasons. The first is to ensure that latrines are actually used when available, since there is widespread international evidence that such facilities may be altogether ignored by beneficiary households if there is no effort to engender behavioral change. The second is to ensure that latrines deliver the corresponding health benefits—less a matter of technology and material used and more a matter of good practices and behaviors.

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Figure C Patterns of access to sanitation across countries

Urban areas

Prevalence of traditional latrine: Central African Republic, Chad, Comoros, Republic of Congo, Ethiopia, Guinea, Lesotho, Malawi, Mali, Mauritania, Mozambique, Nigeria, Tanzania, Uganda, Sudan and Democratic Republic of Congo.

Prevalence of improved latrine: Benin, Burkina Faso, Cameroon, Ghana, Madagascar, Niger, Rwanda

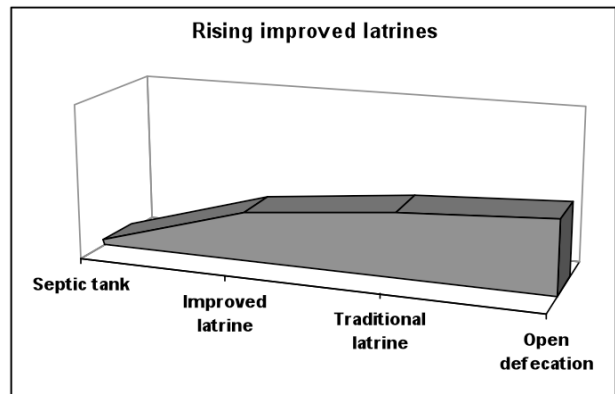
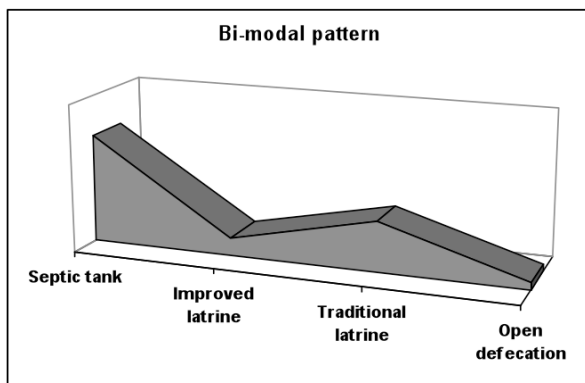
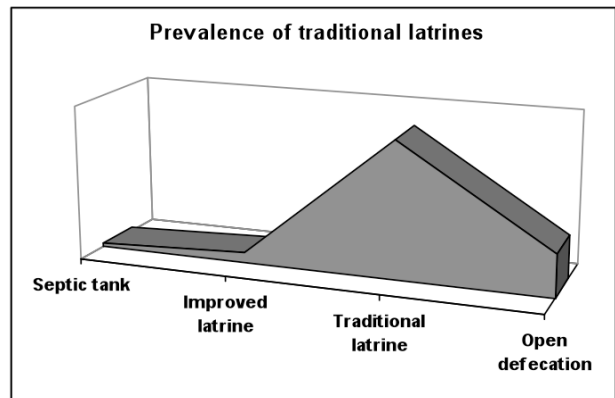
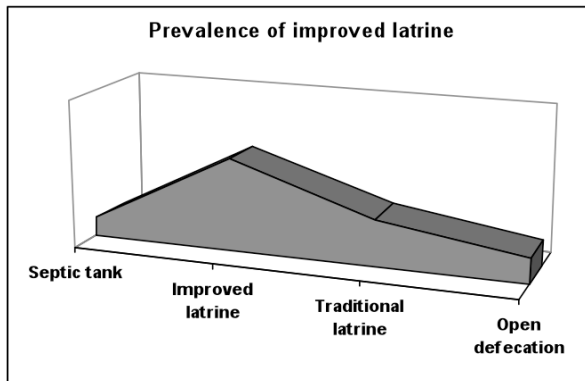
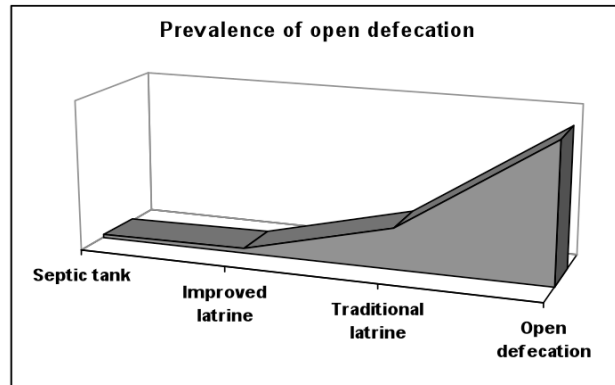
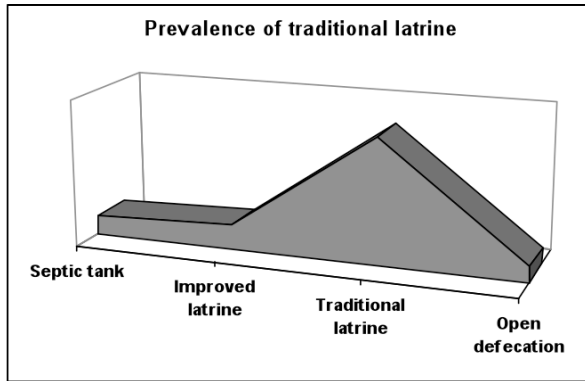
Bi-modal pattern: Côte d'Ivoire, Gabon, Kenya, Namibia, Senegal, South Africa, Zambia, Zimbabwe

Rural areas

Prevalence of open defecation: Benin, Burkina Faso, Chad, Côte d'Ivoire, Ethiopia, Mauritania, Mozambique, Namibia, Niger and Sudan

Prevalence of traditional latrines: Cameroon, Comoros, the Republic of Congo, Gabon, Ghana, Guinea, Kenya, Malawi, Mali, Nigeria, South Africa, Tanzania, Uganda, Zambia and Democratic Republic of Congo

Rising use of improved latrines: Central African Republic, Lesotho, Madagascar, Rwanda, Senegal, Zimbabwe



Source: AICD DH/MICS Survey Database, 2007.

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In settings where traditional latrines are already common, attention needs to focus on upgrading latrines to improved models. Here, the debate centers on whether the main bottleneck lies on the demand side of the market or on the supply side.

From the supply side, the lack of improved latrines can be explained by limited knowledge in construction sectors of required designs, as well as the possible lack of key building materials in local markets. This hypothesis corresponds with the observed low prevalence of improved latrines across Africa (even in middle-income countries); traditional latrines serve a steady 40 to 50 percent of the population, even among the highest income groups, where the resources for more advanced facilities would appear to be available.

From the demand side, the low use of improved latrines may be a matter of affordability. Household incomes are low, and the higher capital costs of such facilities are relatively high. Analyses of sanitation investment costs in Senegal in relation to very limited household budgets show that whereas traditional latrines appear quite affordable across the income spectrum, improved latrines represent more than a month of the household budget, even for households in the highest income group. This is consistent with the much-skewed distribution of improved latrines across the income spectrum.

It is likely that the low numbers of improved latrines can be traced to a combination of demand- and supply-side factors. Nevertheless, it is critical to tackle supply bottlenecks first. Otherwise, subsidy resources may be wasted on households that might have financed the facilities on their own had they been available. Moreover, allowing the local market to develop also provides space for innovation that may ultimately lower the cost of improved latrines and thereby at least partially address the affordability problem.

In cases where septic tanks have reached significant levels of penetration, the key issue becomes how to provide access to improved sanitation to lower-income segments of the population, which in high density settings may require finding solutions to expand sewer networks. While on-site sanitation is likely to remain predominant in Sub-Saharan Africa for some time to come, the method does have its limits. As a result of urban growth, per capita water consumption will increase significantly, creating the challenge of safely returning large volumes of grey water. Also, with growing urban population densities, the limited availability of land will eventually become a binding constraint on the use of latrines. Sooner or later, Africa's burgeoning cities will be faced with the need to develop more extensive sewer networks. But given the acute affordability problems outlined above, it is critical to find ways to reduce their cost via technological innovation.

Greater visibility for an essential service

Across the region, the institutional framework for sanitation is fragmented. In contrast to the water-supply situation, the different elements of the supply chain—from hygiene promotion, to latrine construction, to latrine emptying—are in the hands of different public and private players, with multiple actors often present at each stage. This fragmentation prevents a single, powerful agency from emerging as champion of the sector and rescuing it from its neglected status. The

recent trend toward decentralization of the sector has also made it more difficult to capture adequate public resources for sanitation, while allocating responsibilities to entities that may lack the requisite technical capacity to discharge them.

Some progress has been made in the region toward the adoption of national sanitation policies. The majority of countries have embraced a definition of sanitation and hygiene promotion relevant to establishment of a sanitation framework. Fifteen countries have also established national sanitation policies. That is progress. But key practical components of an effective sanitation regime—such as recovering operating costs, which is known to pay significant dividends—exist in only seven countries. And only eight countries have set up a sanitation fund or a dedicated budget line. In some cases, that fund or line is supplied exclusively by donors (as in Chad and Ethiopia). In others, funds come from a combination of government, sector levies, and donors.

Many ways to better sanitation

To meet the Millennium Development Goal for sanitation, Sub-Saharan Africa needs to spend an estimated 0.9 percent of its gross domestic product (GDP) annually in the sector, of which 0.5 percent should be allocated to new infrastructure, 0.2 percent to the rehabilitation of existing assets and 0.2 percent to operation and maintenance. Meeting the target would bring substantial benefits in the form of reduced incidence of diarrhea, intestinal worms and trachoma—provided, of course, that the new sanitary facilities are accompanied by more hygienic behavior.

Using access trends, it is possible to estimate how much has been invested by all parties in new sanitation facilities. The answer is 0.5 percent of GDP, exactly the investment level required to reach the sanitation MDG. Although this may look encouraging, the MDG challenge is everything but solved.

First, this overall average masks some differences across countries (figure D). Half of countries for which data are available, show annual investment spending below 0.5 percent of GDP; in a number of cases investments have been below 0.1 percent.

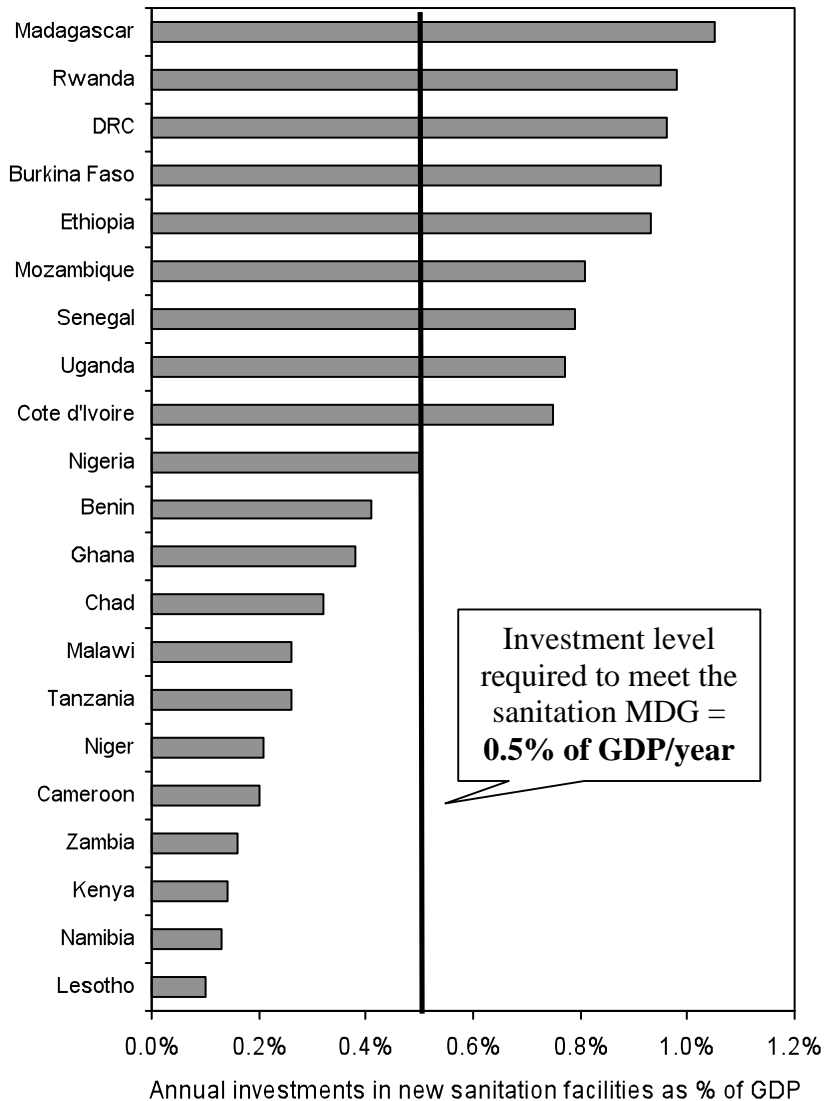
Second, with this approach nothing can be said about rehabilitation and operation and maintenance spending patterns, to which an almost equal amount (0.4 percent of GDP) should be allocated every year in order to meet the sanitation MDG.

Third, owing to decentralization and lack of clear accounting for sector expenditure, it is hard to pin down how much of the estimated total spending on sanitation comes from the public purse as opposed to household budgets and therefore understand to what extent government will contribute to pay for sanitation. The few countries with available evidence report average annual public spending on sanitation to be no more than 0.22 percent of GDP, of which 0.2 percent recurrent and only 0.02 investment. Recurrent spending stands at the level needed to reach the sanitation MDG; however data are too incomplete and this regional average is totally driven by South Africa, which reports operation and maintenance spending on sanitation equal to 0.4 percent of GDP. The rest of the countries reports spending either below 0.05 percent or null.

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More important, spending refer to sewer systems. Operation and maintenance of on-site sanitation remains a household responsibility and facilities are notoriously poorly maintained. Households also appear to be footing most of the investment bill, of which governments cover a negligible fraction according to the available information.

Figure D Spending on new sanitation infrastructure as percentage of GDP



Source: AICD DH/MICS Survey Database, 2007.

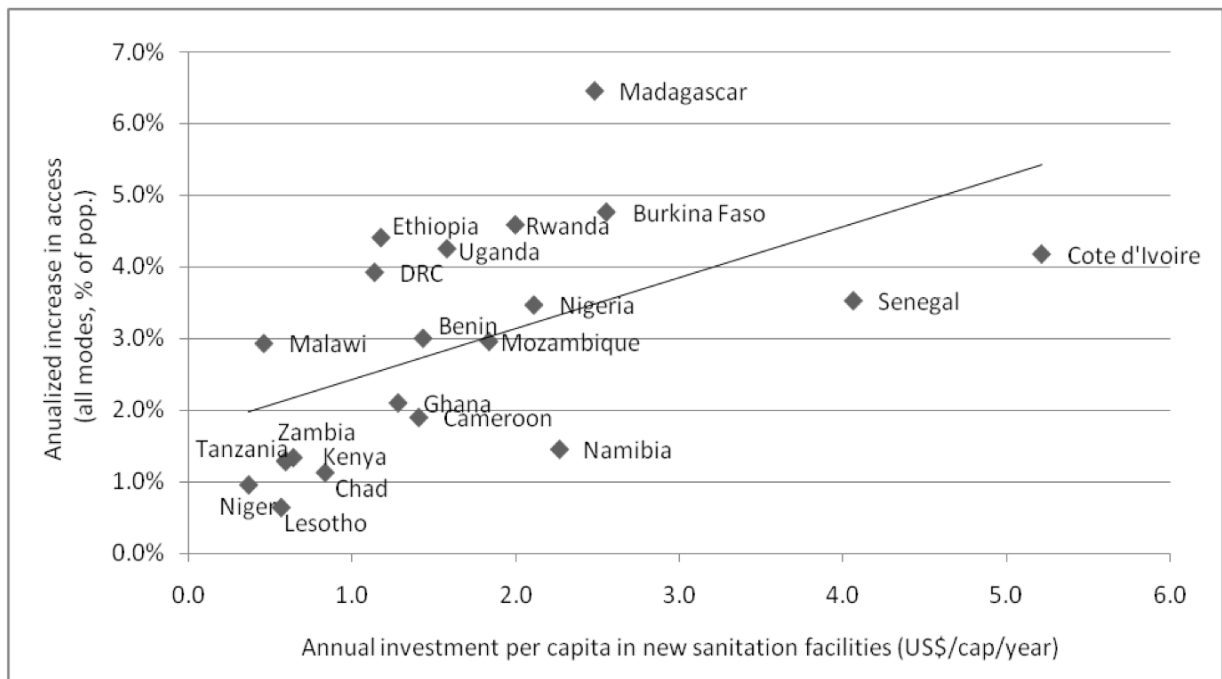
Therefore, countries that are not on track with spending may fall short in meeting their needs if governments do not commit to raise public investment and households do not adequately engage in operation and maintenance of on-site sanitation facilities. Similarly, countries that are already on track with expanding infrastructure, with households paying for most of the bill, may still fall short in meeting their rehabilitation and operation and maintenance needs.

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By comparing the annualized percentage increase in access to sanitation in all forms with per capita spending (both public and private) on sanitation, it is possible to summarize the relationship between spending and outcomes (figure E). Countries above the line are getting relatively rapid progress out of their estimated spending; countries below the line are not.

Factors that contribute to putting countries above the line are effective sanitation policies and emphasis on relatively low cost sanitation modes, which make it cheaper to expand access. Countries making progress on the higher rungs of the ladder—such as Lesotho and Senegal—tend to report larger spending than countries focusing on the lower rungs—such as Ethiopia, Uganda, Malawi and the Democratic Republic of Congo. However, exceptions to this general rule do apply. Côte d’Ivoire reports high spending despite its efforts are concentrated at the bottom of the ladder. Conversely, with much less spending, Madagascar, Rwanda and Burkina Faso have achieved fast progress on improved sanitation.

Figure E Investment in sanitation and increases in access to sanitation



Source: AICD DH/MICS Survey Database, 2007.