



BACKGROUND PAPER 13 (PHASE I)

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

CROSS-COUNTRY ANNEX

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**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](http://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.



# Annex 1 Cross-country tables

## Part I Study methodology to water supply

Table 1.1 Description of country household survey datasets

Table 1.2 Description of utilities in AICD WSS survey

Note:

—= not available

n.a.= not applicable

THE STATE OF SANITATION IN SUB-SAHARAN AFRICA: CROSS-COUNTRY ANNEX

Table 1.1: DESCRIPTION OF COUNTRY HOUSEHOLD SURVEY DATASETS

Country	Available observations			Year of Survey		Included in the trend analysis*
	1990-95	1996-00	2001-05	DHS	MICS	
Benin		✓	✓	1996, 2001		X
Burkina Faso	✓	✓	✓	1993, 1999, 2003		X
Central African Republic	✓			1995		
Cameroon	✓	✓	✓	1991, 1998, 2004		X
Chad		✓	✓	1997, 2004		X
Comoros		✓		1996		
Congo, Democratic Republic of	✓		✓		2000	X
Congo, Republic of			✓	2005		
Cote d'Ivoire	✓	✓		1994, 1999		X
Ethiopia		✓	✓	2000, 2005		X
Gabon		✓		2000		
Ghana	✓	✓	✓	1993, 1998, 2003		X
Guinea			✓	1999, 2005		X
Kenya	✓	✓	✓	1993, 1998, 2003		X
Lesotho		✓	✓	2005	2000	X
Madagascar	✓	✓	✓	1992, 1997, 2004		X
Malawi	✓	✓	✓	1992, 2000, 2004		X
Mali		✓	✓	1996, 2001		X
Mauritania			✓	2001		
Mozambique		✓	✓	1997, 2003		X
Namibia	✓	✓		1992, 2000		X
Niger	✓	✓		1992, 1998		X
Nigeria	✓	✓	✓	1990, 1999, 2003		X
Rwanda	✓	✓	✓	1992, 2000, 2005		X
Senegal	✓	✓	✓	1993, 1997, 2005		X
South Africa		✓		1998		
Sudan		✓			2000	
Tanzania	✓	✓	✓	1992, 1999, 2004		X
Togo		✓		1998		
Uganda	✓		✓	1995, 2001		X
Zambia	✓	✓	✓	1992, 1996, 2002		X
Zimbabwe	✓	✓		1994, 1999		X

Source: AICD DHS/MICS Survey Database, 2007

\* Note: Included in the calculation of 'annual average change in coverage' analysis

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TABLE 1.2: DESCRIPTION OF UTILITIES IN AICD WSS SURVEY

No.	Country	Utility	Population in Service Area	Coverage of Service Area	Sewer network
1	Benin	SONEB	2,900,000	National	no
2	Burkina Faso	ONEA	2,779,875	National	yes
3	Cameroon	SNEC	—		yes
4	Cape Verde	ELECTRA	231,882	National	yes
5	Chad	STEE	—	National	no
6	Cote d'Ivoire	SODECL	8,892,850	National	yes
7	DRC	REGIDESO	18,000,000	National	no
8	Ethiopia	ADAMA	218,111	Urban	no
9	Ethiopia	AWSA	2,887,000	Urban	yes
10	Ethiopia	DIRE DAWA	284,000	Urban	yes
11	Ghana	GWC	17,199,942	National	yes
12	Kenya	KIWASCO	465,613	Urban	yes
13	Kenya	MWSC	826,000	Urban	no
14	Kenya	NWASCO	2,496,000	Urban	yes
15	Lesotho	WASA	540,500	National	yes
16	Madagascar	JIRAMA	4,885,250	National	yes
17	Malawi	BWB	833,418	Urban	no
18	Malawi	CRWB	288,705	Urban	no
19	Malawi	LWB	634,447	Urban	yes
20	Mozambique	AdeM Beira	580,258	Urban	no
21	Mozambique	AdeM Maputo	1,778,629	Urban	no
22	Mozambique	AdeM Nampula	385,809	Urban	no
23	Mozambique	AdeM Pemba	131,980	Urban	no
24	Mozambique	AdeM Quilimane	288,887	Urban	no
25	Namibia	Oshakati Municipality	31,432	Urban	yes
26	Namibia	Walvis Bay Municipality	54,025	Urban	yes
27	Namibia	Windhoek Municipality	300,000	Urban	yes
28	Niger	SEEN / SPEN	2,240,689	National	yes
29	Nigeria	Borno	—	Urban	no
30	Nigeria	FCT	6,000,000	Urban	no
31	Nigeria	Kaduna	3,126,000	Urban	no
32	Nigeria	Katsina	2,845,920	Urban	no
33	Nigeria	Lagos	15,367,417	Urban	no
34	Nigeria	Plateau	1,334,000	Urban	no
35	Rwanda	ELECTROGAZ	2,010,000	National	no
36	Senegal	SDE / ONAS	7,808,142	National	yes
37	South Africa	Cape Town Metro*	3,241,000	Urban	yes
38	South Africa	Drakenstein Municipality*	213,900	Urban	yes
39	South Africa	EtheKwin* (Durban)	3,375,000	Urban	yes

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40	South Africa	Joburg*	3,753,900	Urban	yes
41	Sudan	Khartoum Water Corporation	7,602,000	Urban	yes
42	Sudan	South Darfur Corporation	2,051,000	Urban	no
43	Sudan	Upper Nile Water Corporation	250,000	Urban	no
44	Tanzania	DAWASCO	—	Urban	yes
45	Tanzania	DUWS	279,000	Urban	yes
46	Tanzania	MWSA	458,493	Urban	yes
47	Uganda	NWSC	2,284,000	National	yes
48	Zambia	LWSC	1,564,986	Urban	yes
49	Zambia	NWSC	990,806	Urban	yes
50	Zambia	SWSC	294,000	Urban	Yes

Source: AICD DHS/MICS Database 2007

Part II Access to water supply

Table 2.1 Evolution of sanitation services

Table 2.2 Coverage of flush toilets and improved latrines, by geographic location and income quintiles

Table 2.3 Coverage of traditional latrines and open defecation, by geographic location and income quintiles

—= not available

n.a.= not applicable

## THE STATE OF SANITATION IN SUB-SAHARAN AFRICA: CROSS-COUNTRY ANNEX

TABLE 2.1: EVOLUTION OF SANITATION SERVICES

Percentage population	Flush toilets			Improved latrines			Traditional latrines			Open defecation		
	Early 1990s	Late 1990s	Early 2000s	Early 1990s	Late 1990s	Early 2000s	Early 1990s	Late 1990s	Early 2000s	Early 1990s	Late 1990s	Early 2000s
<b>By country</b>												
Benin	—	0	2	—	1	14	—	24	15	—	74	68
Burkina Faso	1	1	2	1	0	18	26	22	10	72	77	70
Central African Rep	1	—	—	13	—	—	59	—	—	26	—	—
Cameroon	7	6	8	0	24	27	45	60	58	13	10	7
Chad	—	0	2	—	8	3	—	21	24	—	71	72
Comoros	—	3	—	—	21	—	—	75	—	—	0	—
Congo, Rep.	—	—	5	—	—	15	—	—	70	—	—	10
Cote d'Ivoire	14	12	—	22	13	—	21	39	—	42	35	—
Ethiopia	—	0	2	—	0	1	—	17	35	—	82	62
Gabon	—	25	—	—	22	—	—	51	—	—	2	—
Ghana	6	8	10	13	22	23	47	41	41	27	24	25
Guinea	—	3	3	—	0	2	—	61	67	—	34	28
Kenya	8	10	9	6	6	8	68	68	64	18	16	18
Lesotho	—	2	2	—	18	21	—	36	33	—	40	45
Madagascar	3	2	2	31	4	49	6	33	3	61	61	47
Malawi	3	3	4	1	1	1	72	79	81	25	17	14
Mali	—	1	6	—	8	11	—	64	62	—	27	21
Mauritania	—	—	2	—	—	4	—	—	44	—	—	49
Mozambique	—	3	3	—	1	2	—	35	48	—	60	47
Namibia	27	31	—	0	3	—	7	8	—	64	57	—
Niger	1	1	—	12	12	—	4	7	—	82	79	—
Nigeria	8	12	13	0	6	3	62	54	59	29	26	25
Rwanda	1	1	1	0	8	29	93	87	66	6	3	3
Senegal	11	9	36	22	23	10	29	35	31	38	32	22
South Africa	—	46	—	—	0	—	—	34	—	—	13	—
Tanzania	1	2	3	1	1	4	82	85	79	14	12	14
Togo	—	0	—	—	18	—	—	15	—	—	64	—
Uganda	2	—	2	2	—	2	79	—	80	17	—	15
Zambia	27	21	18	1	0	2	42	51	53	29	27	27
Zimbabwe	26	31	—	21	25	—	13	15	—	39	28	—
Congo, Dem. Rep.	2	—	1	11	—	10	71	—	76	16	—	12
Sudan	—	6	—	—	0	—	—	49	—	—	43	—
<b>By income group</b>												
Low income	6	7	8	7	7	9	51	49	54	50	40	37
Middle income	38	33	31	2	7	8	42	42	39	16	14	13
<b>By urbanization</b>												
Low	2	1	3	5	3	9	45	45	52	59	44	41
Medium	12	16	10	11	10	11	55	56	55	57	49	42
High	17	18	19	4	9	8	51	48	51	26	23	21
<b>By subregion</b>												
East	10	10	11	6	7	10	51	49	54	50	49	54
West	7	9	11	8	11	12	53	48	52	50	44	40
South	27	27	22	7	4	11	33	45	39	38	35	28
Central	5	5	6	11	12	13	62	59	65	22	18	19
<b>Overall</b>	9	9	10	6	7	9	50	49	52	46	37	34

Source: AICD DHS/MICS Database 2007

## THE STATE OF SANITATION IN SUB-SAHARAN AFRICA: CROSS-COUNTRY ANNEX

TABLE 2.2: COVERAGE OF FLUSH TOILETS AND IMPROVED LATRINES (LATEST AVAILABLE YEAR)

Percentage population	Flush toilets					Improved latrines				
	National	Urban	Rural	Q1	Q5	National	Urban	Rural	Q1	Q5
<b>By country</b>										
Benin	2.4	0.3	6.0	0.0	11.3	13.9	5.1	29.3	0.0	51.9
Burkina Faso	1.9	0.5	8.2	0.0	9.0	17.9	6.8	69.6	0.1	74.4
Central African Rep	1.1	0.1	2.5	0.0	5.3	13.3	18.4	6.3	16.1	2.6
Cameroon	8.1	0.7	15.8	0.0	38.3	27.0	13.3	41.4	0.0	45.6
Chad	1.8	0.5	7.1	0.0	8.0	2.7	0.2	12.5	0.0	13.3
Comoros	2.9	1.2	7.6	0.0	14.1	20.7	15.3	34.7	0.0	61.8
Congo, Rep.	5.3	0.4	9.8	0.0	24.2	15.1	4.1	24.9	0.2	48.0
Cote d'Ivoire	12.5	2.3	30.1	0.0	60.3	13.3	7.7	22.9	0.0	26.9
Ethiopia	2.1	1.3	8.0	0.0	5.9	0.9	0.5	3.9	0.0	3.9
Gabon	24.5	4.4	31.6	0.1	95.5	22.1	8.4	26.9	1.9	4.3
Ghana	10.3	1.5	22.6	0.3	43.3	22.6	10.9	39.0	0.9	35.2
Guinea	2.6	0.6	7.5	0.0	12.0	2.1	1.7	3.0	0.0	3.8
Kenya	9.0	1.5	39.1	0.0	42.6	8.0	7.1	11.3	0.0	21.8
Lesotho	1.6	0.2	8.3	0.0	7.5	20.8	16.9	38.5	0.0	43.8
Madagascar	1.9	0.5	6.9	0.0	7.9	49.0	44.2	66.7	0.2	82.3
Malawi	3.6	0.9	17.9	0.0	16.4	1.2	1.0	2.4	0.0	5.9
Mali	6.0	3.0	14.6	0.0	17.9	10.8	7.1	21.2	0.0	28.3
Mauritania	1.8	0.0	4.1	0.0	8.4	3.8	0.2	8.6	0.0	15.6
Mozambique	2.9	0.2	8.1	0.0	14.4	1.8	0.1	5.3	0.0	9.1
Namibia	30.6	6.8	78.5	0.0	99.5	2.7	3.1	1.9	0.0	0.0
Niger	1.1	0.2	4.6	0.0	2.9	12.1	2.1	54.9	0.1	58.4
Nigeria	13.1	5.7	27.8	0.1	54.1	2.9	1.7	5.2	0.0	6.8
Rwanda	1.2	0.2	6.3	0.0	5.6	29.3	25.9	48.4	0.0	66.8
Senegal	36.0	14.1	64.5	1.1	77.8	10.1	10.8	9.2	6.5	7.4
South Africa	46.4	5.8	80.2	0.1	99.6	0.0	0.0	0.0	0.0	0.0
Tanzania	2.8	0.5	10.1	0.0	12.8	3.7	1.1	12.2	0.0	17.1
Togo	—	—	—	—	—	18.0	11.5	32.8	0.0	47.7
Uganda	1.7	0.4	10.7	0.0	7.4	2.4	1.4	8.9	0.0	9.3
Zambia	18.1	2.1	46.9	0.0	75.9	1.6	1.3	2.1	0.0	1.9
Zimbabwe	31.5	1.5	95.1	0.0	99.2	25.0	35.7	2.0	6.5	0.4
Congo, Dem. Rep.	1.4	0.0	3.8	0.0	6.1	9.8	0.3	26.1	0.0	40.4
Sudan	6.4	1.1	14.0	0.2	31.3	0.0	0.0	0.0	0.0	0.0
<b>By income group</b>										
Low income	7.4	1.9	21.9	0.1	29.3	7.8	5.1	14.1	0.4	19.3
Middle income	32.7	4.1	58.3	0.1	77.9	8.4	4.5	12.6	0.1	15.1
<b>By urbanization</b>										
Low	3.2	1.0	13.3	0.0	13.2	8.8	6.1	21.1	0.0	24.3
Medium	6.9	0.7	19.1	0.0	27.5	7.4	4.3	12.1	0.9	19.3
High	19.2	5.1	38.1	0.1	60.8	7.1	4.0	11.5	0.4	12.9
<b>By subregion</b>										
East	3.9	1.0	14.9	0.0	17.1	3.8	2.8	7.8	0.0	11.8
West	11.5	4.1	26.3	0.1	44.4	8.0	4.4	14.3	0.4	20.1
South	22.9	2.2	57.4	0.0	59.3	11.0	12.7	8.7	0.7	15.7
Central	3.2	0.2	8.7	0.0	14.5	12.8	3.0	28.4	0.7	36.7
<b>Overall</b>	10.1	2.1	28.1	0.1	34.3	7.8	5.0	13.8	0.4	18.8

Source: AICD DHS/MICS Database 2007

## THE STATE OF SANITATION IN SUB-SAHARAN AFRICA: CROSS-COUNTRY ANNEX

TABLE 2.3: COVERAGE OF TRADITIONAL LATRINES AND OPEN DEFECTION (LATEST AVAILABLE YEAR)

Percentage population	Tradition latrines					Open defecation				
	National	Urban	Rural	Q1	Q5	National	Urban	Rural	Q1	Q5
<b>By country</b>										
Benin	15.2	9.2	26.0	0.3	27.4	67.7	84.7	37.5	99.5	8.7
Burkina Faso	10.0	9.2	14.0	0.2	10.3	70.0	83.3	8.0	99.6	6.0
Central African Rep	59.5	40.2	85.5	0.0	91.3	25.9	41.1	5.3	83.9	0.4
Cameroon	57.6	73.2	41.3	84.4	15.4	7.2	12.6	1.4	15.3	0.6
Chad	23.6	13.2	63.8	0.0	70.1	71.6	85.8	16.5	99.9	8.2
Comoros	75.1	82.3	56.2	99.8	24.0	0.3	0.4	0.0	0.0	0.0
Congo, Rep.	69.8	78.4	62.0	80.0	26.9	9.5	16.7	3.2	19.2	0.8
Cote d'Ivoire	38.6	35.6	43.8	3.1	12.8	35.4	54.2	2.9	96.9	0.0
Ethiopia	34.7	29.0	76.6	0.0	73.5	62.2	69.1	11.4	100.0	16.5
Gabon	50.9	82.9	39.6	92.6	0.1	2.1	3.7	1.5	5.1	0.1
Ghana	40.5	50.4	26.7	88.1	11.3	24.6	36.9	7.3	10.7	4.1
Guinea	67.4	59.3	86.9	4.4	83.6	27.6	38.1	2.4	95.6	0.5
Kenya	64.3	69.3	44.2	86.7	32.4	18.3	21.8	4.0	13.3	2.0
Lesotho	32.9	30.1	45.4	0.0	47.4	44.6	52.7	7.6	100.0	1.2
Madagascar	2.5	1.5	6.2	0.0	8.5	46.6	53.8	20.2	99.8	1.3
Malawi	80.7	81.8	74.5	98.5	75.6	14.5	16.2	5.1	1.5	2.0
Mali	62.1	61.9	62.5	77.1	52.7	20.9	27.7	1.8	22.8	1.0
Mauritania	44.3	28.3	65.8	0.0	75.3	49.3	70.4	21.1	99.9	0.4
Mozambique	48.0	37.9	67.9	0.0	73.0	46.7	61.3	18.0	100.0	3.0
Namibia	7.5	9.0	4.5	0.1	0.3	56.6	79.1	11.2	99.3	0.0
Niger	6.9	3.6	21.2	0.0	24.4	79.5	93.8	18.2	99.9	13.5
Nigeria	59.4	60.1	58.1	75.2	23.6	24.5	32.5	8.8	24.7	15.5
Rwanda	66.1	70.4	42.5	100.0	25.2	3.3	3.4	2.6	0.0	2.5
Senegal	31.3	38.4	22.0	56.4	12.8	22.0	36.1	3.7	35.4	1.2
South Africa	34.1	63.9	9.2	47.6	0.0	12.8	26.1	1.6	50.1	0.0
Tanzania	79.2	80.5	75.2	87.3	68.5	14.3	18.0	2.4	12.5	1.6
Togo	14.9	6.0	35.3	2.2	48.6	64.1	79.1	29.7	94.8	2.5
Uganda	80.2	80.6	77.9	86.5	81.1	14.8	16.6	2.3	13.3	1.8
Zambia	53.1	56.7	46.7	14.5	21.3	27.0	39.9	3.8	85.5	0.1
Zimbabwe	14.9	20.8	2.3	12.0	0.3	28.4	41.6	0.3	81.5	0.0
Congo, Dem. Rep.	76.1	81.8	66.3	81.8	51.2	12.2	17.4	3.3	17.7	1.5
Sudan	48.9	41.5	59.5	19.3	65.7	42.7	55.9	23.6	78.4	2.1
<b>By income group</b>										
Low income	51.8	51.0	54.2	49.3	44.1	32.6	41.7	9.3	50.0	7.0
Middle income	41.4	63.1	21.4	56.6	6.6	13.1	25.7	1.9	41.8	0.2
<b>By urbanization</b>										
Low	49.2	48.0	57.1	44.9	55.4	38.5	44.7	8.1	55.0	6.8
Medium	53.6	52.7	55.9	34.0	51.6	31.4	41.6	12.5	64.4	1.9
High	50.4	57.4	42.1	65.7	17.1	21.9	32.9	6.1	33.4	8.6
<b>By subregion</b>										
East	56.5	54.6	65.5	47.1	63.7	35.3	41.2	10.8	52.5	6.9
West	47.7	45.8	50.2	55.4	25.7	32.6	45.6	9.0	43.9	10.1
South	36.0	43.6	22.9	30.2	23.7	27.6	40.2	6.2	68.3	0.9
Central	65.5	69.9	58.8	70.1	46.3	18.1	26.5	3.8	28.9	2.0
<b>Overall</b>	50.7	51.8	48.7	50.0	40.3	30.6	40.6	8.0	49.2	6.3

Source: AICD DHS/MICS Database 2007

Part III State of institutions

Table 3.1 State of institutions: Wastewater management index

Table 3.2 State of institutions: On-site sanitation index

Table 3.3 State of institutions: Septic tank provision index

Table 3.4 State of institutions: Environmental preservation index

Table 3.5 State of institutions: Description of all sanitation indexes

Note:

—= not available

n.a.= not applicable

TABLE 3.1: WASTEWATER MANAGEMENT INDEX

	Separation of business lines	Cost recovery requirement for wastewater	Opex cost recovery for wastewater	Capex cost recovery for wastewater	Wastewater management index
<b>By country</b>					
Benin	0				0%
Burkina Faso	0	1	1	1	75%
Cape Verde	0	0		1	33%
Chad	0	0			0%
Cote d'Ivoire	1				100%
DRC	1	0			50%
Ethiopia	0	1	1	1	75%
Ghana	1	1	1	1	100%
Kenya	0	1	1	1	75%
Lesotho	0	1	1	1	75%
Madagascar	1	1	1	0	75%
Malawi	1	0			50%
Mozambique	1	0			50%
Namibia	0	1	1	1	75%
Niger	1	0			50%
Nigeria	1	0	1	0	50%
Rwanda	1	0			50%
Senegal	1	1			100%
South Africa	0	0			0%
Sudan	1	1	1	0	75%
Tanzania	1	1	1	1	100%
Uganda	0	1	1	1	75%
Zambia	0	1	1	1	75%

Source: AICD WSS Survey Database 2007

## THE STATE OF SANITATION IN SUB-SAHARAN AFRICA: CROSS-COUNTRY ANNEX

TABLE 3.2: ON-SITE SANITATION INDEX

	Existence of an accepted definition of sanitation	Existence of sanitation policy	Existence of hygiene promotion	Utility involvement in	Households responsible for	Government/private	Government/private utility	Government responsible for	Specific fund for on-site	Existence of cost recovery	Existence of opex cost	On-site sanitation index
<b>By country</b>												
Benin	1	0	1	1	0	1	0	1	0	0		50%
Burkina Faso	1	1	1	1	0	1	0	1	1	1	1	82%
Cape Verde	1	1	1	1	0	1	1	1	0	1		80%
Chad	1	1	1		0							75%
Cote d'Ivoire	1	1	1	0	0	0	1		1	1	1	70%
DRC	1	0	0	0	0	1	0	1	1	0		40%
Ethiopia	1	0	1	1	0	0	1	1	1	0		60%
Ghana	1	1		0	0	0	0	1	0			38%
Kenya	1	1	1	1	0	1	1	0	1	1	0	73%
Lesotho	0	1	1	0	1	1	1	0	0	0	1	55%
Madagascar	1	1	1	1	0	1	1	1	1	1	1	91%
Malawi	1	0	1	0	0	1	0	1	0	1	0	45%
Mozambique	1	1	1	0	1	1	0	1	0	0		60%
Namibia	1	1	1	1	0	1	1	1	0			78%
Niger	1	0	0	1	0	1	0	1	0	0		40%
Nigeria	1	0	0	0	1	1	0	1	0			44%
Rwanda	1	1	1	0	0	1	1	1	0	0		60%
Senegal	1	1	1	1	0	1	0	1	0	0		60%
South Africa	1	1	1	1	0	1	1	1	1	1	0	82%
Sudan	1	0	1	1	0	1	1	1	0	0		60%
Tanzania	1	1	1	1	0	1	1	1	1	0		80%
Uganda	1	1	1	1	0	1	1	1	0	0		70%
Zambia	0	0	0	0	0	1	1	1	0	0		30%

Source: AICD WSS Survey Database 2007

TABLE 3.3: SEPTIC TANK PROVISION INDEX

	Level of Competition in Septic tank provision	Partial regulation of septic tank emptying services	Full regulation of septic tank emptying services	Septic tank provision index
<b>By country</b>				
Benin	1	0		50%
Burkina Faso	1	0		50%
Cape Verde	1	0		50%
Chad				
Cote d'Ivoire	1	0		50%
DRC	1	0		50%
Ethiopia	1	0		50%
Ghana				
Kenya	0	1	0	33%
Lesotho	0	1	1	67%
Madagascar	0	1	0	33%
Malawi	0	1	0	33%
Mozambique	0	0		0%
Namibia				
Niger	1	0		50%
Nigeria	1	0	0	33%
Rwanda	1	0		50%
Senegal	1	1	1	100%
South Africa	0	1	0	33%
Sudan	1	1	0	67%
Tanzania		0		0%
Uganda	1	1	0	67%
Zambia	1	0		50%

Source: AICD WSS Survey Database 2007

## THE STATE OF SANITATION IN SUB-SAHARAN AFRICA: CROSS-COUNTRY ANNEX

TABLE 3.4: ENVIRONMENTAL PRESERVATION INDEX

	Significant contamination of ground water from latrines	Specified dump site for sanitary disposal of sludge from on-site sanitation	Partial regulation or oversight of the dump site	Full regulation or oversight of the dump site	Storm water drainage regulation (construction)	Storm water drainage regulation (maintenance)	Storm water drainage system in the urban areas	Flooding and/or erosion	Environmental preservation index
<b>By country</b>									
Benin	0	1	1	1	0	1	0	0	50%
Burkina Faso	1	0	0		0	0	0	1	29%
Cape Verde	1	0			0	0	0	0	17%
Chad									
Cote d'Ivoire	1	1	1	0	0	0	0	1	50%
DRC	0	0			0	0	0	1	17%
Ethiopia	0	1	1	1	1	1	0	1	75%
Ghana									
Kenya	1	1	1	1	0	1	0	1	75%
Lesotho	1	1	1	0	1	1	0	0	63%
Madagascar	0	0			0	1	0	1	33%
Malawi	0	1	1	0	1	1	0	0	50%
Mozambique	0	0			0	1	0	0	17%
Namibia	0				1	1		0	50%
Niger	0	0	0		0	0	1	1	29%
Nigeria	1	0	0		0	0	0	1	29%
Rwanda	0	0	0		1	1	0	0	29%
Senegal	0	1	1	0	0	0	0	1	38%
South Africa	1	1	1	1	0	1	1	1	88%
Sudan	0	1	1	1	0	1	0	1	63%
Tanzania	0	1	1	1	1	1	0	0	63%
Uganda	0	1	1	1	0	0	0	0	38%
Zambia	0	1	1	1	1	3	0	1	100%

Source: AICD WSS Survey Database 2007

THE STATE OF SANITATION IN SUB-SAHARAN AFRICA: CROSS-COUNTRY ANNEX

TABLE 3.5: DESCRIPTION OF ALL SANITATION INDEXES

Sub-index	Indicator	Definition
Wastewater management	Separation of business lines	0= No separation of water and wastewater services from provision in urban area; 1= Separation of water and wastewater provisions in urban areas;
	Cost recovery requirement for wastewater	0=No requirement for cost recovery; 1=Requirement for cost recovery;
	Opex cost recovery for wastewater	0=No opex recovery; 1=Opex recovery;
	Capex cost recovery for wastewater	0=Only opex recovery or no recovery; 1=Some capex recovery;
On-site sanitation	Existence of an accepted definition of sanitation	0=No accepted definition of sanitation; 1=Existence of an accepted definition of sanitation
	Existence of sanitation policy	0=No policy/strategy; 1=Existence of policy/strategy
	Existence of hygiene promotion program	0=No hygiene promotion program by the Government; 1=Existence of hygiene promotion program by the Government;
	Utility involvement in on-site sanitation	0=Utilities do not play a role n on-site sanitation; 1=Utilities play a role in on-site sanitation
	Households responsible for investment finance	0=Otherwise; 1=Households responsible for financing sanitation investments;
	Government/private sector/utility/NGO/CBO responsible for technical assistance	0=Otherwise; 1=Either municipal government/private sector/water utility,NGO/CBO responsible for technical assistance;
	Government/private sector/utility responsible for desludging	0=Otherwise; 1=Either municipal government/private sector/water utility responsible for desludging;
	Government responsible for regulation	0=Otherwise; 1=Either central/local/municipal government responsible for regulation;
	Specific fund for on-site sanitation	0=No specific fund for on-site sanitation; 1=Existence of a specific fund for on-site sanitation
	Existence of cost recovery requirement for on-site sanitation	0=No requirement for cost recovery; 1=Requirement for cost recovery;
Existence of opex cost recovery for on-site sanitation	0=No opex recovery; 1=Opex recovery;	
Septic tank provision	Level of competition in septic tank provision	0=Monopoly or concentrated market structure; 1=Competitive market structure;
	Partial regulation of septic tank emptying services	0=No regulation; 1=Existence of regulation
	Full regulation of septic tank emptying services	0=Otherwise; 1=Regulation at the government level;
Environmental preservation	Significant contamination of ground water from latrines	0=Contamination of ground water from latrines is a problem; 1=Contamination of ground water from latrines is not a problem;
	Specified dump site for sanitary disposal of sludge from on-site sanitation	0=No specified dump site for sanitary disposal of sludge from on-site sanitation; 1=Specified dump site for sanitary disposal of sludge from on-site sanitation;
	Partial regulation or oversight of the dump site	0=No regulation or oversight of the dump site; 1=Regulation of the dump site;
	Full regulation or oversight of the dump site	0=Otherwise; 1=Regulation at the municipal level;
	Storm water drainage regulation (construction)	0=Otherwise; 1=Regulation at the municipal level;
	Storm water drainage regulation (maintenance)	0=Otherwise; 1=Regulation at the municipal level;
	Storm water drainage system in the urban areas	0=No existence or partial presence of storm water drainage system in the urban areas; 1=Extensive prevalence of storm water drainage system in the urban areas;
Flooding and/or erosion	0=Significant problem in flooding and/or erosion; 1=No significant problem in flooding and/or erosion;	

Source: AICD WSS Survey Database 2007

Part IV State of utilities

Table 4.1 State of utilities: Access, technical and financial performance

Table 4.2 State of utilities: Access, technical and financial performance by categories

Note:

—= not available

n.a.= not applicable

## THE STATE OF SANITATION IN SUB-SAHARAN AFRICA: CROSS-COUNTRY ANNEX

TABLE 4.1: STATE OF UTILITIES: ACCESS, TECHNICAL AND FINANCIAL PERFORMANCE

Country	Utility	Population in the service area that have wastewater connection	Share of households with water connection that have wastewater connection	Kms of wastewater collection per 1000 population	Kms of wastewater collection per 1000 wastewater connections	Wastewater collected as a share of water consumed	Total wastewater collected in service area subject to any level of treatment	Wastewater pipe bursts per km of wastewater network	Average revenue per estimated cubic meter of wastewater collected	Average revenue per wastewater connection per month
		Unit	%	%	km/1000 cap	km/1000 conn	%	%	#/km	USD/m3
Benin	SONEB	—	—	—	—	—	—	—	—	—
Burkina Faso	ONEA	0.0	0.1	0.0	444.4	0.1	2.1	0.0	0.5	1076
Cameroon	SNEC	—	—	—	—	—	—	—	—	—
Cape Verde	ELECTRA	—	—	—	—	—	18.4	—	—	—
Chad	STEE	—	—	—	—	—	—	—	—	—
Cote d'Ivoire	SODECI	15.9	47.7	0.2	7.1	52.0	19.5	—	0.0	2
DRC	REGIDESO	—	—	—	—	—	—	—	—	—
Ethiopia	ADAMA	—	—	—	—	—	—	—	—	—
Ethiopia	AWSA	—	1.1	0.1	57.9	1.1	—	0.5	0.0	1
Ethiopia	DIRE DAWA	—	—	—	—	—	—	—	—	—
Ghana	GWC	—	—	—	—	—	—	—	—	—
Kenya	KIWASCO	10.8	77.1	0.0	2.8	94.0	177.4	6.3	0.0	11
Kenya	MWSC	—	—	—	—	—	—	—	—	—
Kenya	NWASCO	—	—	0.1	—	—	—	—	—	—
Lesotho	WASA	2.8	6.5	0.1	25.9	7.3	0.0	—	0.0	49
Madagascar	JIRAMA	4.7	33.1	0.1	10.6	34.7	—	1.1	—	—
Malawi	BWB	—	—	—	—	—	—	—	—	—
Malawi	CRWB	—	—	—	—	—	—	—	—	—
Malawi	LWB	—	—	—	—	—	—	—	—	—
Mozambique	AdeM Beira	—	—	—	—	—	—	—	—	—
Mozambique	AdeM Maputo	—	—	—	—	—	—	—	—	—
Mozambique	AdeM Nampula	—	—	—	—	—	—	—	—	—
Mozambique	AdeM Pemba	—	—	—	—	—	—	—	—	—
Mozambique	AdeM Quilimane	—	—	—	—	—	—	—	—	—
Namibia	Oshakati Municipality	50.7	91.2	—	—	90.5	70.7	—	0.0	7
Namibia	Walvis Bay Municipality	111.1	100.0	3.3	16.2	100.0	57.9	15.4	0.0	13
Namibia	Windhoek Municipality	76.1	100.0	3.3	22.0	99.2	97.8	—	0.0	11
Niger	SPEN/SEEN	—	—	—	—	—	—	—	—	—
Nigeria	Borno	—	—	—	—	—	—	—	—	—

THE STATE OF SANITATION IN SUB-SAHARAN AFRICA: CROSS-COUNTRY ANNEX

Nigeria	FCT	—	—	—	—	—	—	—	—	—
Nigeria	Kaduna	—	—	—	—	—	—	—	—	—
Nigeria	Katsina	—	—	—	—	—	—	—	—	—
Nigeria	Lagos	—	—	—	—	—	—	—	—	—
Nigeria	Plateau	—	—	—	—	—	—	—	—	—
Rwanda	ELECTROGAZ	—	—	—	—	—	—	—	—	—
Senegal	ONAS	109.3	—	0.3	2.7	—	—	0.4	—	—
Senegal	SDE	—	—	—	—	—	—	—	—	—
South Africa	Cape town metro	101.0	97.7	—	—	98.6	119.8	—	0.0	8
South Africa	Drakenstein Municipality	93.8	97.2	2.6	11.4	96.7	91.5	4.6	0.0	7
South Africa	eThekweni Metro (Durban)	64.9	64.3	2.6	18.7	64.2	110.0	—	0.0	2
South Africa	Joburg	93.0	94.0	—	—	94.8	—	—	—	—
Sudan	Khartoum Water Corporation	0.6	1.8	0.1	84.6	2.1	15.8	—	0.0	113
Sudan	South Darfur Water Corporation	—	—	—	—	—	—	—	—	—
Sudan	Upper Nile Water Corporation	—	—	—	—	—	—	—	—	—
Tanzania	DAWASCO	—	15.7	—	—	15.8	—	—	—	—
Tanzania	DUWS	100.0	19.7	0.2	1.1	107.2	42.0	—	0.0	0
Tanzania	MWSA	2.6	10.0	0.1	13.9	10.8	9.7	—	0.0	5
Uganda	NWSC	4.0	13.2	0.1	14.4	12.0	—	—	0.0	32
Zambia	LWSC	10.3	41.2	0.3	23.8	40.6	106.1	3.0	0.0	8
Zambia	NWSC	59.8	87.6	1.6	23.9	88.6	—	—	—	—
Zambia	SWSC	27.9	47.4	0.5	13.2	42.6	—	—	—	—

Source: AICD WSS Survey Database 2007

## THE STATE OF SANITATION IN SUB-SAHARAN AFRICA: CROSS-COUNTRY ANNEX

TABLE 4.2: STATE OF UTILITIES: ACCESS, TECHNICAL AND FINANCIAL PERFORMANCE BY CATEGORIES

	Population in the service area that have wastewater connection	Share of households with water connection that have a wastewater connection	Kms of wastewater collection per 1000 population	Kms of wastewater collection per 1000 wastewater connections	Wastewater collected as a share of water consumed	Total wastewater collected in service area subject to any level of treatment	Wastewater pipe bursts per km of wastewater network	Average revenue per estimated cubic meter of wastewater collected	Average revenue per wastewater connection per month
unit	%	%	km/1000 cap	km/1000 conn	%	%	#/km	USD/m3	USD/conn/month
<b>By income group</b>									
Low income	14.1	25.7	0.2	57.8	29.3	22.7	0.8	0.0	106
Low income Aid dependent	87.1	86.8	2.5	18.8	87.4	109.9	6.5	0.0	7
Low income Resource Dependent	—	—	—	—	—	18.4	—	—	—
Middle income	17.7	30.5	0.2	51.9	34.7	25.3	0.8	0.0	104
Middle income without Lesotho, Namibia, South Africa	0.6	1.8	0.1	84.6	2.1	15.8	—	0.0	113
<b>By urbanization</b>	87.1	86.8	2.5	18.8	87.4	100.0	6.5	0.0	7
Low urbanization									
Medium urbanization	12.1	12.2	0.1	90.9	16.9	16.8	0.6	0.1	204
High urbanization	21.0	31.9	0.7	59.1	31.9	37.5	5.2	0.0	85
<b>By subregion</b>	76.9	81.3	1.6	13.7	82.5	90.4	4.6	0.0	5
East									
West	10.4	7.1	0.1	56.2	11.6	21.9	0.7	0.0	52
South	13.4	40.0	0.2	77.4	43.7	16.7	0.0	0.1	175
South without Lesotho, Namibia, South Africa	81.5	83.7	2.1	18.3	84.3	100.0	2.8	0.0	7
Central	22.3	50.2	0.6	16.7	50.7	100.0	1.6	0.0	8
<b>By water availability</b>	—	—	—	—	—	—	—	—	—
Scarce									
Abundant	76.5	68.3	1.2	66.1	69.9	90.8	1.0	0.0	65
<b>By utility size</b>	19.8	47.1	0.5	11.4	49.6	32.4	2.4	0.0	8
Small									
Large	53.8	61.1	1.3	17.5	71.5	64.4	5.0	0.0	13
<b>Overall</b>	64.4	64.1	0.9	48.8	65.1	78.9	0.5	0.0	54

Source: AICD WSS Survey Database 2007