

KENYA



COUNTRY INTRODUCTION

- Kenya has a total population of 47.4 million people, 76% of which lives in rural areas. Kenya is experiencing a rapid growth in urbanisation.
- The UN classifies Kenya as a water-poor country. Water is a very limited resource in Kenya – it is one of the most water scarce countries in the world, with a steadily declining per capita fresh water availability.
- As a semi-arid, water-scarce country, Kenya faces particular challenges in terms of management and protection of the country's water resources.

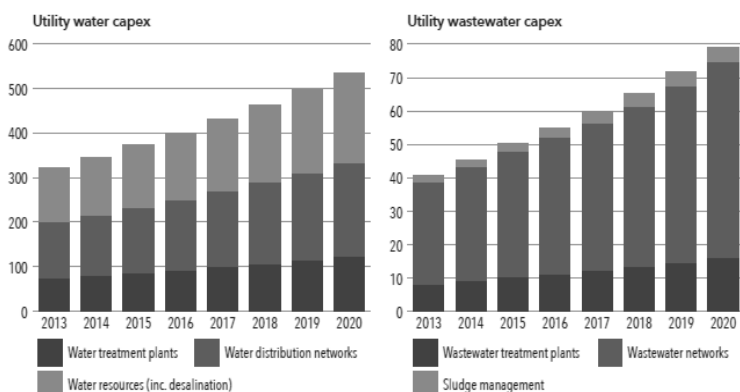
WATER GOVERNANCE

- The Kenyan government has announced The Water Act of 2016, which is due to result in changes in the governance structure in the near future. As of now, the structure is as follows:
- The Ministry of Water and Irrigation (MWI) has the overall responsibility for the development of legislation, policy formulation, sector coordination and guidance, monitoring and evaluation of the water sector.
- The Water Resources Management Authority (WRMA) is responsible for planning, allocation, apportionment, assessment and monitoring of water resources, as well as issuance of water permits.
- The Water Resource Users Association (WRUAs) assists in water monitoring and information gathering.
- The Water Services Regulatory Board (WSRB) regulates and monitors the Water Services Boards, sets standards for provision of water services and develops guidelines for water tariffs.
- Water Services Boards (WSBs) are responsible for efficient and economical provision of water services, developing water facilities, applying regulations on water services and tariffs, and procuring and leasing water and sewerage facilities. Local water boards are constituted per region/sector as Boards. These are: National Water Conservation & Pipeline Corporation, Kenya Water Institute, Athi Water Services Board, Rift Valley Water Services Board & Tana Water Services Board.
- The Water Services Providers are in charge of the provision of water and sanitation services.
- The Catchment Area Advisory (CAACs) advises the WRMA on water resource issues at catchment level.

COMPETITION

- The water sector in Kenya is particularly vulnerable to poor governance as well as corruption. The monopolistic nature of service delivery prevents competition and, when coupled with the failure to recover costs and the need for subsidies, may lead to inefficient resource allocation
- Water utilities are autonomous, registered and regulated shareholder companies, owned by the municipalities.
- The Government sees Public-Private Partnerships (PPPs) as a tool in transitioning the Kenyan water sector.

MARKET FORECAST (million \$)



Sources: GWI Global Water Market 2017 (Global Water Intelligence, 2016), GIZ (2012), Kenya Water Governance, Danish Ministry of Foreign Affairs

Edited: August 2017

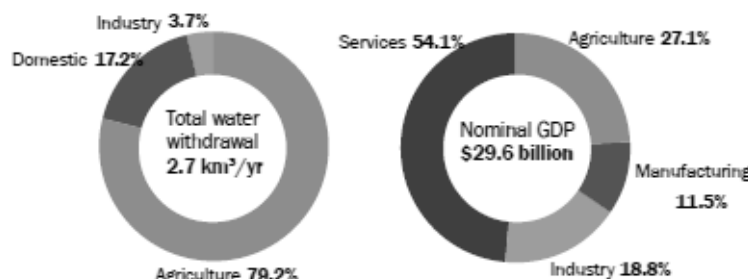
MACRO DATA

Urban Population	11.6	Million
Rural Population	35.8	Million
Total Population	47.4	Million
National GDP (2015)	63 398	Million USD
National GDP per capita (2015)	1 376	USD
National GDP Growth (2015)	5.7	%
Growth Rate (2015 - 2025)	187	%
FDI Stock as % of GDP (2015)	9.6	%
Danish Investment Stock (2014)	0.10	Billion DKK
Danish Export (2015)	201	Million DKK
Danish Water Technology (DWT) Export (2015)	17	Million DKK
DWT Export in % of total Danish Export	8.58	%
Import as % of GDP (2015)	29	%

BUSINESS ENVIRONMENT

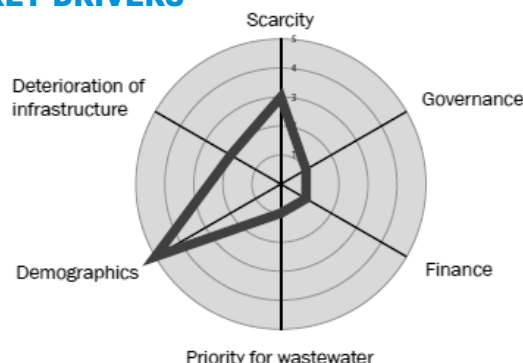
Global Competitiveness Rank	2016-2017 Index	96 / 138
Government Effectiveness Rank	2014 Index	89 / 158
Corruption Rank	2015 index	139 / 168
Ease of Doing Business Rank (World Bank)	2015 Index	108 / 189

SECTORAL GDP AND WATER WITHDRAWAL



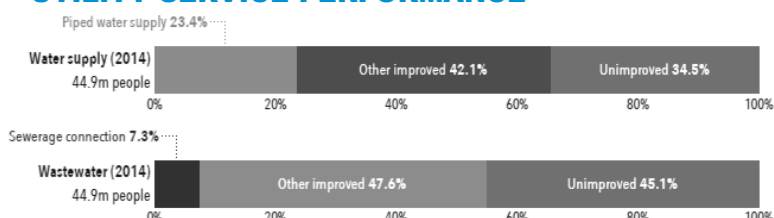
Source: GWI Global Water Market 2011 (Global Water Intelligence, 2010)

MARKET DRIVERS



Source: GWI Global Water Market 2011 (Global Water Intelligence, 2010)

UTILITY SERVICE PERFORMANCE



Source: GWI Global Water Market 2017 (Global Water Intelligence, 2016)

WATER MARKET BY SECTOR (Million \$)	2013	2014	2015	2016	2017	2018	2019	2020
Utility water capital expenditure	322	346	372	400	430	463	498	535
Water networks	127	137	147	158	170	182	196	211
Water treatment plants	71	77	83	90	97	104	112	121
Water resources (excl. desalination)	123	133	142	153	164	176	189	203
Seawater and brackish water desalination	0	0	0	0	0	0	0	0
Utility wastewater capital expenditure	41	45	50	55	60	65	72	79
Wastewater networks	31	34	38	41	44	48	53	58
Wastewater treatment plants	8	9	10	11	12	13	14	16
Sludge management	2	2	3	3	4	4	4	5
Utility capital expenditure	363	391	423	455	490	528	569	614
Industrial capital expenditure	5	5	5	6	6	7	7	8
Total capital expenditure	367	396	428	461	496	534	576	622

Source: GWI Global Water Market 2017 (Global Water Intelligence, 2016)

1. DRINKING / PROCESSWATER

- Kenya's water supply mainly consists of surface water. App. 90% comes from surface water and the remaining 10% comes from groundwater.
- Kenya's annual water supply is about 650 cubic metres per capita – well below the global benchmark of 1 000 cubic metres.
- The agricultural sector is the biggest water user in Kenya, accounting for 59.3% of water withdrawal followed by the municipal sector which accounts for 36.9% and lastly the industrial sector with 3.9%.
- In 2014, only 23.4% of the Kenyan population were connected to the water network.
- The Kenyan Government has set a target to reach 80% water coverage by 2020 and attain the remaining 20% by 2030
- Non-revenue water was as much as 42% in 2014, but has seen a decrease in recent years from 83% in 2011.

2. WASTEWATER

- In 2014, domestic sewerage coverage was as low as 7.3%.
- In 2014, 6.5% wastewater was collected. There is no data on how much of the collected wastewater was treated.
- Pollution is a major issue in Kenya and key rivers run black with both biological and chemical pollutants that are many times greater than permitted levels. About 80% of all illnesses in Kenya are directly connected to poor water supply and sanitation.

3. CLIMATE ADAPTATION

- There are increasing variation in Kenya's climate, which sees irregular rainfall patterns, prolonged droughts and increased flooding intensity.
- Due to increasing population pressure, Kenya has reduced fresh water availability.
- To assess and evaluate availability, reliability, quality, and vulnerability of Kenya's water resources taking climate change into consideration, Kenya has developed a National Water Master Plan 2030.
- Climate change adaptation will necessarily imply upgrading infrastructure and building new facilities to increase water availability.
- Kenya has high vulnerability to climate change, and low readiness to adapt to the impending changes.
- The Government has put a National Climate Change Response Strategy in place, detailing with the needed increases in annual waster sector budgets to cope with the current and expected climate changes; totalling USD 2.2 billion, which is currently looking to be funded.

Sources: GIZ (2012), WRMA (2015)

WATER UTILITY DATA

No. of people connected to water network	10,496,105	2014
% of people connected to water network	23.4	2014
No. of water connections	1,583,560	2014
Utility water supply capacity (m ³ /yr)	425,772,000	2014
Length of water network (km)	-	-
Meter coverage (%)	89.0	2014
Non-revenue water	42.0	2014
No. of WTPs	-	-
Design capacity of WTPs (m ³ /d)	-	-
Operational capacity of WTPs (m ³ /d)	-	-

Source: GWI Global Water Market 2017 (Global Water Intelligence, 2016)

WASTEWATER UTILITY DATA

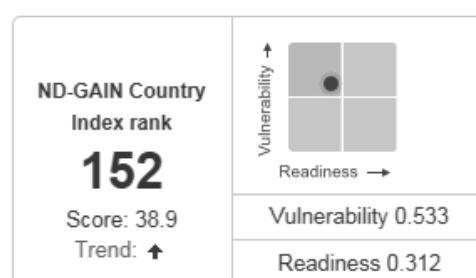
No. of people connected to sewerage network	3,267,246	2014
% of people connected to sewerage network	7.3	2014
No. of wastewater connections	472,000	2014
Volume of wastewater produced (m ³ /yr)	375,000,000	2014
Wastewater collected (%)	6.5	2014
Wastewater treated to secondary level (%)	-	-
Wastewater treated to tertiary level (%)	-	-
Length of wastewater network (km)	-	-
No. of WWTPs	-	-
Design capacity of WWTPs (m ³ /d)	-	-
Operational capacity of WWTPs (m ³ /d)	-	-

Source: GWI Global Water Market 2017 (Global Water Intelligence, 2016)

CLIMATE ADAPTATION

Global ND-GAIN index, Combined	Rank	152 / 181
Global ND-GAIN index, Vulnerability	Rank	145 / 181
Global ND-GAIN index, Readiness	Rank	161 / 181
Yearly rainfall (NRI)	mm/year	902

GLOBAL CLIMATE ADAPTATION INDEX



Source: Notre Dame Global Adaptation Index (2017)

WATER MARKET BY SECTOR (Million \$)	2013	2014	2015	2016	2017	2018	2019	2020
Pipes	45	48	52	56	60	64	69	75
Pumps	22	24	25	27	29	31	34	36
Valves	10	10	11	12	13	14	15	16
Screens	3	4	4	4	5	5	5	6
Agitation/Mixing/Settling	4	5	5	5	6	6	7	7
Aeration	0	1	1	1	1	1	1	1
Gas flotation	3	3	3	3	3	4	4	4
Oil-water separation	3	3	3	3	4	4	4	4
Non-membrane filtration	4	5	5	5	6	6	6	7
Low pressure membranes (MF/UF)	0	0	0	0	0	0	0	0
High pressure membranes (RO/NF)	0	0	0	0	0	0	0	0
Thermal desalination equipment	0	0	0	0	0	0	0	0
Ion exchange	0	0	0	0	0	0	0	0
ED/EDI	0	0	0	0	0	0	0	0
Activated carbon	0	0	0	0	0	0	0	0
Disinfection	5	6	6	6	7	7	8	9
Chemical feed systems	3	3	3	3	3	4	4	4
Sludge thickening/dewatering	1	1	1	1	1	1	1	1
Sludge drying/thermal processes	0	0	0	0	0	1	1	1
Anaerobic digestion	0	0	0	0	0	0	0	0
Other sludge stabilisation	0	0	0	0	0	0	0	0
Meters	7	7	8	8	9	10	10	11
Sensors	5	5	5	6	6	7	7	8
Testing/Analysis	4	4	4	5	5	5	6	6
Automation/control	15	17	19	21	23	26	29	32
Other equipment	25	27	30	32	34	37	40	43
Total equipment	161	173	187	202	217	234	252	272
Design and engineering	26	28	30	33	35	38	41	44
Civil engineering/fabrication	184	198	213	228	245	263	283	305
Regulatory & professional costs	11	12	13	14	15	16	18	19
Total expenditure	382	411	443	477	513	551	594	640

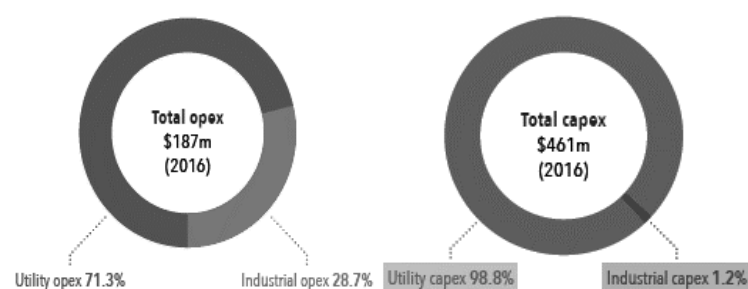
Source: GWI Global Water Market 2017 (Global Water Intelligence, 2016)

WATER FINANCE

- WSRB sets the guidelines for water tariffs which are then applied by the WSBs.
- The Water Services Trust Fund (WSTF) finances provision of water and sanitation for the most disadvantaged, as well as financing Water Resources investment in WRUAs. There is currently low funding for Water Resources Management.
- The National Water Conservation and Pipeline Corporation, WSBs and the WSTF undertake fund allocation and investment planning.
- The water sector is reliant on state funding for recurrent cost reduction.

Sources: GIZ (2012), The Danish Ministry of Foreign Affairs

OPEX AND CAPEX (2016)



Source: GWI Global Water Market 2017 (Global Water Intelligence, 2016)

OPERATING EXPENDITURE (Million \$)	2013	2014	2015	2016	2017	2018	2019	2020
By sector								
Utility water	108	112	116	121	125	130	135	140
Utility wastewater	11	11	12	13	14	15	16	17
Industrial	48	50	52	54	56	58	60	62
By segment								
Labour (in-house services)	54	56	58	60	63	65	68	70
Energy	24	24	25	26	28	29	30	31
Parts & consumables	14	15	15	16	17	17	18	18
Chemicals	14	15	15	16	17	17	18	19
Third party services	17	18	19	20	21	22	23	24
Oil & gas water services	0	0	0	0	0	0	0	0
Other	43	45	47	48	50	53	55	57
Total operating expenditure	167	173	180	187	195	203	211	219

Source: GWI Global Water Market 2017 (Global Water Intelligence, 2016)

MARKET ASSESSMENT

OVERALL MARKET ASSESSMENT

- The Kenyan water sector is small, but increasing steadily, and is expected to grow at a faster rate in the coming years.
- There are ambitious plans and goals in place. However, funding and lack of recurring revenue for water services are limiting factors.
- The governance of the water sector is poor, and there are currently efforts in place to design and implement a better governance structure, as well as introducing public-private partnerships and increased competition.

DRINKING / PROCESS WATER

- There is an ambitious target in place to establish 80% drinking water coverage by 2020, which is unrealistic given that the coverage was only 23% in 2014.
- The level of non-revenue water is decreasing, but still very high, and there will be an increasing focus on lowering it in the coming years.
- Meter coverage is relatively high, and is expected to contribute to the falling non-revenue water level.

WASTEWATER

- Wastewater coverage is extremely low (7.3% in 2014), and there are ambitious plans to increase this level in the coming years. However, these plans are currently not funded.
- There is an opportunity for establishing low-cost decentralised water treatment solutions, but this will need support from legislators and regulators to be developed.

CLIMATE ADAPTATION

- Climate impact is a major concern in Kenya, and has been taken seriously. There are detailed plans in place to increase readiness and adapt to the changing climate. However, the funding is missing, as well as a clear revenue model to fund the investments.

DANISH COMPETITIVENESS

OVERALL MARKET ASSESSMENT

- Overall planning of infrastructure is needed, both for drinking water and for wastewater treatment.
- It is uncertain if financing of infrastructure is available.
- Urbanisation can be foreseen in the coming years and a growing middleclass will require clean water and living environment, which necessitates planning of compounds and areas.
- Kenya will need small town scale projects and technologies.
- Kenya is chosen to be a DANIDA- support program country.
- The Danish Ministry of Foreign Affairs has posted two growth advisors in Kenya. The advisor will cultivate relationships with relevant Kenyan authorities and players, with the purpose of identifying areas where Kenyan authorities want to enter into long-term cooperation with the Danish authorities on the development and implementation of policies and legislation. Water is not the focus in this program, but the growth advisor can act as a "door opener".

DRINKING / PROCESS WATER

- Effective use of the scarce water resources is important, but pricing of the water may be difficult. Engineering a modern infrastructure must go hand in hand with a process including the population.
- Kenya may be ready to take the jump and install a brand new supply and metering system for drinking water, at least in the cities.

WASTEWATER

- Only a few percent of the Kenyan population is connected to sewer systems. Basic infrastructure is needed.
- Local treatment and upgrading for irrigation may be a future market area.

CLIMATE ADAPTATION

- Water stress in Kenya is large. Planning of sustainable water usage may be a future market.

COUNTRY RANK	MARKET ASSESSMENT (1-10 scale, 10 = best)	DANISH COMPETITIVENESS (1-10 scale, 10 = best)
KENYA	3	4
	The Kenyan water sector is small, but growing. The main focus in the coming years will be on increasing coverage both for drinking water and for wastewater treatment. Funding and water revenue remain the main obstacles to developing the water sector in Kenya.	Kenya's water market requires solutions in terms of basic infrastructure for both drinking water and wastewater, which Danish companies can help create plans for. The growth advisors placed in Kenya might help open doors, but funding and water revenue remains an issue for future investments.