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IMPLEMENTATION COMPLETION AND RESULTS REPORT

TF014251 and TF0A5607

ON TWO

SMALL GRANTS

IN THE AMOUNT OF USD 4.33 MILLION AND USD 2.60 MILLION

TO THE

REPUBLIC OF KENYA

FOR

Nairobi Sanitation OBA Project (P131512) AND Nairobi Sanitation OBA II Project
(P162248)

{January 29, 2019}

CURRENCY EQUIVALENTS

(Exchange Rate Effective June 29, 2018)

KES 101.15 = US\$ 1

SDR 0.71 = US\$ 1

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ABBREVIATIONS AND ACRONYMS

ADM	Accountability and Decision-Making Framework
BP	Bank Procedure
CAS	Country Assistance Strategy
CPS	Country Partnership Strategy
CPF	Country Partnership Framework
DIME	Development Impact Evaluation
EATTFP	East Africa Trade and Transport Facilitation Project
EIRR	Economic Internal Rate of Return
ESIA	Environmental and Social Impact Assessments
GoK	Government of Kenya
GPOBA	Global Partnership on Output-Based Aid
ICR	Implementation Completion and Results Report
IDA	International Development Association
IRR	Internal Rate of Return
ISR	Implementation Status and Results Report
IVA	Independent Verification Agent
KISIP	Kenya Informal Settlements Improvement Project
KES	Kenyan Shillings
MoWI	Ministry of Water and Irrigation
NCWSC	Nairobi City Water and Sewerage Company
OBA	Output-Based Aid
O&M	Operating and Maintenance
OVRs	Output Verification Reports
PDO	Project Development Objective
SVR	Sustainability Verification Report
US\$	United States Dollar
WaSSIP	Water & Sanitation Service Improvement Project
WASH	Water, Sanitation, and Hygiene
WB	World Bank
WSPs	Water Services Providers
WHO	World Health Organization

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P131512	Nairobi Sanitation Project
Country	Financing Instrument
Kenya	Investment Project Financing
Original EA Category	Revised EA Category

Organizations

Borrower	Implementing Agency
The National Treasury	Nairobi City Water and Sewerage Company

Project Development Objective (PDO)

Original PDO

The Development Objective is to provide sustainable access to sanitation and water services in selected low-income communities of Nairobi, by applying one-off OBA subsidies in order to make pro-poor sewerage and water connections financially viable.

PDO as stated in Legal Agreement (if different from Project Paper)

The objective of the Project is to increase access to sanitation and water services in selected low-income communities in the Target Areas of the Recipient's territory.

FINANCING

	Original Amount (US\$)	Revised Amount (US\$)	Actual Disbursed (US\$)
Donor Financing			
TF-14251	4,330,000	3,567,380	3,567,380
TF-A5607	2,600,000	1,345,345	1,345,345
Total	6,930,000	4,912,725	4,912,725
Total Project Cost	6,930,000	4,912,726	4,912,726

KEY DATES

Approval	Effectiveness	Original Closing	Actual Closing
17-Dec-2012	19-May-2014	30-Jun-2018	30-Jun-2018

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US\$M)	Key Revisions
02-Nov-2016	0.50	Change in Results Framework Change in Disbursements Arrangements
17-Apr-2017	1.00	Change in Results Framework Change in Loan Closing Date(s)
29-Dec-2017	2.49	Change in Loan Closing Date(s) Change in Disbursements Arrangements

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Moderately Satisfactory	Satisfactory	High

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US\$M)
01	08-Aug-2015	Moderately Satisfactory	Moderately Satisfactory	0.00



02	09-Feb-2017	Moderately Satisfactory	Moderately Satisfactory	1.00
03	14-Sep-2018	Moderately Satisfactory	Moderately Satisfactory	5.36

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Note: The original closing date of P131512 was June 30, 2017. This date is noted correctly in the World Bank Operations Portal; however, it is not reflected correctly in this auto-filled data sheet. Counterpart financing of US\$ 5.63 million has not been captured in the data sheet.



I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

Context

1. An estimated 53 percent of Kenya's urban population and 49 percent of rural households have access to water¹. Access to improved sanitation is lower, estimated at 30 percent² with sewerage coverage at 16 percent. The Kenya Vision 2030 national development plan seeks to make basic water and sanitation available to all by 2030. However, the annual cost of investment and rehabilitation needed in water supply far exceeds available public funding. A series of reforms underpinned by the Water Act of 2002 made it possible for water services providers (WSPs) to access market loans to help fill this financing gap. The key reforms included separating responsibilities for asset ownership and operation, creating autonomous utilities and an independent sector regulator, ring-fencing revenues within the sector, and establishing a framework for utilities to move toward cost-reflective tariffs. The Nairobi Sanitation OBA project capitalized on these reforms to extend low-cost sewerage sanitation and water services in densely populated low-income communities and informal settlements of Nairobi using a blended financing model.
2. The project built upon a 2004 IDA grant to the Nairobi City Water and Sewerage Company (NCWSC) that improved the company's commercial systems (P049618); a 2007 IDA Credit to Athi Water Services Board (AWSB) for the Water & Sanitation Service Improvement Project (WaSSIP – P096367), which financed the expansion of trunk water and sewerage networks, including in low income settlements; and the 2011 IDA-financed Kenya Informal Settlements Improvement Project (KISIP – P113542), which financed improved living conditions in informal settlements including through enhancing security of tenure and improving basic infrastructure. The project also supported the implementation of NCWSC's social connection policy, which was supported by the Water and Sanitation Program financed "Innovation in Scaling-up Access to WSS for the Urban Poor" (P132105) project.

Project Development Objectives (PDOs)

3. At approval the development objective of the project was to increase access to sanitation and water services in selected low-income communities in the Target Areas of the Recipient's territory³.
4. The rationale for the project was to test the application of output-based aid (OBA) to incentivize homeowners to invest in networked sewer connections, which traditionally lack financial sustainability. The Theory of Change (Figure 1) also aimed to provide more affordable sewerage (and associated sanitation hardware) and water supply connections to low income households by blending subsidies with commercial loan finance. This helped consumers to spread the cost of connection charges by spreading the household capital contribution over time. The project also enabled NCWSC enhance its long-term financial sustainability by supporting access to private finance.
5. NCWSC accessed a commercial loan from the market on its balance sheet to pre-finance the cost of the infrastructure and will recover the cost through a combination of the output subsidies paid by the project and a monthly surcharge to consumers for capital cost recovery up to five years. The loan, together with the cost reduction from the

¹ Kenya Water Services Regulatory Board (WASREB)

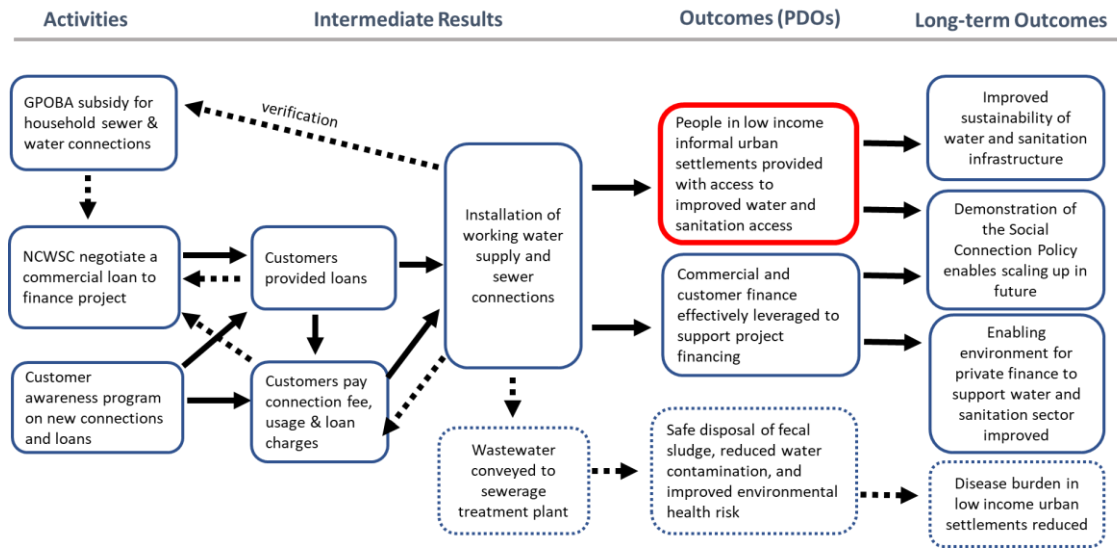
² World Bank Data (Improved Sanitation Facilities), World Bank, Washington, DC, <http://data.worldbank.org/indicator/SH.STA.ACSN>

³ i.e., Nairobi. As there is a minor discrepancy between the PDO in the original project paper and the legal agreement, the legal PDO is used here

OBA subsidy, made customers more able and willing to pay for the connection and monthly costs. The flow of funds from grant payments (after verification of proper installation and subsequent sustained usage and willingness to pay) and from payments for loans plus usage enables the utility to service the commercial loan.

Figure 1: Theory of Change (result chain)⁴

Schematic Overview of the Project’s Theory of Change (Results Chain)



Key Expected Outcomes and Outcome Indicators

6. The indicators set out in the original project design document were: number of sewerage and water connections, and number of people provided with access to sewerage and water services in the project areas. The project originally aimed to reach 80,000 people through the provision of 16,000 household water and sanitation connections. The project aimed to work across seven informal settlements located in Nairobi’s low-income areas.

Components

7. **Component 1: OBA subsidies for water and sanitation services (US\$ 4.08 million).** This component provided output-based subsidies to support the financing of household sanitation and water infrastructure, and connection of these to trunk sewers and mainline water supplies. The project targeted areas where mainline and trunk infrastructure had been put in place through the IDA-financed WaSSIP (P096367) and KISIP (P113542) projects. Households with an existing NCWSC water connection were offered sanitation infrastructure and a sewer connection. Households with an existing latrine but no water connection were offered a water connection along with a sewer connection (including reconfiguration of pit latrines). Households were not offered just a water connection, since its primary objective was to increase access to sanitation.

8. Under this component the project aimed to cover 70 percent of the cost of the sanitation infrastructure within the household compound (estimated at US\$ 175 per household), which included screed blinding for the slab, and the

⁴ The box outlined in bold red emphasizes the outcome directly associated with the PDO. The others are key outcomes associated with the project, but not explicitly stated in the PDO. The boxes outlined by dotted lines indicate results and outcomes associated with increased access to improved water and sanitation; however, these are not measured under the current project.

installation of a squatting WC pan, grey water storage pan a hand wash basin and uPVC pipe to link the facility to the nearest manhole. All the wastewater produced at the beneficiary households was conveyed by a main sewer line to the Kariobangi Sewerage Treatment Plant, which had been rehabilitated under WaSSIP. For water connections, this component provided a 40 percent subsidy to support the cost of a water connection (estimated at US\$ 80 per household), including installation of uPVC pipes to link the household to the water distribution system and installation of a meter to enable household to become a customer of NCWSC and be billed for water usage.

9. Under the original design of the project customers were required to pay an initial upfront connection charge of US\$ 9 (US\$ 5 for sewerage and US\$ 4 for water). To enable customers to afford the remaining cost of connection, minus the project subsidy, NCWSC planned to provide each customer a loan. At the time of the original design, it was envisaged that the loan would be over a 5-year period, and repaid through monthly installments of US\$ 3.10, at an interest rate of 19 percent per annum.

Table 1: User Contribution towards capex Cost (per connection)

	Project Subsidy (US\$)	Household Initial Connection Charge (US\$)	Household Loan (US\$)	Total Cost (US\$)
Sewerage connection	175	5	70	250
Water connection	80	4	116	200
Total	255	9	186	450

10. **Component 2: Output Verification and Monitoring (US\$ 250,000).** This component financed the verification of outputs by an Independent Verification Agent (IVA). The IVA verified a sample of completed connections and subsequently the sustainability of services, and recommended whether the subsidy payments should or should not be made to NCWSC. The OBA payments were originally structured so that NCWSC was eligible for 50 percent of the subsidy on verification of working connections. The remaining 50 percent was to be paid after verification of 6 months of sustained service delivery, as evidenced by billing records. This component also covered monitoring for compliance with policies of World Bank Group-financed projects, and provided resources for NCWSC to contract specialists to monitor project implementation.

11. **Technical Assistance:** The project also benefited from complementary Bank-financed technical assistance to support various activities such as community engagement, customer awareness building, support to NCWSC to access a commercial loan and support for commercial processes, and implementing social marketing and hygiene promotion activities. The focus group discussions with potential customers before the contractor entered the project areas helped to increase community ownership and engagement with the project, as well as identify and address any potential conflicts that might arise within the settlements.

Significant Change During Implementation

12. An assessment of the project during implementation revealed that in many of the settlements, a more complex technical solution was needed to address the sanitation problem than what had been estimated at appraisal. The project was restructured in October 2016 to account for the required changes to the technical design, including the addition of grey-water tanks for storage and demolition and rebuilding of pit latrines in urban areas, which resulted in additional costs. The target areas were also redefined in agreement with the utility on the basis of available trunk infrastructure and demand for services. The number of target settlements increased from 7 at appraisal to 12 at restructuring, and households in 2 areas where residents had been resettled under a Bank-financed transport project were also included to benefit from partial connection fee subsidies. The PDO did not change during the restructuring of the project;

however, a revised results framework was adopted, which included the Bank’s core indicators and additional intermediate indicators – see Table 6 below.

13. At appraisal, the project was to provide US\$ 4.33 million of Bank financing towards the total project cost of US\$ 7.45 million. At restructuring, the total revised cost was estimated at US\$ 12.55 million. The cost increases resulted in the need for an additional US\$ 2.6 million from the World Bank, which was provided through a separate small grant (Nairobi Sanitation OBA II Project - P162248). It was proposed that NCWSC and households would contribute an additional US\$ 2.5 million.

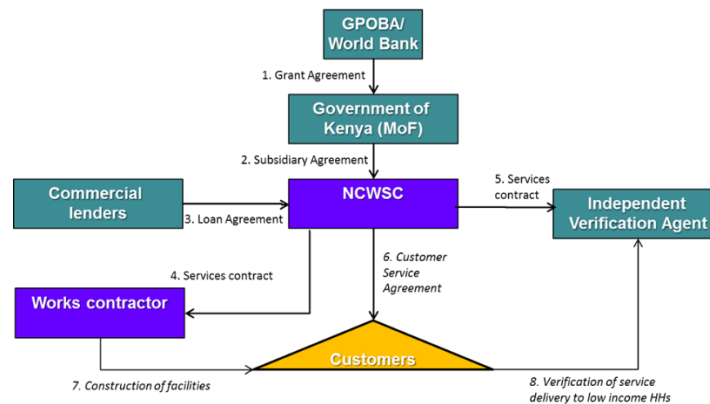
14. The original design was that the subsidy provided by the World Bank would buy down 50 percent of the loan principle. However, following the cost escalation and the restructuring, it was expected that the entire loan amount would be used to finance the project over 10 years with the subsidy of US\$ 6.5 million covering the remainder of the cost. This arrangement increased the overall financial risk of the project, as well as the lender risk.

Table 2: Summary of Planned Project Financing at restructuring (Oct 2016)

	P131512		P162248		Total	
	US\$	%	US\$	%	US\$	%
Component 1 – Sanitation and water subsidies	4,080,000		2,500,000		6,580,000	
Component 2 – Independent Verification	250,000		100,000		350,000	
Total World Bank Contribution	4,330,000	57	2,600,000	51	6,930,000	55
NWSC (through credit from FI)	2,976,000	41	2,300,000	45	5,276,000	42
Households (upfront contribution)	144,000	2	200,000	4	344,000	3
Total Project Cost	7,450,000		5,100,000		12,550,000	

15. The subsidy disbursements mechanism was changed at restructuring. The original project disbursement mechanism proposed 50 percent of the subsidy paid on verification of connections and 50 percent after verification of six months of usage as evidenced by billing records. The revised subsidy mechanism paid an advance of 10 percent against the commercial loan being secured; 65 percent on verification of connections and 25 percent against verification of three months of usage as evidenced by billing records. This helped to provide NCWSC the needed liquidity in a timely manner and accelerate the pace of project implementation. The project funds flow mechanism is shown in Figure 2.

Figure 2: Project funds flow



16. Under the original project design the overall target beneficiary number was 80,000 in seven informal settlements in Nairobi. The original project targets were to be achieved through 16,000 toilet connections to the sewerage system and 16,000 water connections. Based on an assessment done by the client with support from the World Bank’s

Development Impact Evaluation (DIME) group and the IVA, the revised targets took into consideration the revised technical solution for compound households (including provision of two toilets per connection, shower space and a water storage tank), which resulted in an increased cost per connection but reduced the overall number of connections while increasing the target beneficiaries. Table 3 below provides a summary of the targets at appraisal and restructuring - combined for both small grants Nairobi Sanitation OBA Project (P131512) and Nairobi Sanitation OBA II Project (P162248).

Table 3: Summary of Original and Revised Indicators and Targets

	Original Indicators	P131512 Original	Revised Indicators (P131512 + P162248)	Total Revised (2017)*
PDO Indicators				
1.	Number of people provide with sewerage and water connection	80,000	People provided with connection to the sewerage network	167,000
			People provided with access to improved water sources under the project-urban	131,000
			Direct Project beneficiaries	167,000
2.	of which female beneficiaries	N/A	of which female beneficiaries	50%
Intermediate Results Indicators				
1.	Number of sewer connections	16,000	New household sewer connections constructed under the project	13,000
2.	Number of water connections	16,000	New piped household water connections that are resulting from the project intervention	10,900
3.			People in informal settlements with access to improved water sources under the project	144,000
4.			Loan obtained from commercial bank	Yes
5.			Amount of loan financing leveraged by the project	600 million KES

17. The restructured project, with the additional finance through the second project (P162248), aimed to achieve 13,000 sewer connections and 10,900 water connections. Of these targets, 4,475 water connections and 4,475 sewer connections were to come from the resettlement areas.

18. The closing date of the project (P131512) was extended twice, initially for 6 months to December 29, 2017 and then again to June 30, 2018. This was due to restrictions imposed by the administration agreement with the donor (U.K.'s Department for International Development), which was extended twice for 6-months at a time.

II. OUTCOME

Assessment of Achievement of Each Objective/Outcome

19. Despite the need to restructure the project and mobilize an additional grant, the PDO remained relevant, as the underlying principle that the project's innovative financing structure could help NCWSC implement its social connection policy remained sound. In addition, the PDO remained in line with the World Bank Country Partnership Framework and the Government of Kenya's strategies in the WASH sector.

20. While the number of target communities was expanded to twelve informal settlements and two resettlement areas, the project only delivered services in six of the informal settlements and the two resettlement areas. There were a number of reasons for this including: the lack of trunk sewer lines, the lack of willingness of residents to pay, and the hostile environment in some areas. Services under the project were ultimately demand driven, hence NCWSC concentrated their efforts in those communities that could be reached and where demand was strong. In the end, targets were exceeded in all six informal settlements.

21. The total number of sanitation and water connections made under the project were below the revised targets (Table 4), and the resulting number of people reached was also below the revised targets. A significant reason for not reaching the revised targets was project implementation delays, as discussed below.

22. Water supply inconsistency, as in other areas of Nairobi, were experienced in the project areas. In some settlements water lines were damaged due to the construction of roads (Kayole Soweto and Matopeni), and in some areas water supply lines had not been finalized by NCWSC, resulting in limited or no supply. The lack of regular or any water supply discouraged communities from paying connection charges, and therefore also held back progress towards targets. Even in communities where water was available, it only flowed for about 8 hours a day for 2-4 days/week, undermining willingness to pay for usage charges.

Table 4: Summary of Original and Revised Indicators and Targets

	Revised Indicators	Original Target	Revised Target	Final Result	%
1.	People provided with access to improved water sources	80,000	131,000	97,855	75%
2.	People provided with connection to the sewerage network		167,000	137,243	82%
3.	Unique Project beneficiaries		167,000	137,243	82%
4.	of which female beneficiaries (estimated not verified)		50%		
1.	New household sewer connections constructed under the project	16,000	13,000	9,843	76%
2.	New piped household water connections that are resulting from the project intervention	16,000	10,900	7,683	73%
3.	People in informal settlements with access to improved water sources under the project		144,000	84,940	59%
4.	Loan obtained from commercial bank		Yes	Yes	
5.	Amount of loan financing leveraged by the project		600 million KES	600 million KES	

23. The compound (pour flush) latrines installed were a significant improvement over the pit latrines that they replaced, providing customers with an enhanced user experience, including convenience and reduced smell. In addition, customers reported significant improvements in the environmental hygiene status of their communities following the connection to previous under-utilized water and sanitation infrastructure in the informal settlements.

24. An intended outcome (though not included in the PDO) was the mobilization of commercial finance to support the implementation of this project's objectives. The Theory of Change illustrates that financing was a critical element in delivering new infrastructure due to the high costs of installation for NCWSC and up-front costs for customers representing a critical barrier to accessing connections. NCWSC putting in place the conditions to successfully securing a KES 600 million commercial loan from the Co-operative Bank of Kenya was a significant achievement and critical in enabling the project's implementation. By project close, NCWSC had drawn down KES 429 million of the loan. The company subsequently decided to continue drawing down funds to support additional households to connect to the network. Even though the company will incur a financial loss on a per connection basis without the subsidy, it deemed it

worthwhile to invest available funds in the interest of meeting demand and the longer-term revenue benefits of adding consumers to the network.

25. The subsidy was paid in three installments. An initial payment of 10 percent was paid against NCWSC securing a commercial loan to finance the project. The 2nd subsidy installment (65 percent) was paid on actual connections verified by the IVA. The final subsidy installment (25 percent for sustainability test) was paid based on continued service for three months. By project close, the IVA determined that 43 percent of households in the informal settlement areas and only and only 25 percent in the resettlement areas had made payments against three months billing; hence, NCWSC received only 42 percent of the final subsidy payment for connections made. NCWSC experienced ongoing difficulty in billing clients, due to problems with the design and low utilization of the *jisomee mita* self-reading billing system, including failure to include sanitation loans until September 2018. Of the US\$ 6.53 million available to NCWSC in output-based aid subsidies, they were only able to claim US\$ 4.75 million, due to the connections being below the target and partial achievement of the sustainability indicator (verification of three months of usage). While the problems with billing and payment resulted in lower disbursement of subsidy to NCWSC under the project, the company is working on upgrading its billing system and continues to engage with clients in the target areas to ensure payment of bills; hence the repayment rate is expected to pick up in the near future, which will support the longer-term sustainability of the project.

Table 5: Overview of the OBA Subsidy that NCWSC was eligible for, based on actual results

	Target	Results Achieved		Actual Subsidy			Total
		Constructed	Verified as "sustainable"	1 st Installment (10%)	2 nd Installment (65%)	3 rd Installment (25%)	
Sanitation							
Informal Settlements	8,613	7,260	3,132	577,071	3,161,730	524,610	4,263,411
Resettlement Connections	4,475	2,583	659	15,663	58,763	5,766	80,192
Sanitation Total	13,088	9,843	3,791	592,734	3,220,493	530,376	4,343,603
Water							
Informal Settlements	6,438	5,100	2,057	51,504	265,200	41,140	357,844
Resettlement Connections	4,475	2,583	659	8,950	33,579	3,295	45,824
Water Total	10,913	7,683	2,716	60,454	298,779	44,435	403,668
			TOTAL	653,188	3,519,272	574,811	4,747,271

26. As compared to the planned total project cost of US\$ 12.55 million, the actual cost of the project was US\$ 10.55 million (US\$ 7.61 million paid to the contractor, US\$ 0.17 million for consultancy services, US\$ 0.28 million for household initial connection charges, and US\$ 2.49 million in cumulative interest on the commercial loan - US\$ 0.82 million during construction and US\$ 1.67 million discounted cost of interest over the 8-year repayment period), of which US\$ 4.92 million was covered by the OBA grant⁵, US\$ 5.35 million by NCWSC, and US\$ 0.28 million by households.

27. **Economic Rate of Return (ERR).** The economic analysis used the amount payable for services by consumers as one part of the gross benefit, assuming this to be their willingness to pay for the services. The other part of the gross benefit was calculated using assumptions about health benefits accruing to residents as a result of the project. Based on the economic costs and benefits mentioned above, the economic internal rate of return was estimated to be 34 percent prior to the project and was revised down to 23 percent at the time of the restructuring.

28. Based on figures provided by Nairobi County Public Health Office (see Annex 4) the health assumptions appear to be realistic and have not been modified as part of the final ERR calculation. Following revisions to the assumptions based on the actual project outputs and expenditure, the revised calculation places the ERR at 21 percent, which demonstrates

⁵ US\$ 4.75 million for OBA subsidies for water and sanitation services and US\$ 0.17 million for consultancy services

strong economic gains resulting from the intervention. More details of the calculation are provided in Annex 5. It can be concluded that those who have benefited from the project are deriving a higher quality of life and health based on the benefits derived from improved access to sanitation services and better supply of water. In addition to the savings derived from the supply of water to yard taps, water supply from NCWSC is far cheaper as compared to buying water in jerry cans from private vendors. This has significantly reduced the cost associated with water consumption.

29. It is important to consider there were many other potential benefits that were not factored into this analysis due to lack of useable data, such as the creation of new employment opportunities and increase in productive use of time and energy, particularly by women and young children who otherwise spend long periods of time searching for affordable sources of water. In addition, many of the households may have illegal connections—the actual economic gains from switching from legal connections are not as high. The economic internal rate of return is therefore likely to be underestimated.

Overall Outcome Rating

30. The project ratings have been derived based on a combination of the assessment discussed above and ratings prior to the initial restructuring. The final outcome rating is then based on a combination of the two.

- **Relevance of the PDO:** This is rated as ‘High’, as there are at most minor shortcomings in the relevance to the Bank 2014-2018 Country Partnership Strategy (CPS). The PDOs are aligned to the CPS objectives of improving infrastructure and the business environment, as well as equity by targeting low-income areas and private sector investment through the commercial financing angle.
- **Efficacy of the PDO:** This is rated as ‘Modest’, prior to restructuring and “Substantial” post-restructuring given that the operation achieved 76% of the target sewer connections and 70% of the target water connections. The operation also secured notable commercial co-financing.
- **Efficiency of the project:** This is rated as ‘Modest’ based on NCWSC’s operational performance against sector norms. Although the project achieved a good connection rate under challenging circumstances, NCWSC experienced challenges with water supply and problems with the billing system, both of which are affecting customer willingness to pay.
- **Outcome rating:** The outcome rating of the Project before restructuring is rated as ‘Moderately Unsatisfactory’ due to the slow progress made prior to restructuring – although issues were identified that were hindering implementation, it took time to resolve them. However, implementation considerably accelerated post-restructuring resulting in “Substantial” project outcomes, including securing notable levels of commercial finance. Hence the outcome rating of the project after restructuring is rated as ‘Moderately Satisfactory’, and due to the significant weight given to the rating after restructuring, the overall outcome rating of the Project is rated as ‘Moderately Satisfactory’, as set out in Table 6.

Table 6: Application of Split Rating

	Before Restructuring	After Restructuring	Explanation of ratings
Relevance of Objective	High		There were no shortcomings or at most minor shortcomings in the relevance to the current Bank CPF/CPS. The operation provided clear evidence of the alignment of the PDOs to the current CPF/CPS objectives.
Efficacy (PDO)	Modest	Substantial	Modest: The operation partly achieved its objectives (intended outcomes). Substantial: The operation almost fully achieved its objectives (intended outcomes).
Efficiency	Modest		Efficiency is below expectations in the operation’s sector.

1. Outcome ratings	Moderately Unsatisfactory	Moderately Satisfactory	Moderately unsatisfactory: There were significant shortcomings in the operation's achievement of its objectives, in its efficiency, or in its relevance. Moderately satisfactory: There were moderate shortcomings in the operation's achievement of its objectives, in its efficiency, or in its relevance.
2. Numerical value of the outcome ratings	3	4	3: Moderately unsatisfactory 4: Moderately satisfactory
3. Disbursement	US\$ 575,000	US\$ 4.91 million	
4. Disbursement ratio	0.13 (13%)	0.71 (71%)	
5. Weighted value of the outcome rating (Row 2 X Row 4)	1.08	2.84	
6. Final Outcome Rating	Moderately Satisfactory (1.08 + 2.84 = 3.92, rounded to 4)		

Other Outcomes and Impacts

31. **Environmental and health benefits.** Prior to the project the targeted settlements had a high number of poor-quality pit latrines which often drained into the street and lanes, and whose content was unsafely disposed of into the environment around the settlements. In addition, those who did not have access to a latrine or chose not to use the poor-quality latrine practiced open defecation, with fecal matter often disposed of in plastic bags ("flying toilet"). The connection of the new latrines to sewers has visibly improved the environment within the settlements.

32. In addition, information shared through community health workers and public meetings has resulted in the improved management of solid waste within the communities. This is essential to ensure sewers do not get blocked, but also had a positive impact on the environmental hygiene of the settlements. Access to hygienic sanitation, which disposes of fecal matter safely, and to clean water was expected to reduce sanitation-related diseases. While not verifiable, customers reported a drop in the incidents of disease, including outbreaks of cholera, since the project, and this is supported by data from Nairobi County Public Health Department (see Annex 4).

33. **Blended Finance.** The project was able to demonstrate a blended finance model that supported water and sanitation service delivery in low-income areas through a combination of commercial debt and capital cost subsidies. This blended model created the conditions for NCWSC to access commercial finance, in the form of a long-term loan. The flow of funds from output-based grant payments and from customer payments for loans and service usage enabled NCWSC to service the commercial loan. The project has helped strengthen the ability of NCWSC to obtain commercial loans and by implication improve the enabling environment for the rest of the WASH sector to access commercial finance.

34. **Increase Affordability of Services:** This financing model also supported the implementation of NCWSC's Social Connections Policy, which aimed to improve water and sanitation in the informal settlements. Obtaining a commercial loan enabled the utility to connect consumers on a credit basis, after payment of a modest commitment fee, and for customers to repay the connection loan over a 5-year period.⁵ The household loans, together with the cost reduction from the OBA subsidy, made customers more able and willing to pay for the connection and monthly repayment and billing costs. The loan meant the targeted customers contributed their own private funds to gain access to services, thus leverage resources toward the total project cost and increasing customer ownership.

⁵ The water loan is KES 3670 (US\$ 37) and the sanitation loan is KES 27,000 (US\$ 270). The commitment fee is KES 1648 in both cases. The water loan bears interest (at a nominal rate of 16 percent per annum); the sanitation loan does not.



35. Customers who received a water connection, presuming the supply is sufficient, have significantly reduced their water bills. In bringing these customers on board and formalizing their connections, NCWSC has also reduced their non-revenue water (NRW) in the informal settlements. The extension of formalized service also places pressure on the high prices and cartel behavior of water sellers.

36. **Operating in informal settlements:** Through the implementation of this project, NCWSC has significantly increased the knowledge and developed the skills required to implement sustainable water and sanitation solutions in informal settlements. This experience can be used to inform the implementation of the Social Connection Policy more widely, as well as to guide the design and implementation of future projects in challenging urban areas.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

37. **Quality at Entry.** Initial project effectiveness was delayed due to delays in signing the Subsidiary Agreement by the GoK, which was a condition of Effectiveness. The project was approved December 2012 and declared effective in May 2014.

38. Following a request from the Government of Kenya, the project included support for the provision of water and sanitation connections to households resettled under the World Bank-financed East Africa Trade and Transport Facilitation Project (EATTFP - P079734). As a result, the project scope was expanded to include new residential units in Kibera and Mukuru. As the water and sanitation infrastructure had been included in the construction of the residential units under the resettlement activities, the project partially subsidized the connection fees for the residents.

39. Securing the commercial loan took longer than planned. NCWSC launched a competitive tender for the financing and ultimately negotiated with the Co-operative Bank of Kenya. A key sticking point for negotiations between NCWSC and Co-operative Bank was the interest rate to be charged. The Co-operative Bank wanted to charge the prevailing rate of 16 percent (as stated in its Offer Letter); but NCWSC was seeking a 13 percent rate. Perhaps triggered in part by an interest rate cap instituted as of 14 September 2016, Co-operative Bank amended its offer to 13 percent (Central Bank rate of 10.5 percent at the time, plus 2.5 percent margin) on 21 September 2016, which was accepted and signed. There were subsequently further delays in drawing down the loan after signature due to delays in meeting the conditions for drawing down the commercial loan.

40. The project experienced delays in the procurement of the work contractors, as the process of developing the tender documents was not finalized until the technical designs were modified. The delays in signing the commercial loan had a negative knock-on effect with the works contractors. NCWSC was unable to honor its obligation to pay a 20 percent advance to the contractor⁶ upon signing the contract in January 2016. This resulted in construction not commencing until March 2016 while the contractor sought funding from their banks.

41. **External factors also contributed to the delays in the project.** These included unprecedented heavy rains, the deteriorating security situation during the extended election period in 2017, and resistance from some communities requiring protracted engagement with community gatekeepers before works could commence. This also impacted the construction of the trunk sewer lines in Caanan, Mowlem, and Kayole Soweto—one of the principal target areas that was prioritized by NCWSC, which also experienced delays and was only completed in September 2016.

⁶ Interways Works Ltd

42. **Shift from household to compound connections.** Despite construction commencing, the IVA completed all the baseline assessments in August 2016. The baseline confirmed a different reality to the technical, economic and financial analyses in the original project design. The densely populated settlements were confirmed to have a different housing demographic (compound housing instead of individual households) and variation in the composition of toilets (proportion of pit latrines) compared to original assumptions.

43. Under the original project design, it was envisioned that each beneficiary household would have an individual connection. The redesign had to include technical solutions focused on serving multiple families residing within a single multi-room compound. This increased the cost of each individual connection, reduced the number of planned connections, and increased the number of customers per connection, as compound houses had approximately 17 people within them⁷. The baseline also highlighted that in several areas the existing pit-latrines needed to be demolished, exhausted, and reconstructed, as debris and fecal matter had to be safely extracted and disposed of. This invalidated the original assumption that households could demolish pit latrines themselves, and increased the cost.

44. The revised technical design for sewer connections was based on two types of sanitation connections: Type A sewer connection and fittings for a plot with an existing pour/flush toilet (US\$ 388) and Type B sewer connection and fittings for a plot with an existing pit latrine, requiring excavation and filling and reconstruction of a new slab (US\$ 1,170). The cost of lateral lines to serve the planned connections with water and sewerage services was also included in the overall project cost (but not in calculation of the subsidy).

45. **Change in Subsidy:** Given the changing number of connections, type of household and increase in cost per connection, the subsidy model also had to be modified. The original and revised subsidy captured the increased costs, as shown in Table 7 below.

Table 7: Comparison of Subsidy – Original and Revised

Connection type	Original			Revised		
	Subsidy amount (US\$)	Number of connections	Total (US\$)	Subsidy amount (US\$)	Number of connections	Total (US\$)
Informal settlement areas						
Sewer Connection	175	16,000	2,800,000	670	8,613	5,770,710
Water Connections	80	16,000	1,280,000	80	6,438	515,040
Railway resettlement areas						
Sewer Connection				35	4,475	156,625
Water Connections				20	4,475	89,500
Total			4,080,000			6,531,875

47. Within the 12 informal settlements, the revised subsidy per sewer connection was set at US\$ 670. This subsidy was 65 percent of the weighted average cost of US\$ 1,020 (excluding finance costs) of the Type A and Type B connections.⁸ The uniform subsidy was proposed to avoid conflict during verification, as it was anticipated it would be difficult to verify what the toilet type was before construction. Within the 12 settlements the subsidy for water connection remained unchanged at US\$ 80.

48. In the resettlement areas the majority of infrastructure costs had already been borne by the Government of Kenya under the Bank-financed project, and the works followed a more standard approach, providing one water and

⁷ The revised compound sewer connection consisted of two pour flush toilets, one wash hand basin and one 400 liter water storage tank, with an option to reuse the greywater from handwashing for flushing. The storage tank was included to help with the issue of intermittent water supply in the project areas.

⁸ This was less than the 70 percent planned in the original design, and in reality, was even lower than the actual average cost, due to an unanticipated preponderance of Type B toilets, as well as the need to construct lateral lines from the trunk line to the households.

sewerage connection to single households with approximately 5 people. The project partially subsidized the additional cost of NCWSC’s total water and sewerage connection fee of US\$100, with the project funding 70 percent of the sewerage connection cost (US\$ 35) and 40 percent of the water connection (US\$ 20).

49. **Household Connection Charges and Loan Repayments:** The size of the connection charges⁹ in the informal settlements had to be modified in response to the actual costs. Connection charges for both water and sanitation services significantly increased. Monthly charges for the loan repayment increased by nearly 50 percent. Hence over the course of the loan households would repay a total of US\$ 315 for both water and sanitation services (including interest of US\$ 8 at 13 percent per annum on the water portion), compared to US\$ 186 in the original design.

Table 8: User Contribution towards capex Cost (per connection) – Original and Revised

US\$	Household Initial Connection Charge		Monthly Loan Repayments		Number of Payments	
	Original	Revised	Original	Revised	Original	Revised
Sewer connection	5	16	1.2	4.5	60	60
Water connection	4	16	1.9	1.5	60	30
Total	9	33	3.1	6		

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

50. **Monitoring.** NCWSC put in place their own quality control and monitoring system. This included oversight of the construction of project infrastructure by locally based NCWSC staff, and inspection of finalized infrastructure by an independent engineer hired by NCWSC. The independent engineer would confirm the eligibility of payments to the contractors through interim payment certificates, which were also used to draw down tranches of the commercial loan. The IVA completed 11 output verifications reports (OVRs), between September 2016 and June 2018, and a sustainability verification report (SVR) at project closure that were used to underpin subsidy payments. NCWSC customer billing data was used to review and monitor the number of customers who had made a payment against their bills over a three-month period.

51. **The overall rating for M&E quality is high.** The M&E system was designed well to support project management and decision making. The engagement of a third-party specialist to monitoring results ensured data was collected in a timely manner, verified independently and available to use during the project period. This was supported by multiple layers of monitoring by NCWSC. The OBA model utilized M&E data effectively to facilitate disbursements. It is noted that the results framework indicator of “percentage women beneficiaries” was not tracked and the 50 percent figure is based on assumptions regarding the gender composition of the targeted residential areas. On balance, this does not detract from the overall quality of the project’s M&E framework.

52. **Financial Management.** The project had a designated account (DA) managed by the National Treasury and a project account (PA) managed by NCWSC. Funds also had to pass through an account in the Ministry of Water and Irrigation (MoWI), following agreed upon arrangements also practiced by other projects in the Country Office. The project experienced delays in the release of funds between both National Treasury and MoWI, and from MoWI to NCWSC. The delays in disbursements of funds from MoWI were due to inadequate project budget in MoWI’s consolidated budget and slow processing of documentation by MoWI, leading to significant delays in project implementation.

⁹ Both the upfront payment and repayments against the household loans



53. NCWSC's filing of interim financial reports were submitted on time during the project period and acceptable to the World Bank. The Office of the Auditor General has been auditing the project. The final audit was submitted to the Auditor General on 30th September and will subsequently be submitted to the World Bank.

54. **Procurement.** The project experienced significant delays in procurement due to a combination of the innovative financing used in the project and the evolving technical design due to a changing understanding of the ground reality. While the Co-operative Bank was identified through a competitive process in 2015, significant and unexpected delays in the negotiation process meant the contracts were not signed until September 2016. Both the IVA and the contractor were procured through national competitive bidding (modified to comply with World Bank guidelines).

55. **Safeguards.** An Environmental and Social Impact Assessment (ESIA) was prepared between August 2016 and July 2017. The National Environmental Management Authority (NEMA) approved the ESIA, and licenses were granted for the projects. During project implementation it was noted that the supervising consultants were weak on reporting on environmental and social issues. There were not sufficient details of current status of environmental or social issues, and observation or actions taken to address any non-compliance were not well captured.

56. While World Bank safeguard policy promotes the use of local labor on projects, the contractor also came under significant pressure from different local gangs and cartels to use their local labor and source materials from them during the project implementation. The contractor had to carefully manage these risks, as there was potential for disgruntled gang members to disrupt works, as well as inflate prices of labor and goods.

57. The Grievance Redress Mechanism (GRM) within the project contractor were noted as being weak. During the project there was an investigation into allegations of sexual harassment, and one genuine complaint of misconduct of one of the contractor's supervisors was identified. It was appropriately dealt with through dismissal of the errant official. The investigation revealed the need to sensitize workers and introduce social support services. NCWSC made considerable effort to improve safeguards compliance, including in the areas of occupational health and safety, and in clarifying workers' rights to redress. At the time of closure there were no outstanding safeguard incidents.

58. **Technical Sustainability:** It was reported that the sanitation infrastructure installed is prone to blockages, resulting in latrines becoming unusable. Initially blockages were the fault of the customers, who had poor knowledge of the correct use of latrines and continued their existing habit of throwing other waste in the latrine. In addition, manhole covers were found broken or removed in some areas, and this resulted in solid waste and grey water entering the system, causing blockages and flooding. NCWSC has a technical team that addresses blockages and user education from sociologists. In one location (Canaan) manhole covers were raised to stop greywater entering the system.

59. Water scarcity was a known risk prior to the project. Projects to address chronic water shortages by increasing supply in Nairobi, such as the Northern Water Collector Tunnel, have been delayed due to concerns over environmental impacts and domestic politics. The lack of sufficient water has a knock-on effect on the functionality of the latrines and sewer lines, due to the need for high water volumes for the technology to operate effectively. NCWSC is aware of the problem and will address it as part of its company-wide plans for non-revenue water reduction and source augmentation.

60. **Financial Sustainability:** Lack of reliable water and sanitation services has already proven to reduce the likelihood of customers paying their capital cost contributions and ongoing bills. The current billing mechanism does not include a system to reduce standard service charges if no service has been provided or if minimum service levels have not been met. As a result, customers have become frustrated by being asked to pay for services they do not receive. The electronic billing system was not effectively modified in a timely manner to incorporate sewer loan repayments. The lack of understanding of customers of the structure of the billing system (including interest payments on loans) and unclear billing communication has led to confusion and suspicion amongst customers.



61. The financial sustainability of the project requires NCWSC to collect the loan repayments and ongoing billing charges from the targeted customers to repay the commercial loan. Arrears on customer bills will place at risk NCWSC's ability to service debt and maintain service over the long run.
62. **Social Sustainability:** As documented in NCWSC's social connection policy and driven by the political agenda of the County, there is a strong push to continue to maintain and expand connections in low-income communities. This project demonstrated that engaging these communities has a higher transactional cost than working in other areas. The cost of community engagement and communication materials to educate customers was supported by World Bank technical assistance. In addition, the Nairobi County Public Health Department's staff presence within the low-income settlement was harnessed to engage communities and lead social marketing and communication initiatives. To sustain the ongoing customers and infrastructure will require additional financing and expanded partnerships.
63. NCWSC social connection policy includes the concept of establishing a social connection fund to provide financial support in order to lower costs to consumers and leverage further loans to enable this model to provide additional connections in low-income communities. However, the legal basis for establishing the Fund has not yet been passed by the County, and no steps have been taken toward establishing or financing it.
64. **Scalability:** At present, the ability to scale up the blended finance approach in Kenya is constrained by a number of factors, including limited availability of grant funds; limited number of utility companies with the requisite strong financial and management capabilities; the potential for political interference at the county level; and the cap on interest rates. The latter limits the ability of banks to offset the risks of lending to utilities for connections that will, at best, take years to generate loan repayments and profitable revenue streams. In addition, it also limits their ability to offset the risks of making long-term loans when their sources of funds are predominantly short-term.
65. **The overall Bank's performance is rated as Satisfactory.** While there were some shortcomings with the quality of entry, the World Bank's project team have effectively managed a complex and innovative project to deliver results and contribute significant lessons to the sector by demonstrating new implementation models for future use.

V. LESSONS LEARNED AND RECOMMENDATIONS

66. ***Mobilizing effective demand for sewer connections in low-income settlements requires a concerted process of community engagement, social marketing and behavior change communication.*** While the project successfully mobilized community leaders and health workers to support implementation, this was not done until the implementation phase, and resulted in significant redesign to address on-the-ground realities. Earlier engagement with community leaders could have informed the project design, and reduced delays experienced during project implementation. The project successfully engaged the County Public Health Department to support a communication campaign to build awareness around subsidies, new services, loans and usage of new technologies. However, this was not built into the project design, and evidence of misunderstanding amongst customers demonstrated this could have been done in a more systematic manner.
67. ***Commercial lending for water & sewer projects can be viable from the standpoint of commercial banks as well as the utilities, as long as there is demonstrated cash flow available to service the loans.*** The project has yet to unequivocally demonstrate that sufficient revenues can be generated from connections in informal settlements to service the associated debt; nevertheless, the strong balance sheet of NCWSC and the relatively small size of the project's revenues in the company's overall cashflow provided sufficient comfort to the lender to finance the project. The financial model shows a positive rate of return from the investments assuming a 75 percent payment and collection rate. Nevertheless, commercial banks continue to rely on the flow of grant funds to mitigate the risk of relying solely on project revenues. The phased payment of grant funds caused liquidity problems in implementing the project, and future projects



should discuss subsidy payment mechanisms with project financiers and risk takers up front to structure the financing flows appropriately, so that the risk to reward ratio is balanced for financiers while donors continue to achieve value for money in grant financing.

68. ***Providing a financing option that aligned water and sanitation services contributed to stimulating latent demand for sanitation services, which the GoK was able to meet by coordinating different operations in its portfolio.***

Household water connections reduce household water consumption costs, and hence customer willingness to pay is much higher for water connections, as the alternative of buying from vendors is costly. Linking the sanitation service and cost with water supply and providing concessional financing for the capital investments incentivized households to invest in new sanitation solutions, which will bring considerable environmental and health benefits. This project also benefited from upstream investments in trunk infrastructure supported by other World Bank-financed projects (WaSSIP, KISIP and EATTFP). By coordinating and linking various operations, the GoK was able to maximize the benefit to its citizens by combining commercial loans with development finance from different projects, thereby meeting the demand for services and ensuring that the combined investments deliver economic benefits.

69. ***Ensuring a reliable water supply service and an effective billing system are critical for success.*** With regular (even if intermittent) water supply, residents of many informal settlements appear able and willing to pay at least the subsidized cost of connections and usage, if they are able to spread the connection costs over time. This makes it particularly urgent to follow through on water supply augmentation projects and reduction in non-revenue water. Furthermore, the billing system is one of the main interfaces between the utility and its customers, and hence it needs to be user friendly, transparent and accurate. Failure of the billing system to meet these requirements results in the erosion of trust between customers and the utility, and ultimately a breakdown in the relationship, which leads to non-payment of bills and disconnections.

70. ***Ensuring a balanced approach to enforcement.*** NCWSC has demonstrated that they have a rigorous approach to disconnecting water (or sewer) in case of non-repayment in formal (wealthier) areas. However, in the informal settlements NCWSC have taken a more lenient approach, generally preferring to work with customers and community leaders to address repayment problems and develop repayment plans. This approach appears pragmatic, as disconnecting water supply may be counter-productive, since residents in low income-settlements are less likely to pay the reconnection charges and NCWSC will lose customers. A more aggressive approach would also fail to acknowledge the irregular water supply provided to these communities. Nonetheless, to address poor repayment rates, NCWSC have started disconnecting in cases of severe default, and evidence has shown that this action was an important contributor to the tripling of monthly collections in the OBA settlements between 2017 and 2018.



ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual achieved at completion
Direct project beneficiaries	Number	0	80,000 17-Dec-2012	167,000 17-Aug-2017	137,243 30-Jun-2018
of which female beneficiaries	Percent	0	50% 17-Dec-2012	50% 17-Aug-2017	
People provided with connection to the sewerage network*	Number	0		167,000 17-Aug-2017	137,243 30-Jun-2018
People provided with access to improved water sources under the project - urban*	Number	0		131,000 17-Aug-2017	97,855 30-Jun-2018



Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of Water Connections	Number	0.00	16000.00	10900.00	7683.00
		19-May-2014	17-Dec-2012	17-Aug-2017	30-Jun-2018
Number of Sewer Connections	Number	0.00	16000.00	13000.00	9843.00
		19-May-2014	17-Dec-2012	17-Aug-2017	30-Jun-2018

Comments (achievements against targets): 70% of target water connections were achieved, and 76% of target sewer connections were achieved. This takes into consideration the total revised targets from P131512 and P162248, covered under this ICR.



B. Results Framework and Key Outputs (continuation): additional indicators monitored after 2017 project restructuring not captured in portal

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual achieved at completion
People provided with connection to the sewerage network	Number	0	167,000 17-Aug-2017	167,000 17-Aug-2017	137,243 30-Jun-2018
Comments: 82% of target achieved.					
People provided with access to improved water sources under the project - urban	Number	0	131,000 17-Aug-2017	131,000 17-Aug-2017	97,855 30-Jun-2018
Comments: 75% of target achieved.					
People in informal settlements with access to improved water sources under the project	Number	0	144,000 17-Aug-2017	144,000 17-Aug-2017	84,940 30-Jun-2018
Comments: 59% of target achieved.					
Loan obtained from commercial bank	Yes/No	No	Yes 17-Aug-2017	Yes 17-Aug-2017	Yes 30-Jun-2018
Comments: Target fully achieved.					
Amount of loan financing leveraged by the project	Number (KES)	0	600 million KES 17-Aug-2017	600 million KES 17-Aug-2017	600 million KES 30-Jun-2018
Comments: 100% of target achieved.					



C. Organization of the Assessment of the PDO

Objective/Outcome 1	
Outcome Indicators	<ol style="list-style-type: none"> 1. People provided with connection to the sewerage network 2. People provided with access to improved water sources under the project-urban 3. Unique Project beneficiaries 4. of which female beneficiaries
Intermediate Results Indicators	<ol style="list-style-type: none"> 1. New household sewer connections constructed under the project 2. New piped household water connections that are resulting from the project intervention
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	<ol style="list-style-type: none"> 1. 13,000 new household sewer connections constructed under the project 2. 10,900 new piped household water connections that are resulting from the project intervention 4. 144,000 people in informal settlements with access to improved water sources under the project
Objective/Outcome 2	
Outcome Indicators	<ol style="list-style-type: none"> 1. Enabling environment for private finance to support water and sanitation sector improved
Intermediate Results Indicators	<ol style="list-style-type: none"> 1. Loan obtained from commercial bank 2. Amount of loan financing leveraged by the project
Key Outputs by Component (linked to the achievement of the Objective/Outcome 2)	<ol style="list-style-type: none"> 1. 600 million KES loan financing leveraged by the project

ANNEX 2. PROJECT COST BY COMPONENT

A. Nairobi Sanitation OBA Project (P131512)

Components	Amount at Approval (US\$M)	Actual at Project Closing (US\$M)	Percentage of Approval
Component 1: OBA subsidies for water and sanitation services	4.08	3.4	83%
Component 2: Output verification and monitoring	0.25	0.17	68%
Total	4.33	3.57	82%

B. Nairobi Sanitation OBA Project II (P162248)

Components	Amount at Approval (US\$M)	Actual at Project Closing (US\$M)	Percentage of Approval (US\$M)
Component 1: OBA subsidies for water and sanitation services	2.5	1.35	54%
Component 2: Output verification and monitoring	0.1	0	0%
Total	2.6	1.35	52%



ANNEX 3. RECIPIENT, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

In addition to marked up comments on the draft, which were incorporated, the following verbatim comments were received from NCWSC:

Further to our comment on the ICR report, kindly note the report is ok.

Moreover during the implementation stage the following challenges were faced

1) The Contractor was not paid the anticipated advance payment of 20% of the contract sum which affected his performance of works moreso the delays as his planned cash flow could not be effected well

2) Lack of the sewer lines in some of the anticipated informal settlements we expected to work as we expected Athi water Service Board to have them in place as we were implementing the project (this made it easy to work only in the 6 informal settlements)

3) Hostile communities in some of this slums notably Caanan, Mowlem and Riverbank

4) During the implementation period we had a prolonged electioneering period from July 2017 - December 2017 as the August elections were nullified and repeat of the same in October 2017 and this being low income areas with high populations (Voters) were areas of the political rallies which in most cases turned violently affecting the works

5) Lack of way leaves in these areas as people are utizing every space.

6) Water deficiency affecting the applications as some parts are receiving water once in a week.

However a part from the faced challenges the project progressed well and with the World Bank support on community engagement we are able to proceed with the works well.

The project has had a number of the benefits which include:-

1) Increased number of customers in the informal settlement from 2200 to 10,000, this has also reduced the non revenue water in these areas.

2) There is increased revenue from the the initial average of 1 million before the project to currect collection of 3-4 million per month

3) Proper sanitation in the slums which has reduced the cases of the waterborne diseases

4) Increased access to water hence reducing the man hours people here would spend looking for the water.



5) The cartels have no control in this areas as NCWSC is in full control of water and sewer services which has given the people here a lot of confidence.

6) The project created a lot of job opportunities to residence during its implementation.

Hence it is a commendable Project as it has impacted lives of very many poor people

J M Munuve

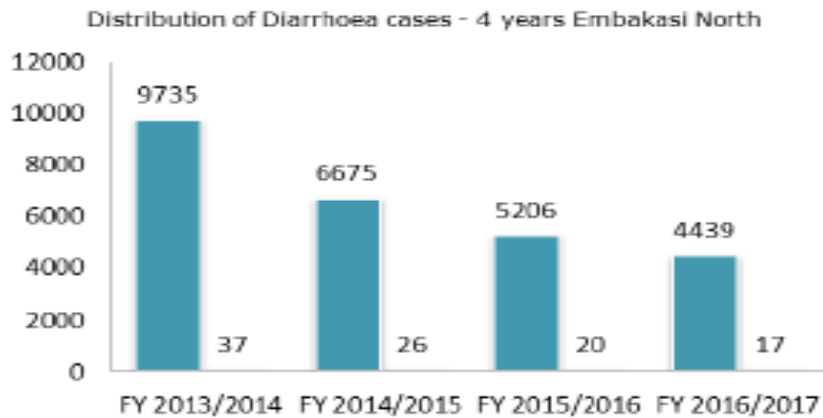
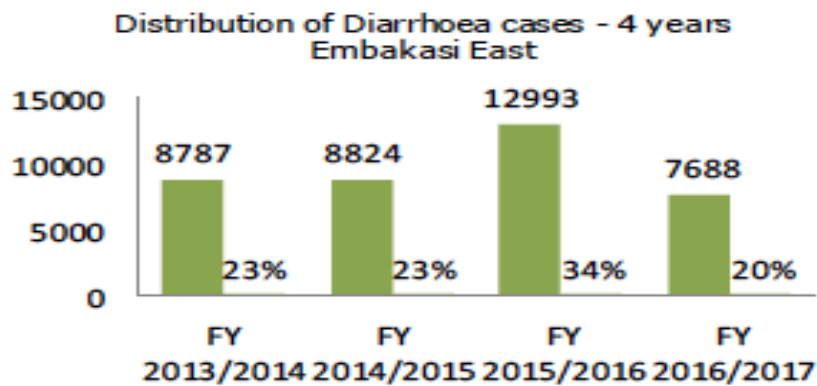
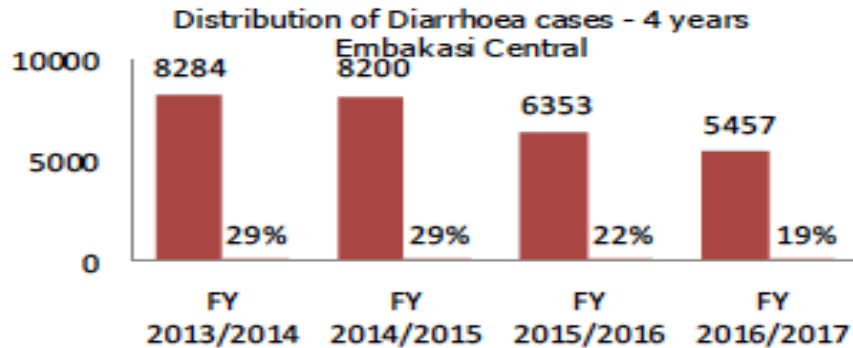
Resident Engineer - OBA Project

NCWSC



ANNEX 4. PUBLIC HEALTH DATA

The data below was compiled by Nairobi County Public Health Office based on reported diarrhea cases over a 4-year period, in the project working areas. It should be noted that changes in the incidents of diarrhea have multiple causes, of which improved access to improved water and sanitation service is one positive contributor.



Source MOH_DHIS data

ANNEX 5. ECONOMIC ANALYSIS

Methodology. The economic analysis in the project document was based on the actual costs of both the original Nairobi Sanitation OBA project (P131512) and the subsequent Nairobi Sanitation OBA II project (P162248). The analysis used the amount payable for services by consumers as one part of the gross benefit, assuming this to be their willingness to pay for the services. The other part of the gross benefit was calculated using assumptions about health benefits accruing to residents as a result of the project.

Key assumptions. Under the economic analysis it was initially assumed that that the project would be implemented in 12 informal settlements in Nairobi and housing areas where people have been resettled by a railways project. As it transpired the project only engaged in 6 informal settlement and two locations where people have been resettled. Despite this the project provided improved sanitation to 137,243 of the planned 160,000 people. However, the projects impact was in a smaller area, and thus covered a smaller overall population, than originally envisaged.

The original economic costs of the intervention included total capital costs for works in both the 12 informal settlements and railway resettlement areas and operations and maintenance (O&M) at KES 100 per month per connection. In terms of the O&M cost at this stage there is not sufficient data to change the original assumption of KES 100 per month, however field observation that disconnections and stolen meters, especially in resettlement project areas, might result in this being underestimated.

Economic benefits included health benefits resulting from improved water and sanitation and revenue from connection fees, tariffs (accounting for 25 percent leakages), and household capital expenditure contributions. The model assumed the total lifespan of project works is 20 years, and there is no evidence to suggest that this assumption is incorrect. The final costs of the project did vary from the assumption used in the original assumption and are captured in the table below.

Table 1: Key Assumptions

Assumptions	Unit of Measure	Original Assumptions	Final Assumptions
Number of Settlements	Number	12	8
# sewerage connections (Type A + Type B)	Number	8,613	7,260
# water connections: informal settlements	Number	6,438	5,100
Resettlement connections (water + sewerage)	Number	4,475	2,583
Total construction cost: informal settlements	KES	887,857,179	760,728,906
Total construction cost: Resettlement areas	KES	44,750,000	
Collection rate	Percent	1	1
Monthly O&M per connection	KES	100	100
Consumer WTP for water (monthly per HH) ⁶	KES	450	450
Consumer surplus for water (monthly per HH)	KES	126	126
Increase in sanitation cost (monthly per HH)	KES	62	62
Monthly water + sewerage cost: informal settlements	KES	728	728
Monthly water + sewerage cost: Resettlement areas	KES	357	357
Monthly household capex payment: water (3 years)	KES	150	150
Monthly household capex payment: sewer (5 years)	KES	450	450
Total subsidy - informal settlements	KES	628,575,000	460,418,250

⁶ based on previous monthly spending of 150/m³ and HH consumption of 3/m³

Assumptions	Unit of Measure	Original Assumptions	Final Assumptions
Total subsidy – Resettlement areas	KES	24,612,500	12,829,100
Project duration	Years	2	2
Project life	Years	20	20
Total beneficiaries (RP paper)	Number	167,073	142,659
People per household	Number	5	5
Resettlement areas households per connection	Number	1.00	1.00
Informal settlements households per connection (assumed)	Number	3.36	3.57

Avoided cost of treatment. The calculation of this benefit was based on the World Health Organization’s (WHO) estimated burden of environmental diseases and, more specifically, the estimated share of diseases that can be attributed to water, sanitation, and hygiene (WASH) risks. The analysis only took into account diarrheal diseases. The original calculation assumed a reduction of 100,200 incidents of diarrhea caused by lack of WASH services. This was combined with the estimated annual average health expenditures per diarrheal incident (KES 500), resulted in about KES 192 million of total annual avoided health expenditure for all WASH-related diseases. The project team estimated that about 25 percent of the total WASH-reduced disease incidents would be attributable to the planned OBA water and sanitation intervention. Applied to the average cost of treatment per incident, the total annual benefit of the proposed operation in this category is KES 50 million. Based on figure provided by Nairobi Public Health Office, and set out in Annex 4, these assumptions appear to realistic and have not been modified as part of the final ERR calculation.

Table 2: Benefits: Health Avoided Cost of Treatment CU5: Assumed continuing savings

Indicator	Assumptions
Exposure Risk Scenario	25%
Cost of Treatment per Incidence (KES)	500
Diarrheal incidence pre-project (per year)	16
Diarrheal incidence post-project (per year)	4
Drop in diarrheal incidence (projected to area)	12
Number of Households in project area	33,400
Drop in diarrheal incidence (projected to area)	400,800
Drop in diarrheal incidence linked to water/sanitation activities	100,200
Benefits: Health Avoided Cost of Treatment CU5: Assumed continuing savings	50,100,000

Income gained due to avoided days lost from work. This benefit was calculated based on the estimated total incidence of sickness per person in the project’s intervention area multiplied by the working age population targeted by the OBA project. Out of estimated 192,000 total reduced incidents of sickness in the OBA targeted population, about 25 percent (48,000) were estimated to be induced by the OBA intervention. This translates, at two days per incident according to the WHO study, into a potential 96,000 days off work that can be avoided as a result of the proposed OBA water and sanitation intervention. The number of avoided sick days, combined with the opportunity cost of time (minimum income in Kenya) estimate for working adults, results in about KES 33 million annual benefit in this category. These assumptions also appear to realistic and have not been modified as part of the final ERR calculation.

Table 3: Income Gained due to Avoided Days Lost from Work

Drop in diarrheal incidence (projected to area) in targeted working adults population 50% of the beneficiaries	200,400
Drop in diarrheal incidence linked to water/sanitation activities	50,100
Total number of avoided sick days because of project intervention	100,200
Opportunity cost of time (minimum income in Kenya) 10,000 KES/month	333
Annual Income gained due to avoided days lost from work	33,366,600

Revenue from tariff. This is based on connection fees and capital cost contributions paid by clients and monthly usage charges for 10 cubic meters of water per connection per month and associated sewer charges. The collection rate assumed is 75 percent.

Economic Rate of Return. Based on the economic costs and benefits mentioned above, the economic internal rate of return was estimated to be 34 percent prior to the project. Following revisions to the assumptions based on the actual project outputs and expenditure, the revised calculation places the Economic Internal Rate of return at 21 percent, which demonstrates strong economic gains resulting from the intervention. It can be concluded that those who have benefited from the project are deriving a higher quality of life and health based on the benefits derived from improved access to sanitation services and better supply of water. In addition to the savings derived from the supply of water to yard taps, water supply from NCWSC is far cheaper as compared to buying water in jerry cans from private vendors. This has significantly reduced the cost associated with water consumption.

Economic Costs and Benefits	Total
Capital Cost	760,728,906
O & M cost	231,876,000
Total Cost	992,604,906
Economic Benefits	
Revenue from Tariff (accounts for 25% revenue leakages)	1,102,703,035
Health benefits	1,627,598,700
Total Benefit	2,730,301,735
Net Benefit	1,737,696,829
EIRR	21%

It is important to consider there were many other potential benefits which were not factored into this analysis due to lack of useable data, such as the creation of new employment opportunities and increase in productive use of time and energy, particularly by women and young children who otherwise spend long periods of time searching for affordable sources of water. Other important benefits such as improved quality of service and product are difficult to quantify. The economic internal rate of return is therefore likely to be underestimated.