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Document of
The World Bank

Report No: ICR00002944

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IDA-H2700, TF093527)

ON

IDA AND SPF GRANTS

IN THE AMOUNT OF SDR3.4 MILLION AND US$5 MILLION (A TOTAL OF APPROXIMATELY US$10 MILLION)

TO

THE REPUBLIC OF HAITI

FOR A

RURAL WATER AND SANITATION PROJECT

May 30, 2014

Water and Sanitation Unit
Haiti Country Management Unit
Latin America and the Caribbean Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective: November 30, 2013)

Currency Unit = Gourdes (HTG)
HTG 1.00 = US$ 0.02
HTG 43.85 = US$ 1.00

FISCAL YEAR
July 1 – June 30

ABBREVIATIONS AND ACRONYMS

AIC	Average Incremental Cost
CAEP	*Comité d'Approvisionnement en Eau Potable* (Drinking Water Supply Committee)
CAEPA	*Comité d'Approvisionnement en Eau Potable et Assainissement* (Drinking Water Supply and Sanitation Committee)
CDD	Community-Driven Development
COPRODEP	*Conseil de Projet de Développement Participatif* (CDD Project Development Council at the Municipal Level)
DINEPA	*Direction Nationale de l'Eau Potable et de l'Assainissement* (National Water and Sanitation Directorate)
EIRR	Economic Internal Rate of Return
EPAR	*Programme Eau Potable et Assainissement en Milieu Rural* (Haiti Rural Water Supply and Sanitation Project)
GDP	Gross Domestic Product
HTG	Haitian Gourde
IDA	International Development Association
IDB	Inter-American Development Bank
ICR	Implementation Completion and Results Report
ISR	Implementation Status and Results Report
LICUS	Low-Income Countries Under Stress
NGO	Non-Governmental Organization
NPV	Net Present Value
O&M	Operations and Maintenance
OREPA	*Offices Régionaux d'Eau Potable et Assainissement* (Regional Water and Sanitation Offices)

PAD	Project Appraisal Document
PDO	Project Development Objective
PRODEP	World Bank-assisted Community-Driven Development project in Haiti
PSDH	*Plan Stratégique de Développement d'Haïti* (Haiti's Strategic Development Plan)
SNEP	*Service National d'Eau Potable* (National Drinking Water Service)
SPF	State and Peace-Building Fund
TEPAC	*Techniciens en Eau Potable et Assainissement Communaux* (Communal Water and Sanitation Technicians)
URD	*Unités Rurales Départementales* (Departmental Rural Units)
WSP	Water and Sanitation Program of the World Bank
WSS	Water Supply and Sanitation

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Haiti Rural Water and Sanitation Project

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Data Sheets

IDA Grant and SPF Trust Fund Data Sheets

A. Basic Information			
Country:	Haiti	Project Name:	Haiti Rural Water and Sanitation Project
Project ID:	P089839 (IDA) P114936 (SPF)	L/C/TF Numbers:	H2700-HT (IDA) TF093527 (SPF)
ICR Date:	May 30, 2014	ICR Type:	Core
Lending Instrument:	Investment Project Financing	Borrower:	Republic of Haiti
Original Total Amount:	SDR 3.4 million - US$ 5 million equivalent (IDA) US$ 5 million (SPF)	Disbursed Amount:	US$ 5,217,304 (IDA) US$ 4,630,027 (SPF) Total = US$ 9,847,331
Revised Amount:	No change		
Environmental Category:		B	
Implementing Agency:		DINEPA (Direction Nationale de l'Eau Potable et de l'Assainissement)	
Co-Financiers and other External Partners:		None	

B. Key Dates

Process	Date	Process	Original Date (planned)	Revised/Actual Date
Concept Review:	December 8, 2005 (IDA) November 12, 2008 (SPF)	Effectiveness:	August 1, 2007 (IDA) April 2, 2009 (SPF)	August 1, 2007 (IDA) April 2, 2009 (SPF)
Appraisal:	September 22, 2006 (IDA) November 18, 2008 (SPF)	Restructuring:	-	December 31, 2010 (IDA) July 18, 2012 (SPF)
Approval:	January 30, 2007 (IDA) November 25, 2008 (SPF)	Mid-Term Review:	October 13, 2010 (IDA and SPF)	October 13, 2010 (IDA and SPF)
		Closing:	December 31, 2011 (IDA) December 31, 2011 (SPF)	December 31, 2011 (IDA) November 30, 2013 (SPF)

C. Ratings Summary	
C.1. Performance Ratings by ICR	
Category	**Rating**
Outcomes:	Satisfactory
Risk to Development Outcomes:	Moderate
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

C.2. Detailed Ratings of Bank and Borrower Performance			
Bank	**Rating**	**Borrower**	**Rating**
Quality at Entry:	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency:	Satisfactory
Overall:	Satisfactory	Overall:	Satisfactory

D. Sector and Theme Codes		
D.1. Sector Codes (as percentage of total Bank financing)		
Sector	**Original Percentage**	**Revised/Actual Percentage**
Other Social Services	12	9
Water Supply	25	7
Sanitation	63	84
D.2. Theme Codes (as percentage of total Bank financing)		
Theme	**Original Percentage**	**Revised/Actual Percentage**
Administrative and Civil Service Reform	25	10
Other Human Development	25	19
Rural Services and Infrastructure	50	71

E. Bank Staff		
Position	**At ICR**	**At Approval (2007)**
Vice-President	Jorge Familiar Calderon	Pamela Cox
Country Director	Mary A. Barton-Dock	Caroline D. Anstey
Sector Director	Ede Jorge Ijjasz-Vasquez	Makhtar Diop
Sector Manager	Wambui G. Gichuri	John Henry Stein
Task Team Leader	Christophe Prevost	Manuel Schiffler
ICR Team Leader	Jean-Martin Brault	
ICR Author	Elizabeth Kleemeier	

F. Results Framework Analysis

F.1. Project Development Objectives (from Project Appraisal Document)

PDO: Increase access to and use of WSS services in participating rural communities.

Specific objectives:
-Increase the sustained and effective use of safe drinking water in participating communities;
-Improve use of effective sanitation and hygiene practices in participating communities; and
-Strengthen the capacity of the implementing agency, local water committees, and professional operators in cooperation with local government.

F.2. Revised Project Development Objectives (as approved by original approving authority)

The PDOs were not revised.

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Value	Formally Revised Target Value	Actual Value Achieved at Completion
Indicator 1:	**Number of people provided with access to improved water sources under the target**			
Unit = People	30,000	Baseline + 21,000	51,000	59,367
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	11/30/2013
Comments (incl. % target achieved)	**116% target achievement**: Based on 2008 population extrapolated by various growth rates. For some communities a household count was			

(a) PDO Indicator(s)				
Indicator	**Baseline Value**	**Original Target Value**	**Formally Revised Target Value**	**Actual Value Achieved at Completion**
	completed just prior to system construction.			
Indicator 2:	**Number of households using basic sanitation systems in participating localities**			
Unit = Households	3,060	Baseline + 1,890	4,060	4,964
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	11/30/2013
Comments (incl. % target achieved)	**122% target achievement:** The number of beneficiaries (HHs) is the estimated number of HHs in the 7 communities where sanitation campaigns were conducted ("participating localities"), calculated with the baseline and adding the number of HHs that have built and are using a latrine in the last 5 years (27.5%, see results survey).			

(b) Intermediate Outcome Indicator(s)				
Indicator	**Baseline Value**	**Original Target Value**	**Formally Revised Target Value**	**Actual Value Achieved at Completion**
Indicator 1:	**Proportion of CAEPAs which meet the requirements stated in the Standard Minutes of Comm. Meeting to Accept Project**			
Unit = Percentage of committees	0	Not defined	90%	100%
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	12/31/2011
Comments (incl. % target achieved)	**100% target achievement:** 15 CAEPAs were created in line with the 2009 sector framework law.			
Indicator 2:	**Proportion of communities using professional operators with signed contracts with professional operators**			
Unit = Percentage of communities	0	100%	100%	100%
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	12/31/2011
Comments (incl. % target achieved)	**100% target achievement:** the 9 communities using a professional operator have a signed contract with them.			
Indicator 3:	**Proportion of Operators trained in Financial Management, technical O&M, and community relations**			
Unit = Percentage of operators	0	100%	100%	100%
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	10/31/2012
Comments (incl. % target achieved)	**100% target achievement:** All 9 private operators were trained in financial management, technical O&M, and community relations.			

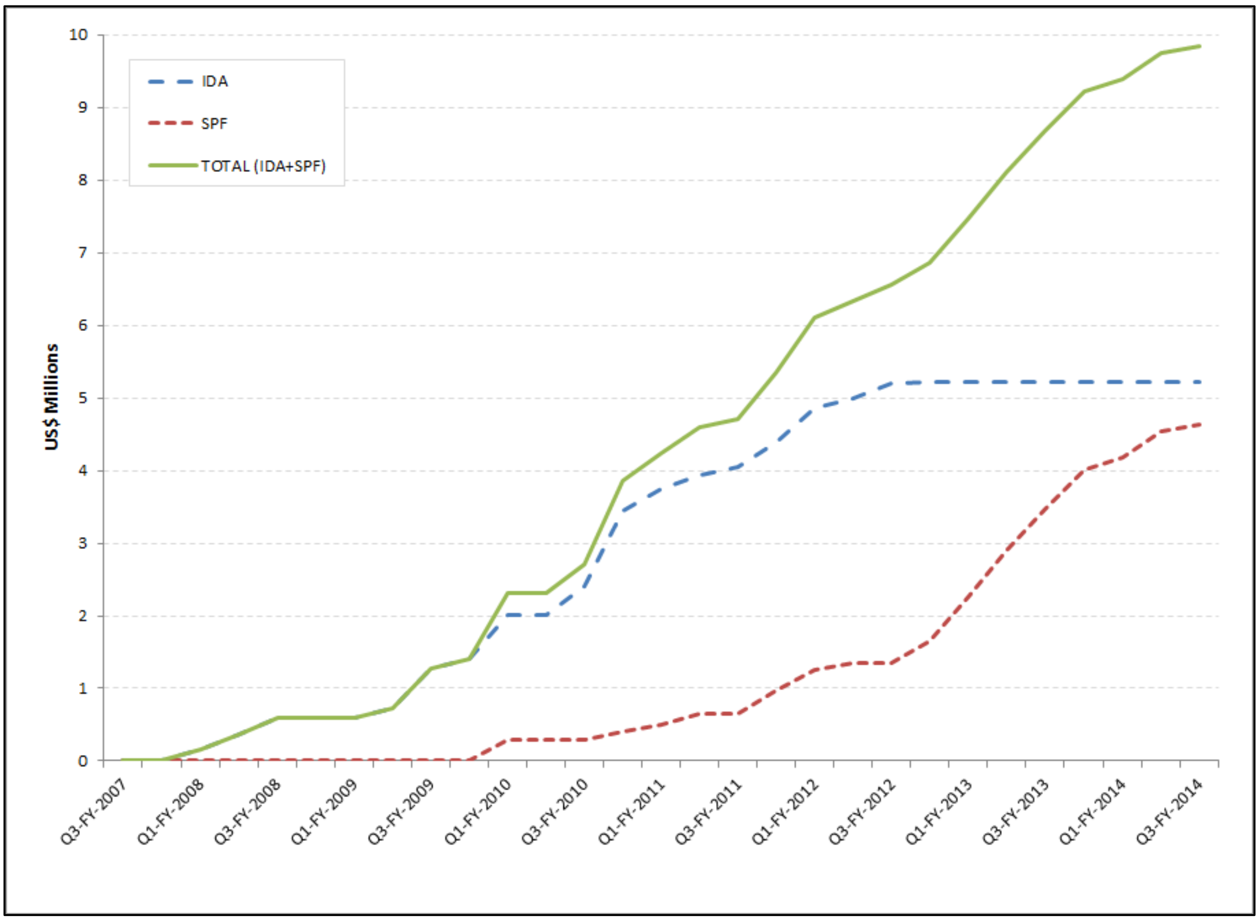
(b) Intermediate Outcome Indicator(s)				
Indicator	**Baseline Value**	**Original Target Value**	**Formally Revised Target Value**	**Actual Value Achieved at Completion**
Indicator 4:	**Number of water utilities that the project is supporting**			
Unit = Water Utilities	0	1	1	1
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	12/31/2012
Comments (incl. % target achieved)	**100% target achievement:** The Project supported DINEPA.			
Indicator 5:	**Number of water systems rehabilitated or newly built**			
Unit = Water System	0	Not defined	11	15
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	11/30/2013
Comments (incl. % target achieved)	**137% target achievement:** 8 piped systems were rehabilitated, 4 new piped systems were constructed, and 3 communities were served with a total of 8 handpumps. Each of these communities with handpumps is considered a system.			
Indicator 6:	**New piped household water connections that are resulting from the project intervention**			
Unit = On-premise household connection	0	Not defined	200	1,598
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	11/30/2013
Comments (incl. % target achieved)	**799% target achievement:** the revised estimate was set at a low value to reflect uncertainty about demand for private connections, but the demand ended up being high.			
Indicator 7:	**Improved community water points constructed or rehabilitated under the project**			
Unit = Standpost or kiosk	0	Not defined	40	159
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	11/30/2013
Comments (incl. % target achieved)	**400% target achievement**: Of the 159 kiosks and communal water points constructed, 89 were in operation as of March 2014. Others had been closed by the operators due to a lack of demand for the kiosks (not profitable to keep a kiosk operator on site), or users did not shut faucets of communal water points (standposts).			

(b) Intermediate Outcome Indicator(s)				
Indicator	**Baseline Value**	**Original Target Value**	**Formally Revised Target Value**	**Actual Value Achieved at Completion**
Indicator 8:	**Percent of target audience receiving training on hygiene and sanitation in communities**			
Unit = Percentage	0	Not defined	80	13
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	12/31/2012
Comments (incl. % target achieved)	**16% target achievement:** "Target audience" is defined as the estimated 2012 population (34,011) in the 7 communities that benefitted from the promotion campaign. 4,406 people were trained, attended events, or received home visits, a much lower number than planned, given the reduction in the firm's original scope.			
Indicator 9:	**Number of masons trained in latrine construction**			
Unit = Mason	0	Not defined	40	14
Dates Achieved	10/31/2008	10/31/2008	12/31/2010	12/31/2012
Comments (incl. % target achieved)	**35% target achievement:** This activity was scaled down due to the change in sanitation policy, procurement delays and subsequent lack of time and funds, but the target value was not changed.			

G. Ratings of Project Performance in ISRs				
No.	**Date ISR Archived**	**DO**	**IP**	**Actual Disbursements (USD millions)**
1	04/16/2007	Satisfactory	Satisfactory	0
2	10/10/2007	Satisfactory	Satisfactory	0
3	03/26/2008	Satisfactory	Satisfactory	0.59
4	10/16/2008	Satisfactory	Satisfactory	0.59
5	04/01/2009	Satisfactory	Satisfactory	1.27
6	07/16/2009	Satisfactory	Satisfactory	1.80
7	10/14/2009	Satisfactory	Satisfactory	2.31
8	04/13/2010	Satisfactory	Satisfactory	2.97
9	02/22/2011	Satisfactory	Moderately Satisfactory	4.70
10	09/08/2011	Satisfactory	Moderately Satisfactory	5.70
11	03/13/2012	Moderately Satisfactory	Moderately Satisfactory	6.56
12	11/12/2012	Moderately Satisfactory	Satisfactory	7.82
13	11/30/2013	Satisfactory	Satisfactory	9.48

H. Restructuring					
Restructuring Date(s)	**Board Approved PDO Change**	**ISR Rating at Restructuring**		**Amount Disbursed at Restructuring in USD millions**	**Reason for Restructuring & Key Changes Made**
		DO	**IP**		
12/31/2010	N	S	S	4.60	(1) change the implementing agency, (2) forego building capacity in Participatory Project Development Councils, (3) integrate and revise results framework for IDA and SPF grants, (4) forego counterpart funding
07/26/2012	N	MS	MS	6.92	Extend closing date of SPF Grant by 11 months

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

1. ***Country Context.*** At project appraisal, Haiti was going through a transitional period following the abrupt end of the Aristide regime in 2004. More than three-quarters of its 8.6 million population was living below the poverty line, as well as 54 percent in extreme poverty, and the absence or poor state of basic rural infrastructure led to high rural-urban migration. The State and Peace-Building Fund (SPF) application noted in addition that Haiti was in crisis in 2008 due to the devastation of three hurricanes and a tropical storm, with total damages estimated at 15 percent of the Gross Domestic Product (GDP). Public institutions remained weak, despite progress on democracy, security, economic governance and institutional reform in 2006-2008. Haiti further suffered from setbacks in political stability in April 2008, when riots broke out over rising food and fuel prices, highlighting the need to improve socio-economic conditions and provide basic services to reduce the risk of social unrest.

2. ***Sector Context.*** Access in rural areas to improved water supply and sanitation (WSS) was the lowest in the Western Hemisphere with 54 and 16 percent, respectively, and institutional capacity for rural WSS provision was low. The National Drinking Water Service (SNEP), the main institution for water supply outside Port-au-Prince, focused its limited capacity on intermediate cities of more than 10,000 people and the Ministry of Health had a small and inactive unit for hygiene and water supply due to lack of funds. No institution was charged with the responsibility of rural sanitation at the time. Without an institutional presence in rural areas and with little knowledge about levels of coverage and needs, it was thus difficult to prioritize investments which were, as a result, carried out in a piecemeal manner and did not necessarily reach the neediest citizens.

3. The Government had drafted legislation for a new institutional setup for rural WSS, which would be in place after project effectiveness. This legislation included decentralization of the responsibility for water supply provision to communes, creation of regional water and sanitation companies, and delegation by the communes to third party water service providers, which could be the regional companies, the private sector or community water associations. The legislation became law in 2009, creating the National Water and Sanitation Directorate (DINEPA) and replacing SNEP, as well as other national entities.

4. ***Rationale for Bank Involvement.*** The Project would support objectives in the World Bank Group Transitional Support Strategy for Haiti FY05-FY06 (Report # 30541), as well as the Interim Strategy Note for Haiti FY07-FY08 (Report # 37720-HT), discussed by the Executive Directors on December 10, 2004 and December 14, 2006, respectively, specifically to deliver quick wins in basic service provision, building public-private partnerships to promote inclusion and restore credibility in public institutions, and to deepen good governance and institutional reforms.

5. Also, a World Bank-assisted pilot project for rural water supply, school sanitation, and hygiene education had been implemented by SNEP in 2005-2007, using US$855,000 from a Low-Income Countries Under Stress (LICUS) grant. The LICUS project had been successful in building SNEP's capacity, testing in 3 schemes a new approach to service provision using professional operators, as well as selling water by volume through metering household connections and converting communal standposts to water kiosks. [1]

[1] Standposts (*fontaines* in Haiti) distribute water freely, while kiosks sell water by the *bokit* (5 US gallons or 18.9 liters).

6. ***Contribution to Higher Objectives.*** The Project would contribute to 4 higher level objectives: (i) *Improved governance and public sector capacity:* Build SNEP capacity; introduce transparent procedures for allocating infrastructure investment; (ii) *Greater social stability and state credibility:* Demonstrate quickly and effectively state capacity to provide jobs and services to vulnerable populations; (iii) *Social cohesion:* Improve community capacity to mobilize inhabitants to obtain and sustain water services; (iv) *Improved health:* Reduce diarrhea, particularly in children and infants, through integrated water supply, hygiene, and sanitation services.

1.2 Original Project Development Objectives (PDO) and Key Indicators (*as approved*)

7. The IDA and the SPF grants were different sources of funding, and therefore had different guidelines and objectives. The practice at the time of project design (for IDA) was to list PDOs together with specific project objectives, while the format of the SPF proposals did not include the definition of the PDO in the main text. The PDO for SPF was instead expected to be included in the Results Framework.

Table 1: PDO, Specific Objectives and Indicators

IDA Grant	**Indicators**[2]
- PDO: Increase access to and use of WSS services in participating rural communities. - Specific objectives: • Increase the sustained and effective use of safe drinking water in participating communities; • Improve use of effective sanitation and hygiene practices in participating communities; and • Strengthen the capacity of the implementing agency, local water committees, and professional operators in cooperation with local government.	- Number of beneficiaries gaining access to and using sustainable water systems in participating localities - Number of beneficiaries gaining access to and using basic sanitation systems in participating localities
SPF Grant	**Indicators**[3]
- PDO: • Increased access to safe and continuous water supply; • Increased use of sanitary facilities; • Enhanced credibility of the government, as proven by its ability to deliver water and sanitation services to participating communities.	- Increase in the number of beneficiaries receiving improved water service (access, continuity, and safety) - Increase in the number of beneficiaries using sanitary facilities - Positive beneficiary perception of government support for WSS service provision

8. Additionally, while for SPF grants, indicators only reflected the PDOs, the initial IDA Results indicators reflected both the PDO and the specific objectives. See Table 1 for the exact wording of the development objectives and indicators in the original documents.

[2] The PAD defined "sustainable" as: tariffs at a level that finances O&M; 80% minimum of revenue collected; water committees meet regularly; professional operators fulfill their contractual obligations. The PAD also defined "basic sanitation systems" as any system that met the WHO-UNICEF Joint Monitoring Program definition of improved basic sanitation.

[3] The SPF grant application stated that the given indicators were preliminary results, and the final versions would be part of the project's operation manual. The project operation manual gave (in French) the indicators shown in this table.

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

9. The Project was restructured on December 2, 2010, primarily to put in place a single, common set of PDO- and intermediate-level indicators for both grants. As a result, (i) the SPF development objective of enhanced government credibility would now be measured only by increased access to water and sanitation services; and (ii) sustainability as an objective was dropped entirely. After restructuring, for all practical purposes, the Project had now one objective, to increase the number of improved WSS facilities, and the target for beneficiaries of improved water supplies was revised upwards, while the target for beneficiaries of improved sanitation facilities was revised downwards, as explained in Table 2.

Table 2: Revised PDO-level Indicators[4] for IDA and SPF Grants

Revised PDO-level indicators	Comments
REVISED: People provided with access to "Improved Water Sources" under the project (number)	This indicator was revised to be consistent with Bank-wide Core Sector Indicators
REVISED: Number of households using basic sanitation systems in participating localities	The target value for sanitation was revised downward mostly due to delays in recruiting a consultant or firm to lead the hygiene promotion and sanitation activities.
DROPPED: Positive beneficiary perception of government support for WSS service provision	This indicator was deemed as impractical to measure in a meaningful way, and thus a poor indicator for the intended outcome

1.4 Main Beneficiaries

10. *Poor and vulnerable citizens:* The social analysis for the IDA grant concluded that the Project would benefit the poorest and most underserved of Haiti's citizens, particularly women and children, by virtue of the Project's geographic focus on rural areas. The rural populations, roughly two-thirds of the total population, were the poorest people in Haiti with 86 percent living on less than US$2 a day and 69 percent on less than $1 a day.

11. *Selected communities located in the Sud Department*: The beneficiaries would be located in the Sud and Nippes departments where an IDB study had identified 40 communities eligible to be considered for the project based on technical criteria. Eligibility criteria included: (i) the number of inhabitants had to be less than 10,000; (ii) availability of a nearby, sufficiently productive, good quality source of water; (iii) protection of the source or indication of willingness and likelihood that the source would be protected; (iv) estimated per capita costs of less than US$150; (v) acceptance to pay volumetric tariffs covering operation and routine maintenance (O&M) costs; (vi) acceptance of the professional operator model; and (vii) payment of an up-front financial contribution (equivalent to an estimated 3 months of O&M costs) into a fund managed by the water committee. If the above criteria did not reduce the number of eligible communities sufficiently, the following additional criteria would be applied: lowest unit cost, and greatest average walking distance to current sources.

12. *SNEP and CAEPs:* Project documents identified public sector institutions as beneficiaries, because the Project would work through government to strengthen sustainable service delivery. At project appraisal, SNEP was the public sector institution which would receive assistance from the Project, the scope of which

[4] Intermediate outcomes indicators and target values were also revised but for different reasons: the difficulty in measuring them; to harmonize the SPF and IDA indicators; and delays due to the 2009 hurricane and January 2010 earthquake.

would be based on a 2005 technical audit concluding that: (i) SNEP's water service delivery capacity was inadequate due to limited human and financial resources, particularly to the rural population, and due to the lack of a control system for service quality. Donors generally concentrated their financial resources on infrastructure, leaving SNEP with insufficient public resources to finance operation, management and maintenance; (ii) management capacity in SNEP was deficient; and (iii) local water committees (CAEPs) often did not receive support from SNEP to manage local water systems. Both the PAD and SPF documents also highlighted the importance of providing support to these CAEPs, which later became water and sanitation committees (CAEPAs), as well as to professional operators.

1.5 Original Components (*as approved*)

13. The IDA Grant had two components and the SPF Grant had four. This difference was due to the latter defining smaller and more specific components. This section describes in turn each IDA component, along with its corresponding SPF components. The SPF Grant divided the water supply and sanitation/hygiene activities into two distinct components.

14. ***Component 1: Capacity Building and Project Management.*** The IDA activities under this component comprised: (i) technical assistance and resources for the SNEP regional office in the Sud Department; (ii) financing for SNEP to finalize and disseminate the national rural water and sanitation strategy developed under the LICUS project; (iii) financing for project management, documentation, reporting, information technology, environmental management, and financial audits; and (iv) financing for monitoring and evaluation (M&E) surveys to measure indicators.

15. The SPF capacity-building activities would finance training for: (i) community water and sanitation committees (CAEPAs) and the community organization members formed under the Bank's Community-Driven Development (CDD) Project, PRODEP, in communication, community mobilization, conflict resolution, and the roles of the various stakeholders under a professional operator management model; (ii) professional operators (and CAEPAs if they choose to act as operators) in billing and accounting, meter reading and repair, water disinfection, plumbing, community relations, and conflict resolution; (iii) members from umbrella associations of the community organizations (COPRODEPs or Participatory Project Development Councils) in how to form a water and sanitation sub-committee; and (iv) service providers under the CDD and rural water projects in the form of annual departmental workshops to exchange experiences. The SPF component for project management and M&E would fund consultant services, equipment, and operating costs for SNEP.

16. ***Component 2: Water Supply, basic sanitation and hygiene promotion.*** Water schemes, sanitation facilities, and hygiene promotion activities would be in the approximately 12 communities selected to receive the water schemes. The Project would finance interventions in:

- *Water Supply*: The Project would construct or rehabilitate piped water schemes, as well as boreholes equipped with handpumps, and put in place the professional operator management model. Water would be sold based on volume consumed through household connections and kiosks, at tariffs that would at a minimum, cover routine O&M costs. The Project focused on supporting SNEP in small towns of 1,000 to 10,000 people. Preliminary designs, social mobilization and supervision of works would be provided by an engineering firm throughout project implementation;
- *Household Sanitation:* The IDA Grant included financing for household latrine construction, including a subsidy, whereas the SPF grant specifically excluded any direct financing or subsidy for household latrines. Both grants would support activities to promote demand for household latrines. SPF would also finance training for local masons in household latrine construction;

- *Institutional Sanitation:* Both grants would support the construction of ''latrine blocks'' or *blocs sanitaires*[5] in schools and health centers;
- *Hygiene Promotion:* The service provider (private firm or NGO) in charge of sanitation activities would also conduct hygiene promotion campaigns in the project communities. The SPF application specified that this should include training for teachers, women leaders, water committee members, and the community organizations participating in the CDD project.

1.6 Revised Components

17. ***Change in national sanitation strategy.*** With the creation of DINEPA came a new sanitation strategy which prohibited household latrine subsidies, encouraging households to build, use and maintain their own sanitation facilities, through the development of various incentive mechanisms, awareness and education campaigns and training of local masons. This strategy had been under discussion and preparation since at least 2008 and explains why the SPF Grant did not follow the IDA Grant component in subsidizing household latrines. The household latrine construction aspect of the Project was dropped, and the focus shifted to the construction of institutional latrines, as well as to hygiene and sanitation promotion.

18. ***COPRODEPs.*** The first restructuring, approved in December 2010, changed the SPF capacity building component by eliminating the proposed training to prepare COPRODEPs to establish water and sanitation sub-committees for their councils and prepare communal water and sanitation investment plans. COPRODEP funding was dropped in order to align the Project with the new institutional structure for the sector which did not assign investment planning responsibilities to the COPRODEPs. Rather, CAEPAs and the regional offices of the new DINEPA were supposed to cooperate in planning and procuring water and sanitation investments, as well as promoting household sanitation.

1.7 Other significant changes

19. Other significant changes included:

- ***SPF Funding.*** The SPF funding was approved two years after the IDA Grant was appraised, and came with a slightly different development objective, as well as additional indicators;
- ***Change in implementing agency, from SNEP to DINEPA.*** The 2010 restructuring approved the change in the project implementing agency, resulting from the new law in 2009 creating DINEPA, but the transition led to delays in implementation;
- ***Forego counterpart-funding.*** The January 2010 earthquake made government financing difficult and the requirement to provide US$250,000 in counterpart funding was foregone. This did not affect the achievement of the PDO;
- ***Change in Results Framework to consolidate monitoring for IDA and SPF financing.*** This change was part of the 2010 restructuring, and is further described in Section 2.3;
- ***No-cost extension of project closing.*** The World Bank approved a no-cost extension to the SPF Grant twice, to December 31, 2012 and November 30, 2013, respectively, to allow works to be completed. The completion of water supply and sanitation works had been delayed by: (i) natural disasters and the cholera epidemic; (ii) administrative delays from an extensive sector reform, and change in management of DINEPA; and (iii) political instability. The closing date extensions contributed to the achievement of project targets.

[5] A *bloc sanitaire* is a concrete structure with toilets and basic water supply fixtures in two compartments, one for men/boys and one for women/girls.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design, and Quality at Entry

20. The project design for water supply drew on the positive experience of Bank projects in Madagascar and Rwanda supporting new management models for piped water schemes, including service delegation to a local private operator by the beneficiary community through a lease contract as well as the Haiti LICUS Project. Given that the LICUS Project was quite limited (3 schemes), this project was basically designed to test the management model at a larger scale.

21. The new management model for piped water schemes was fully in line with the sector reforms that were under discussion during project preparation and enacted during project implementation. The government decision to seek an alternative management solution with professional operators was based on the deteriorating performance of the community management of piped water schemes as revealed by a national sector diagnostic and analysis carried out by the Government in 2005.

22. The IDB had prepared a similar project (approximately US$15 million) in three adjoining departments, which was approved in September 2006. Both projects were designed to use the same implementing agency, operational manual and coordinator.

2.2 Implementation

23. The Project was financed by two sources, namely a SDR3.4 million IDA Grant (P089839) approved in December 2006 and a complementary US$5 million SPF Grant (P114936) approved in November 2008. The first phase of implementation was dedicated to feasibility studies and social mobilization activities prior to construction and rehabilitation of water systems.

24. The new management model for water supply with professional operators proved promising. Two reasons that communities accepted the professional operators were: (i) the role given to communities in selecting their operators, and (ii) the operators being members of the community. The initial planning did not include sufficient resources for social mobilization after construction, as capacity-building for professional operators and CAEPAs, but this deficiency was eventually corrected during implementation. Despite the communities expressing general acceptance of the new model in public meetings, several factors can explain resistance in the first years of implementation:

- An indirect consequence of the earthquake, bringing in a number of organizations providing free services as relief, which in turn had a negative impact on community attitudes toward a management model based on paying for water according to volumes consumed;
- Some local politicians campaigned on promises to reduce the tariff or provide free water; and
- The professional operators lacked clear directives and support from DINEPA or the mayors regarding disconnection of water services due to nonpayment. Furthermore, recruitment of operators was initially slowed down by the lack of interest from the private sector (firms), and the approach had to be reformulated to focus instead on local candidates.

25. The selection procedures for communities also worked well, but it was noted that some aspects needed to be improved such as: (i) how to accommodate the demand and interest from initially reluctant communities, as they watch implementation proceed in the selected communities, and (ii) how to integrate water source protection activities and incentives into the model.

26. The engineering firm implemented social mobilization activities prior to construction,[6] and SNEP/DINEPA provided capacity-building support to the CAEPAs and professional operators during and after construction. In addition, the Project recruited an international consultant to support the professional operators and the then German Development Service (DED) provided technical assistance to support operator training and CAEPA capacity-building.

27. The Project was strategically restructured in 2010 to simplify and update the results framework as well as to adapt to DINEPA's new sanitation strategy. The Project shifted from household latrine subsidies to institutional latrine construction as well as hygiene and sanitation promotion. Procurement delays in selecting the firm in charge of the sanitation activities also limited the construction of institutional latrines in only a portion of the communities served by the water schemes.

28. ***Other factors affecting implementation:***

- *Natural disasters and epidemics:* Hurricanes, the 2010 earthquake and the subsequent cholera epidemic required government agencies to place priority on emergency activities. This led to a considerable amount of project funding being reallocated to emergency responses. Additionally, some local construction firms had suffered losses or had demobilized following these events;
- *Passage of the 2009 Water Framework Law:* The transfer of staff and authority from SNEP to DINEPA delayed project implementation. The final transfer of authority and amendment of subsidiary agreements were completed in March 2011. Political uncertainty in Haiti exacerbated this problem.

29. It is important to note that, despite the natural disasters, cholera epidemic and political instability, DINEPA's institutional response was strong and maintained the project on track throughout implementation.

2.3 Monitoring and Evaluation (M&E) Design, Implementation, and Utilization

30. The system for monitoring construction and activity implementation functioned adequately. This system comprised reports from the implementing agency and frequent World Bank supervision missions. However, the system for monitoring PDO and intermediate results suffered from a number of indicators impractical to measure over the life of the project, overly ambitious initial targets, as well as the initial lack of harmonization between the different indicators for the IDA and SPF results frameworks.

31. ***M&E Design.*** The M&E design suffered from two main problems: (i) separate sets of indicators for the IDA, SPF, and IDB financing of the program; and (ii) poorly defined indicators in some cases. Initial project design planned for consultants to design and implement surveys to collect most of the required data, offering little prospect for putting in place a sustainable M&E system.

32. ***M&E Implementation.*** The 2010 project restructuring allowed harmonization of the results framework from the different sources of financing, consolidating targets and simplifying monitoring arrangements. The revised framework was more pragmatic and indicators were more easily measurable and relevant to the reality on the ground. No indicators for institutional sanitation were included, despite this becoming the major focus of the sanitation and hygiene promotion activities. The Results indicators were also aligned to the Bank's core sector indicators in 2010 and targets were revised, at a time when the first waterworks had been completed, and sanitation activities had not yet started. Also, DINEPA had plans to develop a sector M&E system with which the project's system would be aligned. Despite the initial

[6] Consulting communities on their acceptance of the management model based on payment by volume and a professional operator, and forming CAEPAs.

problems with the design and lack of clarity on some results indicators (for example “Percent of target audience receiving training on hygiene and sanitation in communities”), the M&E design had no negative impact on project implementation.

33. The final figures for the PDO- and intermediate-level indicators were agreed upon by the DINEPA Coordinator and ICR Team based on a review of information gathered in supervision missions and the hygiene and sanitation consultant reports, supplemented by the Coordinator’s first-hand knowledge of the schemes and interactions with the various professional operators.

34. ***M&E Utilization.*** Information on progress from reports and supervision missions was closely reviewed and used to take actions to deal with implementation delays. Data on the various results indicators were systematically used to inform decision-making or resource allocation in the course of the Project.

2.4 Safeguard and Fiduciary Compliance

35. ***Safeguards.*** The Project triggered the safeguard policies on environmental assessment, natural habitats, and cultural property, and was classified as Category B. An Environmental Assessment report and an Environmental and Social Management Framework were prepared. In December 2009, the environmental management frameworks for the IDA, SPF and IDB projects were consolidated. The implementation of potential environmental and social impacts mitigation measures which, for all sub-projects were only minor, went well, but overall safeguards compliance was rated “Moderately Satisfactory” as monitoring and documentation were not performed systematically.

36. The main environmental concerns were to: (i) protect the catchment area and source from pollution and degradation; (ii) select scheme sites that were safe from flooding, washouts and landslides; (iii) control wastage of water water points; (iv) mitigate pollution, nuisance and accidents during construction; and (v) take proper measures in case of archeological discoveries and in protected areas. To address these concerns, each feasibility study had to include an environmental management plan. DINEPA’s environmental safeguards monitoring capacity throughout implementation depended heavily on the engineering firm which developed the feasibility studies. No dedicated DINEPA environmental specialist was in place.

37. A December 2011 supervision mission noted a number of environmental issues, namely: (i) lack of protection of areas around the source in Arniquet and Cavaillon; (ii) inadequate drainage around the kiosks and standposts; (iii) faucets left continuously open at some standposts, exacerbating the drainage problem; and (iv) guidelines on latrine location were not disseminated. These issues were later fixed and helped to improve the remaining works financed under the Project. Completed works throughout the Project also did not interfere with natural habitats or physical cultural resources.

38. DINEPA’s capacity in monitoring the Project’s social aspects was adequate. The Involuntary Resettlement policy was not triggered and no specific problems were identified, but documentation of resolved issues, such as negotiating the price of water with residents living close to water sources, was not systematically performed and was done on an ad-hoc basis.

39. ***Fiduciary Compliance.*** Financial management was rated “Moderately Satisfactory” throughout the project period. The problems affecting the management of project funds included: (i) continued use of Excel, rather than the DINEPA financial accounting software (ACCPAC), due to technical problems; (ii) late submission of audit reports; (iii) budget management based on the global allocation of annual funds to the project, rather than a budget for the estimated cost of implementing activities; and (iv) a delay in the bank account reconciliation. In addition, a 2011 supervision mission observed that professional operators

needed more training in financial management. Procurement was also rated "Moderately Satisfactory" throughout project implementation, mainly due to delays related to the preparation of bidding documents.

2.5 Post-Completion Operation/Next Phase

40. A key goal of the Project was to introduce a new water management model based on professional operators, which will have greater prospects for sustainable water services. A new project (estimated US$30 million) is under preparation, which will build on the lessons learned from the implementation of this model and expand to other regions of Haiti, particularly in zones affected by cholera. Additionally, the World Bank, through the Water and Sanitation Program (WSP) financed a study tour to Benin so that stakeholders could learn from the implementation of a national strategy for supporting private operators for rural water supply. The new operation will seek to include the main findings from the Benin trip and adapt them to the Haitian context, including: (i) gradually decentralizing planning and execution to local government levels; and (ii) preparing the WSS sector for a shift from a project approach to a programmatic approach. A budget support operation[7] with inputs for the water sector will also strengthen the enabling environment for the project. A similar World Bank-assisted budget support operation in Benin in the early 2000's was instrumental in laying the foundation for the expansion of private operators for rural piped schemes.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

Rating: **Substantial**

41. Increased access to improved water supplies and basic sanitation remain priorities, especially given the Bank's interest in contributing to the elimination of cholera from Haiti. The PDO-level indicator for water services began with the dual goals of increasing access and sustainability, but it was eventually reinterpreted to focus on access. The thrust of the Project, however, was to put in place a management model that would deliver sustainable water services.

42. Although the PDO related to sanitation was successfully achieved, the strategy and approach toward sanitation proved more challenging, given DINEPA's change in sanitation strategy during project implementation which ruled out household latrine subsidies. As a result, a stronger emphasis was given to institutional over household sanitation, and hygiene and sanitation promotion were implemented on a smaller scale than originally planned.

43. Water and sanitation remain highly relevant to Haiti's current development priorities, as indicated in the Government of Haiti's Strategic Development Plan (PSDH) to become an emerging country by 2030 and 3-year investment plan for 2014-2016. Additionally, by increasing access to drinking water and sanitation, the Project's objectives are consistent with the current World Bank Group's Interim Strategy Note for Haiti FY13-FY14 (Report # 71885-HT) discussed by the Executive Directors on September 27, 2012, particularly with regards to reducing Haiti's vulnerability to cholera. The Project also supports the World Bank's twin goals of reducing poverty and promoting shared prosperity, as reflected by its objective of increasing access to basic services in rural areas where the highest poverty levels are still found.

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[7] Haiti Reconstruction Fund (HRF) Grant for Strengthening Governance in Education and Water Sectors (P147166).

3.2 Efficacy

***Rating*: Substantial**

44. **Increased access to water supply services.** The Project has successfully increased access to water services in participating rural communities, by providing 59,367 people with access to improved water supplies in 15 communities. This corresponds to a 116 percent target achievement. Additionally, 8 piped systems were rehabilitated, 4 piped systems were constructed, and 3 communities were served with a total of 8 handpumps. This corresponds to a 137 percent target achievement.

45. **Increased level of service.** As a result of the Project, 1,598 new piped household water connections were installed and 159 improved community water points were constructed or rehabilitated. Over 20 percent of the households in the project area now have a private connection to the water network, compared with 8 percent in 2008. This also favorably compares with the rural proportion of Haitians with a household connection to a piped system (5 percent in 2011).[8] Additionally, an evaluation of project results estimated that the average water consumption at household connections was 30 liters of water per capita per day (lpcd) and 19 lpcd at kiosks. For this consumption, households paid between 150 and 250 gourdes per month (between US$3.50 and 5.75 per month), a rate which allows operators to cover operating and maintenance costs.

46. **Sustained quality of drinking water.** As a result of the Project, every drinking water system constructed or rehabilitated under the Project is equipped with a chlorinator and every operator uses a kit to measure residual chlorine (a proxy for water quality). These analyses are performed by the operator and the TEPACs and results are incorporated into the national water quality monitoring system called SISKLOR. Water distributed by the systems financed under this Project has consistently complied with safe drinking water standards in place in Haiti, of particular importance in the context of the cholera epidemic. Additionally, close to 50 percent of the survey respondents (see Section 3.6 for description of survey) pointed to the quality of water as the reason why they asked to be connected to the network or why they chose to use kiosks for their water needs.

47. **Increased access to and use of sanitation at household and institutional levels.** The Project successfully contributed to increasing access to and use of sanitation to 4,964 households in the 7 communities targeted for this intervention. This corresponds to a 122 percent target achievement, despite the reduced target audience receiving training on hygiene and sanitation and reduced number of masons trained in these communities. According to field surveys, 27.5 percent of households have built, with their own resources, a latrine in the last 5 years, following sanitation and hygiene promotion campaigns under the Project and other organizations present in the zone. This increased the proportion of households owning and using a latrine to about 81 percent,[9] which compares favorably with the Haiti rural coverage figure of 59 percent, as shown in the WHO-UNICEF 2013 Progress Report. In addition, sanitation was improved in one health center and 14 schools which received a total of 25 new or rehabilitated latrine blocks to benefit 5,547 students and teachers.

48. **Enhanced social stability and state credibility.** The Project contributed to improved social stability and state credibility, as suggested in the beneficiary survey which shows that beneficiary communities are satisfied with the water service provided, as well as by the general acceptance of the new management professional operator model and the water services it delivers. According to the beneficiary survey:

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[8] WHO-UNICEF, 2013. Progress Report on Sanitation and Drinking Water - Update.

[9] Although the beneficiary survey did not systematically verify whether the latrines were being used in every surveyed household, usage was confirmed on a number of occasions throughout project implementation.

- 77 percent of surveyed households with a connection to the network have expressed confidence in the quality of the treated water, compared with 15 percent in 2008;
- 67 percent of surveyed kiosk users have expressed confidence in the quality of the treated water, compared with less than 4 percent in 2008;
- Over 80 percent of the clients (household connections and kiosks) are satisfied with the private operator and expressed their support and desire in maintaining the new management model;
- 65 percent of the surveyed users at water kiosks have expressed their interest in requesting a household connection.

49. While it is uncertain whether water supply interventions financed by the Project directly improved social stability in the selected communities, the improved infrastructure and level of service were able to provide water of acceptable quantity and quality to customers who had to deal with water stresses related to natural disasters and a cholera epidemic. Additionally, facilities were not vandalized or misused (except in one case where a local politician ordered the transmission line from one of the Bank-financed systems to be diverted to provide water to a neighboring community not included in the project) and solar panels were not stolen, as originally feared during project preparation.

50. **Capacity of the implementing agency, local water committees and professional operators strengthened.** The Project successfully strengthened the key actors in delivering sustainable water services to rural populations, including in project management, financial management technical O&M, community relations, chlorination and social mobilization. These have had their challenges over the life of the Project, but the new piped water scheme management model piloted under the Project now seems to be well established. This model was successfully implemented in 9 communities who have signed a contract with an operator and a model based on a management committee (CAEPA or other) was put in place in 6 smaller communities. Fifteen CAEPAs were created in line with the 2009 sector framework law. Eight of these systems have been operational for over 3 years now, with various degrees of efficiency and cost recovery. To address this variability, the project team worked on defining performance indicators for these operators during a workshop in October 2013. Professional operators still require support and training from DINEPA.

3.3 Efficiency

***Rating*: Substantial**

51. As the location of project activities was not determined at the time of appraisal, the PAD's economic analysis focused on providing screening tools for selecting sub-projects. A cut-off value (US$170) for per capita investment levels was determined, under which sub-projects would likely achieve an economic internal rate of return (EIRR) higher than 12 percent and could be accepted without further analysis. The overall EIRR and the net present value (NPV) of the Project were not provided in the PAD. The SPF documentation did not include any economic analysis.

52. Therefore, the ex-post economic analysis follows a different approach and consists of a cost-benefit analysis of the water supply investments (representing about 71 percent of the overall base costs of the project), for which quantifiable benefits can be measured (value of the additional consumption of safe water and costs savings accruing to project beneficiaries). The analysis was carried out for each sub-project as well as for the overall project, and estimates for the EIRR and NPV (with a 10 percent discount rate) stand at 10.0 percent and 0.10 US$ million. The average investment cost per capita was US$118.

53. The EIRR of the individual sub-projects spreads from -4.3 percent (in Fonds des Blancs, which is penalized by cost overruns due to the low success rate of drilling) to 18.9 percent (in Arniquet, which

benefits from the lowest per capita investment cost of all piped systems), with a majority of sub-projects having an EIRR close or higher than the 12 percent cut-off rate set in the PAD. In hindsight, it seems that the PAD overestimated the water demand by relying on optimistic time savings assumptions and the overall EIRR of 10 percent is considered as satisfactory, given the challenging environment. The ex-post efficiency is therefore rated as "Substantial". Annex 3 presents the results in more detail.

3.4 Justification of Overall Outcome Rating

***Rating*: Satisfactory**

54. The rating for Overall Outcome is "Satisfactory". The new management model for water supply has proved promising, contributing to the achievement of the PDOs related to water supply, sanitation, social stability and state credibility, as well as capacity building. Relevance, efficacy and efficiency were all rated "Substantial".

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

55. **Poverty.** In reaching the PDO and its targets for sanitation and hygiene promotion, the Project provided water supply services to the beneficiaries described in Section 1.4, one of the poorest and most vulnerable populations in the Western Hemisphere. Preliminary results of the 2012 Household Living Standards Survey indicate that, while extreme poverty has declined in Haiti from 2000 to 2012 by 7.5 percent, particularly in urban areas, poverty headcounts have remained high in rural areas with 38 percent (extreme poverty) and 75 percent (moderate poverty) respectively.

56. **Gender aspects.** In the beneficiary survey, it was found that fetching water is a task mostly undertaken by women (24 percent) and girls (39 percent). By providing household connections, kiosks strategically positioned in town centers, as well as standposts along the transmission lines, the Project contributed to time savings, especially for women and girls, who can dedicate time to other revenue-generating activities or education. Additionally, of the 28 trainers and 28 community workers trained in the Participatory Hygiene and Sanitation Transformation (PHAST) approach, 22 were women, highlighting the importance of women in behavioral change activities.

(b) Institutional Change/Strengthening

57. The Project supported the Haitian government's commendable efforts to put in place a new institutional structure for the sector. The implementing agency, DINEPA, is a pivotal organization in the new structure and received considerable support. The implementing agency's low project management capacity, as identified in the 2005 technical audit of SNEP, was successfully addressed during project implementation and considerably strengthened with specialized training. Capacity-building for professional operators, such as provided by the Project, was equally key to developing new and more sustainable management models for the Haitian rural water sector.

58. DINEPA's decentralized structures (OREPAs, URDs and TEPACs) came into existence during project implementation and were involved as soon as their training had been completed. They are now fully in place and are gradually assuming the supervision of the systems developed under the Project.

(c) Other Unintended Outcomes and Impacts

Not applicable.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

59. The WSP financed a project results assessment, which included the implementation of a survey to 324 beneficiaries and non-beneficiaries in 6 out of the 15 communities assisted through IDA and SPF financing. The survey results suggest the following:

- As many as 37 percent of the households with a connection sold water to their neighbors;
- The price for water bought from an on-premise connection is similar to the price at a kiosk (up to 2 gourdes per *bokit* – US 5 gallon or 18.9 liter container);
- Most people who currently do not have an on-premise connection hope to get one eventually. The principal reason given for not having one is that the people live in an area too far from, or inaccessible (too elevated) by, the network ;
- The majority of consumers believe the water is safe to drink: 73 percent of users with a household connection have confidence in the network's water quality and the proportion of users treating at home the water fetched at water points such as kiosks and standposts has decreased from 96 (before the Project) to 33 percent (after the Project);
- 95 percent of both kiosk users and household connection holders prefer management by a professional operator rather than by the CAEPA.

60. The above findings suggest that communities now accept the model of professional management based on generating revenue through the sale of water by volume. However, these findings do not take into account the many households with on-premise connections prior to the Project who often did not allow the professional operator to install meters on their connections. This points to continued social mobilization and education campaigns prior to, during and after the implementation of works in communities.

61. Comments from CAEPA members and professional operators during a stakeholder workshop in October 2013 also indicate broad support for the new management model (see Annex 5).

4. Assessment of Risk to Development Outcome

***Rating*: Moderate**

62. The beneficiary survey and stakeholder workshop indicate a high commitment among consumers to the new management model and their satisfaction of the quality of service is high. The government and DINEPA are also committed, as evidenced by their support for this Project and the legislation passed for the sector in 2009. Nonetheless, moderate risks remain, among them many exogenous factors resulting from the context of fragility, lack of resources and political instability in Haiti.

- *Institutional:* The financial dependency of DINEPA, particularly its decentralized structures on donor funding interferes with the consolidation and sustainability of the decentralized institutional structure in place in the medium and long terms. Around 90 percent of DINEPA's operating expenses are financed with donor funding and not by the Treasury of the State. The Bank's new operation and other donors aim to support DINEPA in building sustainable structures in the longer term;
- *Environmental*: Deforestation and agricultural practices threaten the quantity and quality of water sources;[10]
- *Natural disasters*: The past record of hurricanes and earthquakes indicates risks for the future;[11]

[10] In 2011, the forest area in Haiti was 3.6 percent of its territory (World Bank Indicators). This area has decreased by nearly 13 percent from 1990 to 2010 (UNDP).

[11] Haiti ranks as one of the countries with the highest exposure to multiple natural hazards with 96.5 percent of its population living at risk, as well as with the highest vulnerability to hurricanes among the region's small island states with 13 deaths per million exposed.

- *Social:* The management model and volumetric billing approaches and their value added in terms of sustainability of the service are only viable in the long run if they are implemented at scale, which DINEPA intends to do, with the support of the new Bank operation as well as other donors. The existence of different management models or tariffs in communities may put at risk the sustainability of volumetric billing and the viability of the professional operator management model;
- *Financial:* The revenue collection rate for professional operators has reached an average of 50 percent, up to 66 percent, and the operators currently set aside an average of 8 percent of revenues for maintenance. It is also to be noted that even though operators received initial start-up funds and water meters, they do not benefit from government subsidies for operation and maintenance. However, this balance remains fragile and CAEPAs and operators need support after they have been put in place, mostly related to commercial aspects to increase revenue collection.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry
***Rating*: Satisfactory**

63. The project design built on the LICUS pilot project which had tested a professional operator model. The project designers also drew on experiences with this model in Africa. The collaboration with the IDB in testing this model further was commendable. As a result, better managed water schemes have been put in place in a number of communities, and the implementing agency has gained experience with this management model. Despite the initial problems with the design, the M&E design had no negative impact on project implementation.

(b) Quality of Supervision
***Rating*: Satisfactory**

64. The Project was closely supervised and action taken to keep construction and activity implementation moving forward, and delays in contracting and progress were mostly due to severe conditions in Haiti such as natural disasters and political instability. The Bank Team strategically used restructuring to adapt to DINEPA’s change in policy with regards to sanitation and issues with the original M&E system design were also addressed. Additionally, Bank staff arranged a highly successful study visit to Benin, which contributed to strengthening planning for the next project. One area in which Bank supervision could have been improved was environmental monitoring by increasing the number of missions including an environmental specialist, as DINEPA’s capacity was low in that aspect.

(c) Justification of Rating for Overall Bank Performance
***Rating*: Satisfactory**

65. The rating for Overall Bank Performance is “Satisfactory”, mainly due to the incorporation of lessons learned from Bank experience in other countries and Haiti, to its engagement with partners such as the IDB and the DED to implement a joint rural WSS program, to the strategic us of restructuring to adapt to DINEPA’s change in policy with regards to sanitation and issues with the original M&E system design, as well as to the quality of supervision.

5.2 Borrower Performance

(a) Government Performance
***Rating*: Satisfactory**

66. The Government passed legislation that put in place an institutional structure that was supportive of the project objectives. This caused problems for the Project initially in that the implementing agency changed (from SNEP to DINEPA) and this transition held up implementation for many months. Outweighing these short-term delays is the long-term government commitment to sector reform, giving DINEPA's autonomy to make strategic decisions for the sector, and a coordinated use of donor funds.

(b) Implementing Agency or Agencies Performance
***Rating*: Satisfactory**

67. Throughout project implementation, DINEPA showed commitment, vision and flexibility to adapt and learn from other countries, in the numerous visits to Central America, as well as to the Dominican Republic and Benin. DINEPA also maintained the same core team during the entire project implementation period, bringing continuity to an environment constantly challenged by external shocks. Financial management and procurement by DINEPA were rated "Moderately Satisfactory" and DINEPA also lacked capacity in environmental safeguards compliance and monitoring, but these shortcomings proved to be minor in the light of the Project's achievement of its objectives, in its efficiency, or in its relevance. Some allowance should also be made to the fact that DINEPA only came into existence after the Project was underway, at a time when Haiti faced many water and sanitation crises due to natural disasters. The DINEPA Project Coordinator's 30-year experience in the rural WSS sector as well as constant presence on the ground, negotiation skills and timely delivery of information and procurement documents were also a central piece to the success of this project.

68. During project implementation, DINEPA also developed a number of initiatives for the rural sub-sector which further highlight its commitment to bringing sustainable WSS services to these populations. Two examples are the development of: (i) a performance indicator monitoring system for rural water supply and (ii) the SISKLOR water quality monitoring system which publishes, on a monthly basis, information on chlorine residuals in urban and rural water systems across the country.

(c) Justification of Rating for Overall Borrower Performance
***Rating*: Satisfactory**

69. The rating for Overall Borrower Performance is "Satisfactory" mainly due to the Government's commitment to sector reform and the quality of implementation from DINEPA and its staff.

6. Lessons Learned

70. **Rural communities are willing to accept a new management model using a professional operator model and payment for water based on volume consumed.** It was not certain at the project outset that consumers would accept professional operators and water payments based on the volume of water consumed. However overall, the consumers have accepted these changes, and, according to the beneficiary survey, prefer this approach to the previous model. The success stems in part from (i) the role given to communities in selecting their operators, and (ii) the operators being members of the community. Nonetheless, this model remains fragile. Once they are put in place, the CAEPAs and professional operators require additional training and technical assistance that the lower tiers of DINEPA (OREPAs, URDs and TEPACs) are hard-pressed to provide, due to understaffing and lack of other resources. Additionally, professional operators must be selected before the construction of water supply systems in order to enable them to acquire a better knowledge of the network they are about to manage.

71. **The maintenance responsibilities for institutional latrines should be agreed upon before construction begins.** The project approach focused mainly on construction, with the consequence that latrine maintenance in some of the schools was poor. Interventions should also bring a connection to the water network, as well as arrangements for cleaning latrines.

72. **A better mechanism for source protection needs to be developed.** The environmental management plans for source protection did not prevent intrusion and environmental degradation in the various catchment areas. The problem was that communities and people benefiting from the schemes had limited means to prevent intrusion into the catchment areas by others not served by the schemes and forest coverage in catchment areas was not sufficient. Infrastructure to protect water sources should be coupled with the involvement of local farmers or landowners, with schemes such as simplified payment for environmental services.

73. **Finding the right match for South-South knowledge exchanges improved the operators' commitment and confidence in this new profession.** Throughout project implementation, South-South knowledge exchanges (Dominican Republic and Benin), as well as regional workshops with operators from across Haiti (including those from communities supported by the IDB) allowed operators to exchange with their peers and strengthen themselves on a number of topics, such as community relations and billing and collection, proving valuable in creating long term operators. Despite challenges with billed revenue collection, operators are interested in continuing to operate the systems.

74. The exchange with Benin was particularly relevant in that it provided Haiti with a case of a country which had dramatically increased rural access to water supply, with similar vision and challenges. Among the lessons learned during the exchanges between Haiti's professional operators and their peers from Benin were: (i) creating a nationwide operators umbrella association to bring mutual support for technical issues, community relations and conflict resolution; and (ii) ensuring that the personnel in charge of operating the systems and collecting bills are from the community, even if the manager to which the service has been delegated can be from another community and manage several systems. Lessons from South-South exchanges will serve to improve the design of new operations in Haiti.

75. **Engaging in sector transformation with a long-term programmatic approach has a lasting impact.** The decade-long Bank engagement in the WSS sector in Haiti started at a time when the sector was struggling with investment and capacity in rural areas. Local communities did not maintain infrastructure well and many rural water systems were managed by water committees often consisting of unpaid volunteers elected by the community. The performance of water committees varied widely, but most water committees lacked the capacity or were unwilling to perform their functions adequately and collected insufficient funds for operation and routine maintenance.

- The Bank deployed the LICUS Grant to explore <u>innovative</u> options to deliver sustainable water supply services to rural populations, adapting experience from Africa to the Haitian context. This included the <u>piloting</u> of professional operators and the replacement of standposts serving free water by water kiosks at which water was to be sold in buckets;
- This positive experience led to a regional scale-up of the experience with the professional operators, with IDA and SPF funds. In this effort, DINEPA was also able to <u>leverage</u> support from other partners such as the IDB and the DED to increase the scope of this regional program. The program used the same project coordinator, operations manual, environmental management framework and implementation arrangements, allowing for a more efficient and effective use of resources, decreasing the demands on the implementing agency;

- The lessons learned in this operation as well as from South-South exchanges will allow DINEPA to further scale-up the use of professional operators to a national scale, with the support of the new Bank operation under preparation.

76. **Development objectives and intermediate results for different funding to the same project need to be harmonized.** The differences in the objectives and intermediate results for the IDA, SPF and IDB financing meant that three separate results frameworks were developed for the operational manual. This was a highly complex approach to introduce to a new agency in a country context where monitoring systems are generally weak and need to be strengthened. In a context of fragility, results frameworks need to be pragmatic and indicators easily measurable to avoid confusion and complexity in reporting.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

77. DINEPA reviewed a copy of the ICR and provide additional comments on implementation, risks and lessons learned. This information is included in this ICR. DINEPA agrees with the ratings of the ICR.

(b) Cofinanciers

Not applicable.

(c) Other partners and stakeholders

Not applicable.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Category	Appraisal Estimate (US$)	Actual/Latest Estimate (US$)	Percentage of Appraisal
Goods and Services			
Capacity Building and Project Management	670,000 (IDA) 800,000 (SPF*)	1,792,144 (IDA) 784,050 (SPF)	267.5% 98.0%
Water supply, basic sanitation, and hygiene promotion	4,330,000 (IDA) 4,200,000 (SPF*)	3,425,160 (IDA) 3,845,977 (SPF)	79.1% 91.6%
Total Amount	5,000,000 (IDA)** 5,000,000 (SPF)	5,217,304 (IDA) 4,630,027 (SPF)	104.3% 92.6%
Project Costs at Appraisal and Implementation			
Project Preparation Costs	377,601	299,688	79.4%
Project Implementation Costs	661,341	815,583	123.3%
Total Financing Required	11,038,942	10,962,602	99.3%

* The SPF grant had four components: Capacity Building (US$0.5 million), Project management (US$0.3 million), Water Supply (US$3.7 million), and Sanitation and Hygiene (US$0.5 million).
**The exchange rate was US$1.48020 to SDR 1 at appraisal (September 30, 2006) and US$1.53521 to SDR 1 at project closure (November 30, 2013).

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (US$)	Actual/Latest Estimate (US$)	Percentage of Appraisal
Borrower		250,000	0	0
IDA	Grant	5,000,000	5,217,304	104.3%
SPF	Grant	5,000,000	4,630,027	92.6%

Annex 2. Outputs by Component

A2.1 Capacity-building and Project Management Component

The following table presents the activities financed under the Project with both IDA and SPF financing, as well as the corresponding outputs.

Table 1: Activities and outputs for the capacity-building and project management component.

Activity	Outputs
Strengthen SNEP/DINEPA's capacity at the central level	• Support provided in procurement, social mobilization and sanitation by two consultants from the then German Development Service (DED), now the German International Cooperation Agency (GIZ). The agreement with SNEP/DINEPA, the DED and the World Bank was that salaries would be paid the DED and the Project would take care of the associated logistical and operational costs; • Participation of project coordinator and project engineer in training in (i) project management, (ii) monitoring and evaluation; and (iii) human resources at the Illinois State University; • Recruitment of consultants to support project execution in its regional office in the South Department, as well as provision of cars, office space and coverage of operating expenses and financial audits.
Strengthen SNEP/DINEPA's capacity at the regional level	• Organization of a regional workshop on the delegation of service delivery to professional operators and monitoring and evaluation with the IDB, as well as various members of CAEPAs. The Bank's WSP also participated and presented models and lessons learned from Rwanda, Paraguay and Honduras (October 2010); • Organization of two regional workshops on various themes including governance, performance indicators, exchanges on good practice and lessons learned to support the professional operators and CAEPAs from communities benefitting from World Bank and IDB financing (September 2012 and October 2013). The World Bank and the IDB alternately financed these events as well as other smaller training activities throughout implementation;
Strengthen SNEP/DINEPA's capacity at the communal level	• Initial startup funds for the professional operators of the first 7 communities to receive new or rehabilitated water supply systems, including for water meters and the provision of subsidies to pay for the initial rent, hire personnel and buy spare parts; • Members of CAEPAs were trained in communication skills, community mobilization, conflict resolution, the clarification of the roles of various stakeholders and the supervision of professional operators. Professional operators were trained in billing and accounting, meter reading and repair, water disinfection, plumbing, as well as in social mobilization and conflict resolution; • Following the cholera epidemic, a number of members of CAEPAs, professional operators and plumbers were trained in disinfection and in the basic response to cholera and other waterborne diseases. The trainees were from communities benefitting from World Bank as well as IDB financing. This event was financed by the IDB; • Provision of hygiene and latrine maintenance kits for CAEPAs and schools which benefitted from sanitation interventions; • Provision of water system maintenance toolkits to professional

	operators. • Provision of a 500 water meter and protection box pool for professional operators.
Support the rural water supply and sanitation sector	• Development of Operational Guidelines for the rural water and sanitation sector. This would later serve as a basis for the elaboration of the "National Technical Reference Guidelines" published by DINEPA in 2013.
Support knowledge exchanges with the Dominican Republic	• Organization of two technical visits (April 2012 and November 2013) to the Dominican Republic with the National Drinking Water and Sewerage Institute (INAPA), responsible for rural WSS, as well as with the Santo Domingo Water and Sewerage Utility (CAASD). The two visits allowed DINEPA and Haitian professional operators to exchange with their counterparts on (i) rural water supply system operation and maintenance, (ii) rural sanitation, as well as (iii) metering, including maintenance of meters. The IDB participated in the second visit;
Support SNEP/DINEPA's emergency response	• Repairs on water supply networks following the passage of tropical storm Fay and hurricanes Gustav, Hanna and Ike. These funds, initially allocated to IDA Component 1, were used for emergency works.

Professional operators. Professional operators were trained and put in place in the following communities: St-Michel/Dimizaine (rural neighborhood of Miragoane), Cavaillon, Simon (neighborhood of Les Cayes), Maniche, Chantal, Arniquet, Coteaux, Fond des Nègres and Chardonnières.

A2.2 Water Supply, Sanitation, and Hygiene Promotion Component

The next four tables summarize the outputs for the water supply, sanitation and hygiene promotion interventions.

Table 2: Communities served through handpumps under the Project

Community	Number of Beneficiaries	Number of Handpumps
Laval	2,500	5
Fond des Blancs	500	1
Baie du Mesle	1,000	2
Total	*4,000*	*8*

Note: The number of beneficiaries is based on the Haitian national standard of 500 persons served per handpump.

For these communities, a Water Point Committee (*Comité de Point d'Eau*, CPE) is chosen by the community with the support of DINEPA, and each handpump gets assigned a manager who collects payment by the *bokit* (US 5 gallon or 18.9 liter container).

Table 3: Piped Schemes Constructed and Rehabilitated under the Project

Scheme	Estimated Population Served	Rehabilitation or Construction	Number of connections installed or rehabilitated			Functioning at project closure	
			HH	Kiosks	Standposts	Kiosks	Standposts
Saint-Michel/ Dimizaine	3,740	Construction	152	9	2	5	2
Cavaillon	9,040	Rehabilitation	360	33	3	10	2
Simon	3,859	Construction	220	2	0	1	0
Maniche	4,610	Rehabilitation	190	9	0	4	0
Chantal	4,341	Rehabilitation	9	13	33	13	3
Arniquet	3,497	Rehabilitation	215	6	3	2	2
Coteaux	5,533	Rehabilitation	131	22	3	5	3
Ile à Vache	2,155	Rehabilitation	6	6	7	0	7
Fond Tortue	2,000	Rehabilitation	15	0	7	0	7
Fond des Nègres	10,000	Rehabilitation	300	12	2	12	2
Garatte	1,500	Construction	0	0	4	0	4
Chardonnières	5,092	Rehabilitation	0	11	2	3	2
Total	**55,367**	**---**	**1,598**	**123**	**36**	**55**	**34**

Note: All of the above schemes are located in the Sud Department, with the exception of Fond Tortue, Fond des Nègres, and St- Michel/Dimizaine which are located in the Nippes Department. Non-functioning kiosks have been closed mainly because of an insufficient number of paying customers to make service viable at these water points. Non-functioning standposts have been closed because the users did not shut off the faucets, decreasing the pressure in the network for users downstream.

Professional operators typically collect payment by the *bokit* (US 5 gallon or 18.9 liter container) at kiosks and by the metered m^3 at the household level. Operators have specific tariff structures in each community, but it typically includes a standard number of m^3 at a fixed price and an incremental portion for additional m^3.

Table 4: Outputs from the Sanitation and Hygiene Promotion Campaign under the Project

Sub-component	**Outputs**
Training	• 14 masons from 7 communities (St-Michel/Dimizaine, Cavaillon, Maniche, Chantal, Arniquet, Coteaux and Simon) and 1 URD technician trained in latrine construction; • 28 trainers and 28 community workers trained in the Participatory Hygiene and Sanitation Transformation (PHAST) approach; • On-the-job training for trainers in communities.
Develop Hygiene and Sanitation strategy	• Carry out focus group discussions and surveys covering 261 households; • Develop strategy Develop a PHAST training guide in Creole for trainers and community workers; • Develop posters, radio spots, etc. for awareness campaign.
IEC Campaign Implementation	• Visit the 7 communities and conduct Information, Education and Communication (IEC) campaigns for 1,500 people; • Radio spots and discussions broadcast on 2 regional radio stations, during 9 weeks; • 14 hygiene promotion sessions for 1,500 students and at 4 health centers.
Household latrine promotion	• Develop low-cost latrine models using locally available; • Construct demonstration latrines in 2 communities with trained masons.
Institutional latrines	• See Table 5

Table 5: Institutional Sanitation Infrastructure constructed or rehabilitated under the Project

Locality	Number of Institutions Served	Latrine Blocks		Latrine Stances		Urinals	Handwashing Facilities
		New	Rehabilitated	New	Rehabilitated		
Saint-Michel/ Dimizaine	3	3	4	13	4	4	5
Cavaillon	2	2	14	9	14	4	4
Maniche	2	2	15	9	15	4	4
Chantal	2	3	0	14	0	4	4
Arniquet	2	3	2	15	2	4	4
Coteaux	3	2	22	8	22	5	6
Garatte	1	1	0	5	0	0	1
Total	**15**	**16**	**57**	**73**	**57**	**25**	**28**
Latrine Total		**73**		**130**			

Note: All of the institutions were primary schools, with the exception of 1 health dispensary in Saint Michel.

Annex 3. Economic and Financial Analysis

The Economic Analysis Section of this Annex aims to assess the economic impact of the water supply investments of the project through a cost-benefit analysis. The Financial Analysis Section aims to assess the financial viability of water services delivered by professional operators.

A. Economic Analysis

Methodology and Scope

The methodology used in the ex-post analysis differs from the PAD, which followed a specific approach. The location of project investments was not defined at the time of the PAD, and the economic analysis then focused on providing screening instruments for selecting sub-projects. The PAD determined a cut-off value (U$170) for per capita investment levels, under which sub-projects could be accepted without further analysis. The threshold was computed on the basis of the results of household surveys of water supplies and consumption that were previously carried out in three departments of Haiti (Artibonite, Grand Anse and Ouest). The benefits that were expected to accrue to potential sub-project beneficiaries consisted of time savings valued with opportunity costs (based on daily wages in the agricultural sector) and increased water consumption.

As in the PAD, the ex-post economic analysis consists of a cost-benefit analysis that is carried out on the water supply sub-projects. Project benefits are the benefits accruing to the actual project beneficiaries, which may be measured by using the results of the survey of beneficiaries and of the results evaluation study that were carried out in November 2013, complemented by estimates of benefits for the facilities that were not yet in operation at that time. Project costs include the direct investment costs in piped systems and water points (boreholes equipped with handpumps), the additional implementation costs, and the operating costs. All calculations are carried out over a 20-year period, using constant prices and excluding taxes and transfer payments.

Water Supply Investments

The investment costs associated with water supply are drawn from the disbursement and procurement data. They include: (i) direct costs of facilities; (ii) consultants services for design, community outreach and works supervision; and (iii) implementation support costs. The total investment costs are thus estimated at US$7.02 million, i.e. 71 percent of the total disbursements under the IDA and SPF grants.

Table 3-1: Investment Costs for Economic Analysis (US$'000)

Funding	Centers	Direct Costs	Total Costs	Served Population	Per Capita Cost (US$)
		Piped Systems			
IDA	Cavaillon	807	1,000	9,040	110
	Simon	450	555	3,859	144
	Coteaux	508	626	5,533	113
	Saint-Michel/Dimizaine	552	682	3,740	182
	Maniche	305	377	4,610	82
	Arniquet	199	246	3,497	70
	Chantal	316	390	4,341	90

Funding	Centers	Direct Costs	Total Costs	Served Population	Per Capita Cost (US$)
	Ile à Vache	288	356	2,155	165
	Sub-total	3,424	4,227	36,775	115
SPF	Chardonnières	470	539	5,092	106
	Fond des Nègres	1,334	1,530	10,000	153
	Fond Tortue	271	310	2,000	155
	Garatte	96	110	1,500	74
	Sub-total	2,172	2,490	18,592	134
	Total piped systems	5,596	6,717	55,367	121
		Water Points			
SPF	Laval	105	128	2,500	51
	Baie du Mesle	45	55	1,000	55
	Fond des Blancs	98	120	500	239
	Total water points	248	302	4,000	76
Design & supervision		1,040	-		
Implementation costs		136	-		
	Overall	**7,019**	**7,019**	**59,367**	**118**

Source: IDA/SPF disbursements and procurement data

The average per capita investment cost is well below the cut-off value specified in the PAD economic analysis. Only two individual centers (St-Michel and Fonds des Blancs) are above the threshold. In the latter case, this is attributable to a low success rate of drilling, which was unpredictable.

Household Supply Sources and Water Demand

The survey of beneficiaries – carried out in eight centers supplied by piped systems – and the evaluation study were used to assess the main source of supply and the average daily water consumption of the households. The resulting estimates are given in the table below.

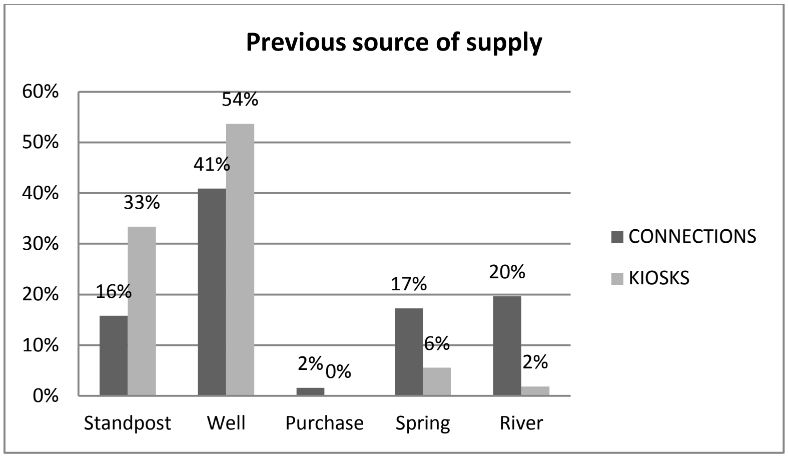
Table 3-2: Supply Sources and Water Demand (Piped Systems)

	Kiosks	Standposts	HH Connection
Percentage of population served	57%	17%	26%
Average number of persons served	510	280	9.0
Daily water consumption	1 bokit[†]	1 bokit	30 lpcd

[†] 1 bokit = 5 US gallons (18.9 liters)

The survey shows that 37 percent of households with a private connection share it with other households (on average 1.9 households), so that a connection serves on average 9 people. The high numbers of persons served per kiosk or standpost reflect the impact of the frequent closing of facilities by the operators, following excessive spillage or non-payment (see Table 3 of Annex 2).

The survey also provides information on the source of water used by the households before the Project. The figure below shows that the current users of private connections were more likely to be supplied by distant sources (spring and river) than the users of kiosks, of whom 87 percent were supplied by closer sources (private wells or standposts).



Project Benefits
In the “without project” situation, the population had no access to safe water. This is confirmed by the fact that 90 percent of the households currently served by connections and 96 percent of the households currently served by kiosks and standposts used water treatment. Therefore benefits are associated with the total water consumption of the served population.

The PAD analysis relied on estimates of time savings to determine the value of water and the consumer surplus. Estimating ex-post time savings is, however, quite challenging in the absence of adequate quantified information on average times for fetching water before and after the project. In addition, time savings are quoted by about 40 percent of the beneficiaries as the main reason to shift to the new sources of supply.

Therefore, the assessment of the benefits in the ex-post analysis is based on: (i) the actual willingness-to-pay as a proxy of the value of water; and (ii) the cost savings accruing to beneficiaries. The currently applicable water rates are given in the table below.

Table 3-3: Water Rates (November 2013)

Supply Center	Kiosk (HTG/Bokit)	Service Connection (HTG)		
		Monthly Fee	Including	Additional m^3
		Piped Systems		
Cavaillon	1	150	3 m^3	50
Simon	2	200	3 m^3	80
Coteaux	1	125	6 m^3	55
Saint-Michel	1	125	6 m^3	35
Maniche	1	125	No limit	-
Arniquet	1	125	6 m^3	71
Chantal	50/month/HH	-	-	-
Ile à Vache	2	100	3 m^3	-
Chardonnières	1	50	-	-
Fond des Nègres	1	125	3 m^3	50
Fond Tortue	1	75	-	-
Garatte	25/month/HH	-	-	-

Supply Center	Kiosk (HTG/Bokit)	Service Connection (HTG)		
		Monthly Fee	Including	Additional m^3
Water Points				
All centers	Flat fee (HTG 25 per month per household)			

Source: Bank Aide-Memoires and Evaluation Study

The above rates may not always coincide with the actual willingness-to-pay. They often result from political interferences pushing for a revision of the original tariff, particularly to increase the volume included in the monthly fee paid for private connections (which leads in practice to a flat fee for all consumers, irrespective of their actual consumption). By contrast, a vast majority of surveyed households agreed with the statement that water users should be billed in accordance with the volume they consumed. Therefore, the analysis is based on a reference rate schedule consisting of a 3 m^3 volume included in the monthly fee and an additional rate of HTG 50 for each m^3 consumed above this threshold (or the actual additional rate, if higher). The water consumed at the kiosks, standposts or water points is valued at HTG 1 per bokit (or the actual rate, if higher).

The beneficiaries also save costs associated with the treatment of water. This applies to 80 percent of beneficiaries, who previously boiled water before use and are now satisfied with the quality of piped water. The cost of treatment is estimated, by reference to international standards, to about US$2 per month per household.

Incremental Costs

The evaluation study provided some information on the annual expenditures of 6 private operators, which is summarized in the table below. The expenditures include staff costs maintenance and other expenditures. In the absence further information, it is assumed that expenditures are mainly related to the number of people served.

Table 3-4: Operating Costs – Actual Values and Assumptions

Center/Type of production facilities	Expenditures (HTG)	Unit Costs (HTG/person served)
Actual Expenditures of Piped Systems		
Cavaillon / Gravity-fed	109,000	12
Simon / Electricity pumping	466,900	121
Coteaux / Gravity-fed	48,500	9
Saint-Michel / Gravity-fed	160,000	43
Maniche / Solar pumping	137,800	30
Arniquet / Gravity-fed	135,000	39
Assumptions		
Other piped systems with household connections		40
Other piped systems without household connections		10
Water points		0.5% of investment costs

Source: Evaluation study and Bank estimates

Results

The ex-post economic internal rate of return (EIRR) is estimated at 10.0 percent. The net present value (NPV) of the project's benefits and costs is estimated at US$0.01 million, with the 10 percent discount rate most frequently used in rural water and sanitation. With the same discount rate, the long-term marginal cost of water of the piped systems− measured by the Average Incremental Cost (AIC) − is estimated at HTG 58 per m^3 (equivalent to US$1.34 per m^3). The table below provides the results of the analysis for each sub-project:

Table 3-5: Summary of Economic Analysis

Centers	EIRR	NPV @ 10%
Piped Systems		
Cavaillon	11.1%	0.07
Simon	11.4%	0.04
Coteaux	12.5%	0.07
Saint Michel Dimizaine	3.8%	-0.20
Maniche	17.1%	0.17
Arniquet	18.9%	0.14
Chantal	11.8%	0.04
Ile à Vache	9.4%	-0.01
Chardonnières	10.0%	0.00
Fond des Nègres	5.4%	0.28
Fond Tortue	5.3%	-0.06
Garatte	18.7%	0.04
Total piped systems	10.0%	0.01
Water Points		
Laval	17.5%	0.04
Baie du Mesle	16%	0.01
Fond des Blancs	-4.3%	-0.05
Total water points	9.8%	0.00
Overall	***10.0%***	0.01

The EIRR of nine of the 15 sub-projects is close or higher than the 12 percent cut-off value used in the PAD. The individual EIRRs are closely correlated to the per capita investment cost of the sub-projects. The overall outcome, albeit satisfactory, is mainly attributable to a water demand that is lower than anticipated in the PAD. The PAD, using time savings estimates that are likely higher than the actual ones, assumed a per capita daily consumption that was twice as high as the actual demand.

B. Financial Analysis

Financial Information. The evaluation study points out several weaknesses that impact the reliability and integrity of the financial information available from private operators: (i) the agreed reporting forms are not used; (ii) water sales at kiosks and standposts are not correctly reported; and (iii) water sales at connections are generally under-billed and metering is not properly used. These findings are confirmed by a comparison between the revenues reported by the operators with the potential revenues estimated in the economic analysis, which shows a substantial differences, even though the assumptions of the economic analysis are very conservative.

Financial Viability. The current shortcomings of the financial information available from the operators make the assessment of their financial viability particularly challenging. The data provided in the Evaluation study show that only one operator (Simon) is likely to cover its operating costs in a sustainable manner, while the other operators may restrict expenditures to a level consistent with their cash-flows. Implementing the recommendations of the Evaluation study regarding the application of more realistic water rates and a continuation of support to the operators appear as necessary conditions to restore financial viability.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit
Lending/Grant Preparation		
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Names	Title	Unit
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Zainiddin Karaev	Operations Officer	OPSFC
Barbara Minguez Garcia	Team Assistant	LCSWS
Elizabeth L. Kleemeier	Consultant – ICR Author	-
Richard Verspyck	Consultant – ICR Economist	-

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending (both IDA and SPF)		
FY06	20.32	135.21
FY07	22.31	155.97
FY08	0	0
FY09	0.90	8.51
Total:	**44.53**	**299.69**
Supervision/ICR (both IDA and SPF)		
FY07	6.44	46.54
FY08	13.25	88.14
FY09	27.79	147.48
FY10	28.36	120.17
FY11	25.92	145.98
FY12	31.24	156.90
FY13	9.29	49.21
FY14	10.94	61.17
Total:	**153.23**	**815.58**

Annex 5. Beneficiary Survey Results and Stakeholder Workshop Report and Results

DINEPA organized a workshop for professional operators and CAEPA members from both World Bank and IDB project areas in late October 2013. The main recommendations and lessons learned were as follows:

- More community participation in water scheme construction;
- Train young residents as plumbers;
- Provide more resources (transport, offices, etc.) to the CAEPAs;
- Install meters on all household connections in a future project;
- Construct kiosks in areas where household connections are not possible, and sell water at 0.5 HTG per *bokit* (equivalent to 18.9 L);
- Better revenue management;
- Educate people about open defecation and building household latrines.

Annex 6. Summary of Borrower's ICR and/or Comments on Draft ICR

The main conclusions from the DINEPA ICR report (in French) are listed below.

Main difficulties encountered during implementation:

- Changing people's attitude toward payment for water based on volume, especially when politicians continued to espouse idea that water should be free;
- The transition from SNEP and other local structures to DINEPA and the new institutional governance structure for the sector;
- Hurricanes and 2010 earthquake.

Challenges

- The Project schemes that require payment are near other schemes that continue to use the traditional free and minimal payment systems;
- The rural departmental units (URDs) that are supposed to provide support to the professional operators after project completion are not large enough to cover all 37 operators (from World Bank and IDB projects) in 3 departments.

Recommendations

- The CAEPAs and professional operators need technical assistance to continue to support them;
- All water schemes in a given area should be rehabilitated and placed under the same management system;
- The government should subsidize the routine operation costs of water schemes with pumped distribution;
- The professional operators should receive materials and other subsidies for the first three years, as the schemes are not immediately profitable.

Next Steps

- Apply the professional operator model at the national level;
- Replicate this project in other regions;
- Reinforce the CAEPAs and professional operators;
- Develop good indicators for the M&E system;
- Make the CAEPAs more dynamic;
- Encourage residents to protect the catchment areas;
- Provide water to neighboring villages using the same management model;
- Construct or rehabilitate an additional 20 schemes serving 500,000 consumers.

Annex 7. List of Supporting Documents

Project documents:

- IDA Project Appraisal Document (PAD), Project Information Document (PID), SPF Activity Proposal Form and official communication;
- Restructuring Paper and memoranda on project closing date extensions;
- Grant Agreements;
- ISRs;
- Aide-Memoires;
- Environmental Assessments.

Other background documents :

- Diallo, O. and R. Torquebiau (2014). « Évaluation de l'implication du secteur professionnel local dans la desserte en eau en milieu rural en Haïti et évaluation de l'adaptabilité de ce nouveau modèle de gestion et de la facturation au volume à l'échelle nationale: Rapport Final », Port-au-Prince;
- DINEPA (2008, revised 2012). « Document d'Orientation Stratégique pour l'Assainissement en Haïti », Port-au-Prince;
- DINEPA (2013). « Atelier d'Évaluation du Projet EPAR », Les Cayes, 23 et 24 Octobre 2013;
- DINEPA (2014). « Eau Potable et Assainissement en Milieu Rural (EPAR I) : Rapport Final IDA/2700-HA, SPF/9327 », Port-au-Prince;
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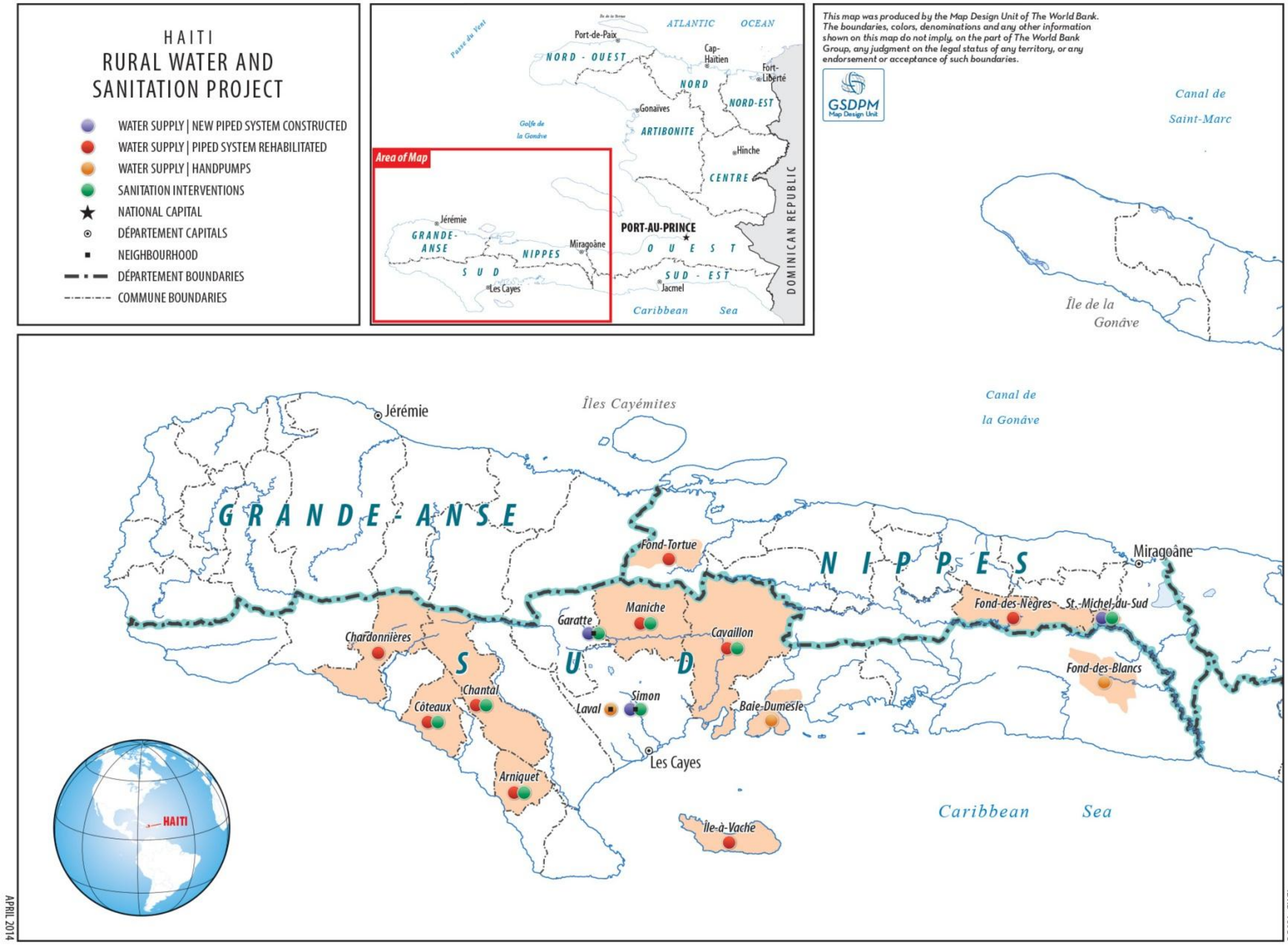
- SNEP (2005). « Stratégie Nationale de Développement du Secteur Eau Potable et Assainissement en Milieu Rural. Partie I : Diagnostic et analyse du secteur », Port-au-Prince;
- SNEP (2006). « Cadre environnemental : Rapport de Synthèse », Port-au-Prince;
- SNEP (2009). Project Operational Manual, Port-au-Prince;
- World Bank (2004). World Bank Signs $US1.36 Million in Grants for Solid Waste Management and Water and Sanitation, Washington D.C.

MAP


HAITI
RURAL WATER AND SANITATION PROJECT
WATER SUPPLY | NEW PIPED SYSTEM CONSTRUCTED
WATER SUPPLY | PIPED SYSTEM REHABILITATED
WATER SUPPLY | HANDPUMPS
SANITATION INTERVENTIONS
NATIONAL CAPITAL
DÉPARTEMENT CAPITALS
NEIGHBOURHOOD
DÉPARTEMENT BOUNDARIES
COMMUNE BOUNDARIES
ATLANTIC OCEAN
Port-de-Paix
Cap-Haïtien
Fort-Liberté
NORD - OUEST
NORD
NORD-EST
Gonaïves
ARTIBONITE
Golfe de la Gonâve
Hinche
CENTRE
Area of Map
Jérémie
GRANDE-ANSE
Miragoâne
NIPPES
SUD
Les Cayes
PORT-AU-PRINCE
OUEST
SUD - EST
Jacmel
DOMINICAN REPUBLIC
Caribbean Sea
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GSDPM Map Design Unit
Canal de Saint-Marc
Île de la Gonâve
Canal de la Gonâve
Îles Cayémites
GRANDE-ANSE
Fond-Tortue
NIPPES
Miragoâne
Maniche
Fond-des-Nègres
St.-Michel-du-Sud
Garatte
Cavaillon
Chardonnières
SUD
Fond-des-Blancs
Chantal
Côteaux
Simon
Laval
Baie-Dumesle
Les Cayes
Arniquet
Île-à-Vache
Caribbean Sea
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