



Operation Number: **HA-L1087**  
Year- PMR Cycle: **First period Jan-Jun 2015**  
Last Update: **11/10/2015**  
PMR Validation Stage: **Validated by Representative**

Chief of Operations validation date: **11/10/2015**  
Division Chief validation date: **11/10/2015**  
Country Representative validation date: **11/11/2015**

Inter-American Development Bank - IDB  
Office of Strategic Planning and Development Effectiveness

## Operation Profile

### Basic Data

Operation name:	Water Management Program in the Artibonite Basin	Loan Number:	3089/GR-HA
Executing Agency (EA):	Ministère de l'Agriculture, des Ressourc es Naturelles et du Développement Rural		
Team Leader:	Bidault,Caroline	Sector/Subsector:	SUSTAINABLE AGRICULTURAL DEVELOPMENT
Operation Type:	Loan Operation	Overall Stage:	Disbursing (From eligibility until all the loans are closed).
Lending Instrument:	Investment Loan	Country:	HAITI
Borrower:	REPUBLIQUE D' HAITI	Convergence related Operation(s):	

### Total Cost and Source

	Original IDB	Current Active IDB	Local Counterpart	Co-Financing/Country	Total operation cost - Original Estimate
HA-L1087	\$25,000,000.00	\$25,000,000.00	\$2,500,000.00	\$0.00	\$27,500,000.00

### Available Funds (US\$)

	Current IDB	Disb. Amount to Date	% Disbursed	Undisbursed Balance
HA-L1087	\$25,000,000.00	\$4,665,701.09	18.66%	\$20,334,298.91

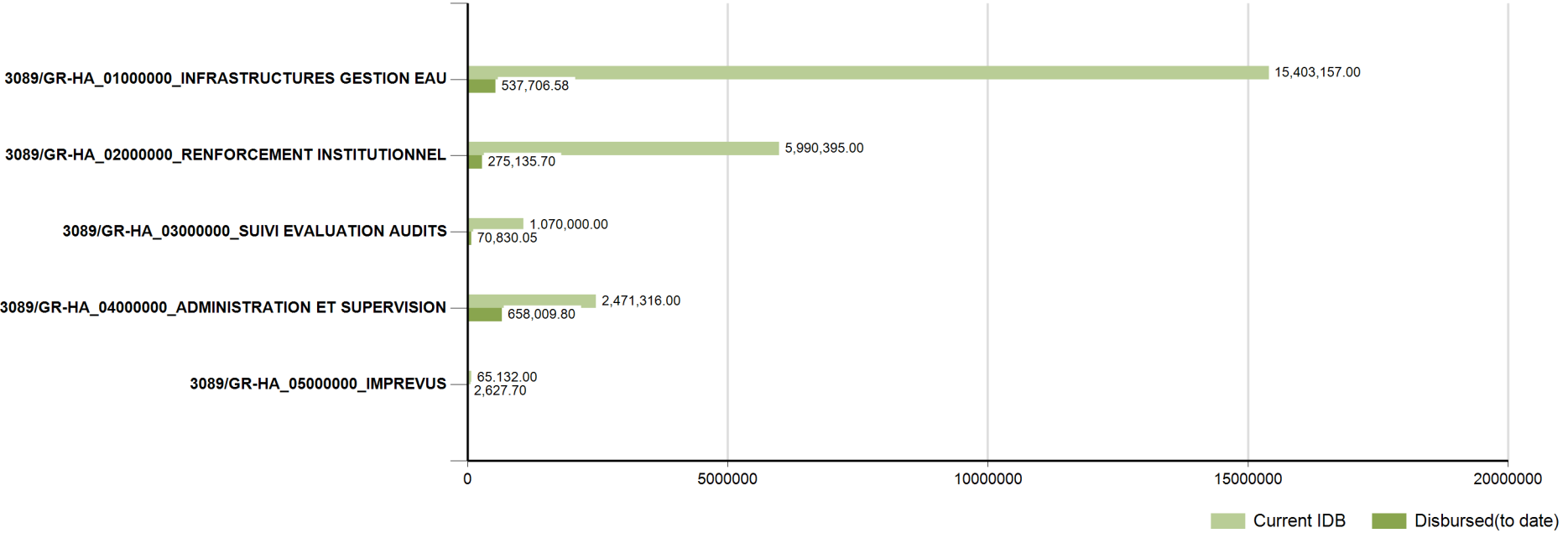
### Environmental and Social Safeguards

Main Operation	
Impacts Category:	
Safeguard Performance Rating:	
Safeguard Performance Rating - Rationale:	

### Reformulation Information

Main Operation	
Was/Were the objective(s) of this operation reformulated?	NO
Date of approval:	

Expense Categories by Loan Contract (cumulative values)



Results Matrix

Impacts


Impact:	1 Decrease crop, livestock and infrastructure losses caused by flooding in the Artibonite watershed.								
Observation:									
Indicators		Flags*	Unit of Measure	Baseline	Baseline Year	Means of verification	Observations	EOP	
1.1 Value of annual agricultural damages caused by flooding in the Artibonite watershed			USD thousands	8,700.00	2013	Means of Verification: Specific evaluation by the Ministry of Agriculture, using the same sample as Artelia.	Source of baseline: Artelia surveys	P	1,738.00
								P(a)	1,738.00
								A	
Impact:		2 Increase agricultural productivity in the Artibonite watershed.							
Observation:									
Indicators		Flags*	Unit of Measure	Baseline	Baseline Year	Means of verification	Observations	EOP	
2.1 In the irrigation district: average annual gross margins of rice for beneficiary farmers			US\$/Ha	1,176.00	2013	Household surveys during the final evaluation (ex-post economic analysis), using the same sample as Artelia.	Source and year of baseline: Artelia and AECOM.	P	1,515.00
								P(a)	1,515.00
								A	
2.2 In the upper watershed: difference in average annual gross margins in selected gullies between the group of beneficiaries and control			US\$/Ha	0.00	2013	Household surveys conducted by the firm contracted for impact evaluation.	(1) According to a study (Bayard, 2013), the typical crop association in gullies change from a low-profit grain-based cropping pattern ? without? infrastructure to a high-profit banana-grain-based pattern ?with? infrastructure. (2) The randomized phase-in o	P	1,556.00
								P(a)	1,556.00
								A	



 RF - RF Indicator     SI - Sector Indicator     CI - Country Indicator     PG - Pro-Gender     PE - Pro-Ethnicity

Outcomes

Outcome:	1 OUTCOME 1: Improve water and sediment containment in selected gullies of the upper Artibonite watershed.
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Observation:	During rainfalls events, infrastructures built in the gullies will contain (i) Sediments: with time, sediments will accumulate and create highly fertile areas where high-value crops can be grown (ii) Water: it will be contained on the upstream side of che											
Indicators	Flags*	Unit of Measure	Baseline	Baseline Year	Means of verification	Observations	2014	2015	2016	2017	2018	EOP
1.1 Indicator 1.1: Total volume of sediment contained by check-dams		m3	0.00	2013	Day-to-day observations and measurements performed by field-based students affiliated to MARNDR's Studies and Programming Unit (UEP)	The volume of sediments contained is a good indicator of the program's environmental benefit because in the absence of check-dams, these sediments would have flown downstream and contributed to the silting of infrastructures, including the Péligre reservoir	P					66,500.00
							P(a)					66,500.00
							A					
1.2 Indicator 1.2: Market gardens created in the gullies		Ha	0.00	2013	Day-to-day observations and measurements performed by field-based students affiliated to MARNDR's Studies and Programming Unit (UEP)	The total area of market gardens created on the upstream side of check-dams is a good indicator of the program's local economic benefit (agricultural intensification systematically observed on those areas).	P					620.00
							P(a)					620.00
							A					

1.3 Indicator 1.3: Total annual volume of water stored by water retention tanks		m3	0.00	2013	Day-to-day observations and measurements performed by field-based students affiliated to MARNDR's Studies and Programming Unit (UEP)	Water retention tanks built on the downstream side of check-dams will store rainwater and will thus facilitate access to water usable for agricultural as well as domestic purposes by local populations. Field observation (Saintil, 2013) suggests that a wat	P						52,000.00
	P(a)											52,000.00	
	A												
1.4 Indicator 1.4: Farmers who benefit from new cultivable area and better access to water.	 RF	Farmers	0.00	2013	Household surveys performed by field-based students affiliated to MARNDR's Studies and Programming Unit (UEP)	Each check-dam will benefit one farmer (and his family). Each water tank will benefit at least 10 additional farmers (and their family).	P						2,350.00
	P(a)											2,350.00	
	A												
Outcome:	2 OUTCOME 2: Improve water distribution in the Artibonite irrigation district												
Observation:													

Indicators		Flags*	Unit of Measure	Baseline	Baseline Year	Means of verification	Observations	2014	2015	2016	2017	2018	EOP
2.1 Indicator 2.1: Surface of the irrigation district that benefit optimal waterflows in the pilot area			Ha	0.00	2013	Water flows will be measured at gates (100 measuring devices installed, including a tele-monitoring unit at ODVA = output 6).	? Optimal flows? means that actual waterflows measured are consistent with theoretical waterflows (for which the canals were designed) and that there is no excess, scarcity or waste of water in the irrigation system.	P					3,300.00
								P(a)					3,300.00
								A					
2.2 Indicator 2.2: Number of farmers that benefit a better water distribution in the pilot area of the irrigation district			Farmers	0.00	2013	Water Users Association s' registry of members.		P					6,400.00
								P(a)					6,400.00
								A					
Outcome:	3 OUTCOME 3: Decrease waterlogging in the Artibonite irrigation district												
Observation:													
Indicators		Flags*	Unit of Measure	Baseline	Baseline Year	Means of verification	Observations	2014	2015	2016	2017	2018	EOP
3.1 Indicator 3.1: Surface cultivated in formerly uncultivated and hydromorphic area			Ha	0.00	2013	Measures of areas with GPS.		P					3,000.00
								P(a)					3,000.00
								A					
3.2 Indicator 3.2: Number of farmers cultivating in formerly uncultivated and hydromorphic area			Farmers	0.00	2013	WUA's registry of members.		P					7,500.00
								P(a)					7,500.00
								A					

Outcome:	4 OUTCOME 4: Improve flood management at Peligre dam												
Observation:	One of the main roles of the Péligre commission is to ensure that EDH complies with key operating rules at Peligre dam, including rules for flood management												
Indicators	Flags*	Unit of Measure	Baseline	Baseline Year	Means of verification	Observations	2014	2015	2016	2017	2018	EOP	
4.1 Indicator 4.1: Days with water level at Péligre dam above the maximum limit for flood management		Days	75.00	2011	EDH operation reports at Peligre dam and flood management software (see output 8)	According to the dam's operations manual, if the water level is above 166 Meters Above Sea Level (MASL) between May 1st and June 15th or above 168 MASL between September 15th and October 15th, the Péligre dam cannot act as a buffer in case of heavy rains	P	75.00	0.00	0.00	0.00	0.00	0.00
	P(a)						75.00	0.00	0.00	0.00	0.00	0.00	
	A						0.00						

4.2 Indicator 4.2: Days with water flows released by Péligre dam above 400 m3/sec						Flooding in the Valley is inevitable if Canneau dam receives water flows above 500 m3/sec, then if Péligre dam releases more than 400 M3/sec (flow at Canneau = flows from Péligre + flows for others tributaries).	P	18.00	0.00	0.00	0.00	0.00	0.00
							P(a)	18.00	0.00	0.00	0.00	0.00	0.00
							A	0.00					
		Days	18.00	2011	EDH operation reports at Péligre dam and flood management software (see output 8)								

Outcome:

5 OUTCOME 5: Improve ODVA's internal management

Observation:

Indicators	Flags*	Unit of Measure	Baseline	Baseline Year	Means of verification	Observations							
							2014	2015	2016	2017	2018	EOP	
5.1 Indicator 5.1: Financial statements prepared by external auditors issued with a positive opinion		Audit	0.00	2013	Annual audits prepared by external auditors..	The correct fiduciary and internal control management of ODVA is a key part of the general capacity of ODVA to properly operate and maintain the main infrastructures of the irrigation district. Targets don?t cumulate.	P	0.00	0.00	0.00	1.00	1.00	1.00
	P(a)						0.00	0.00	0.00	1.00	1.00	1.00	
	A						0.00						



Outcome:	6 OUTCOME 6: Improve operations and maintenance of hydraulic infrastructures and equipment in the irrigation district																	
Observation:																		
Indicators	Flags*	Unit of Measure	Baseline	Baseline Year	Means of verification	Observations	2014		2015		2016		2017		2018		EOP	
6.1 Indicator 6.1: Secondary and tertiary canals and drains dredged (manually) by the 3 WUAs in the pilot area		Meters	86.00	2012	WUAs annual reports on operations, maintenance and collection of water tariffs (reports controlled by Technical Assistance firm)	Measures the level of maintenance provided by WUAs. The existing network counts with 86Km of canals and drains; the project will built 50.4 additional Km. The dredging of the existing 86Km by WUAs in 2012 was financed by ODVA. Targets don't cumulate.	P	86.00	86.00	108.00	136.40	136.40	136.40	1,364.00				
							P(a)	86.00	86.00	108.00	136.40	136.40	1,364.00					
	A						0.00											
6.2 Indicator 6.2: Rate of cost recovery in the 3 WUAs of the pilot area		%	0.00	2013	WUAs annual reports on operations, maintenance and collection of water tariffs (reports controlled by Technical Assistance firm)	Measures the WUAs' financial viability (the capacity of WUAs to operate without subsidies). Water tariffs will be at least \$US10/Ha/year. Targets don't cumulate.	P	0.00	50.00	75.00	75.00	75.00	75.00	75.00				
							P(a)	0.00	50.00	75.00	75.00	75.00	75.00					
	A						0.00											

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## Outputs: Annual Physical and Financial Progress

Component 1. Water and sediment management infrastructures		Physical Progress			Financial Progress		
Outputs	Unit of Measure		2015	EOP		2015	EOP
Output 1: Water and sediment containment infrastructures built in gullies in the pilot area of the upper watershed	Infrastructures	P	247.00	950.00	P	1,552,500.00	5,262,500.00
		P(a)	247.00	950.00	P(a)	1,349,858.00	5,262,500.00
		A	0.00	0.00	A	60,915.33	70,499.33
Output 2: Electromechanical system (gates and automatic control) at Canneau dam rehabilitated	System	P	1.00	1.00	P	471,143.00	621,143.00
		P(a)	1.00	1.00	P(a)	165,286.00	661,143.00
		A	0.00	0.00	A	4,968.07	4,968.07
Output 3: Protection walls preventing the Left and Right Banks Master Canals from collapsing downstream Canneau dam: built	Wall	P	2.00	2.00	P	1,690,986.00	2,690,986.00
		P(a)	2.00	2.00	P(a)	1,150,099.00	2,690,986.00
		A	0.00	0.00	A	469,325.24	469,325.24
Output 4: Secondary and tertiary irrigation and drainage canals built or rehabilitated in the pilot area of the irrigation district	Kilometers	P	22.00	50.40	P	1,821,105.00	4,441,708.00
		P(a)	22.00	50.40	P(a)	2,457,003.00	4,441,708.00
		A	0.00	0.00	A	0.00	0.00
Output 5: Primary irrigation and drainage canals dredged in the irrigation district	Meters	P	30,000.00	120,000.00	P	929,250.00	3,451,500.00
		P(a)	30,000.00	120,000.00	P(a)	828,360.00	3,451,500.00
		A	0.00	0.00	A	0.00	0.00
Output 6: Equipment to regulate and measure water flow built/installed on the main canals of the irrigation district	Device	P	50.00	100.00	P	669,667.00	1,435,320.00
		P(a)	50.00	100.00	P(a)	894,417.00	1,435,320.00
		A	0.00	0.00	A	0.00	0.00
Component 2. Institutional strengthening		Physical Progress			Financial Progress		
Outputs	Unit of Measure		2015	EOP		2015	EOP
Output 7: Meetings of the Péligre Commission taking place	Meetings	P	6.00	27.00	P	69,000.00	345,000.00
		P(a)	6.00	27.00	P(a)	79,615.00	345,000.00
		A	1.00	3.00	A	1,351.91	1,351.91
Output 8: Flood management system (composed of water level gauges, flood management software and one computer per dam) operating at the Péligre and Canneau dams	System	P	1.00	1.00	P	288,725.00	338,725.00
		P(a)	1.00	1.00	P(a)	338,725.00	338,725.00
		A	0.00	0.00	A	0.00	0.00
Output 9: Artibonite Watershed Binational Commission created	Commission	P		1.00	P	0.00	250,000.00
		P(a)		1.00	P(a)	0.00	250,000.00
		A		0.00	A	0.00	0.00
Output 10: ODVA's procedures manual for operation and maintenance of infrastructure and equipment prepared	Manual	P	1.00	1.00	P	70,000.00	128,011.00
		P(a)	1.00	1.00	P(a)	19,609.28	120,818.28
		A	0.00	0.00	A	0.00	0.00
Output 11: CIA-ODVA's staff trained	Staff	P	20.00	20.00	P	85,342.00	256,024.00
		P(a)	20.00	20.00	P(a)	41,669.72	256,739.72
		A	0.00		A	0.00	0.00
Output 12: Annual technical and financial plan and annual technical and financial report of operation and maintenance of primary infrastructures under ODVA's responsibility prepared	Reports/plans	P	2.00	9.00	P	51,205.00	256,023.00
		P(a)	2.00	9.00	P(a)	80,500.00	262,500.00
		A	0.00	0.00	A	51,602.00	61,132.00
Output 13: CIA-ODVA equipped with a package of operating equipment	Package of equipment	P		1.00	P	60,000.00	90,000.00
		P(a)	1.00	1.00	P(a)	30,000.00	90,000.00
		A	1.00	1.00	A	32,123.00	32,123.00
Output 14: ODVA's administrative and financial staff trained	Staff	P	10.00	10.00	P	50,000.00	150,000.00
		P(a)	10.00	10.00	P(a)	120,000.00	150,000.00
		A	0.00		A	0.00	0.00

Output 15: Accounting software installed at the ODVA's administrative and financial service	Accounting software	P		1.00	P	15,000.00	15,000.00
		P(a)	1.00	1.00	P(a)	7,156.44	15,000.00
		A	0.00	0.00	A	0.00	7,843.56
Output 16: ODVA's administrative and financial service equipped with a package of operating equipment	Package of equipment	P		1.00	P	60,000.00	60,000.00
		P(a)	1.00	1.00	P(a)	60,000.00	60,000.00
		A	0.00	0.00	A	0.00	0.00
Output 17: DGSE-ODVA equipped with a package of operating equipment	Package of equipment	P		1.00	P	90,000.00	140,000.00
		P(a)	1.00	1.00	P(a)	70,000.00	140,000.00
		A	1.00	1.00	A	113,911.00	114,461.18
Output 18: Water Users Associations (WUAs) equipped with office, IT equipment and motorcycles	WUAs	P	3.00	16.00	P	260,625.00	695,000.00
		P(a)	3.00	16.00	P(a)	260,625.00	695,000.00
		A	0.00	0.00	A		37,076.82
Output 19: DGSE and WUA staff trained	Staff	P	80.00	170.00	P	326,322.00	1,487,054.50
		P(a)	80.00	170.00	P(a)	362,946.65	1,474,886.05
		A	0.00		A		0.00
Output 20: Annual technical and financial plan and annual technical and financial report of operation and maintenance of infrastructures under WUAs' responsibility: prepared	Reports/plans	P	6.00	24.00	P	326,322.00	1,487,055.50
		P(a)	6.00	24.00	P(a)	370,081.35	1,499,224.95
		A	0.00	0.00	A		0.00
Administration, Monitoring and Evaluation, Audits, Contingencies							

Other Cost		2015	Cost
Administration, Monitoring and Evaluation, Audits, Contingencies	P	\$739,451.00	\$3,898,950.00
	P(a)	\$783,281.00	\$3,858,949.00
	A	\$376,349.00	\$790,967.00
Total Cost		2015	Total Cost
	P	\$9,626,643.00	\$27,500,000.00
	P(a)	\$9,469,232.44	\$19,141,313.11
	A	\$1,110,545.55	\$1,589,748.11

## Changes to the Matrix

No information related to this operation.

Please note that the Overall Stage represents the stage of the operation at the time of this report's publication, which might not necessarily match the stage of the operation during the PMR Cycle to which the report pertains.