

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

HAITI

**WATER MANAGEMENT PROGRAM
IN THE ARTIBONITE BASIN**

(HA-L1087)

PROPOSAL FOR A NON-REIMBURSABLE FINANCING

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ELECTRONIC LINKS	
Required	
1.	Plan of Activities for first disbursement and the first 18 months of implementation http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38110838
2.	Monitoring and Evaluation Arrangements http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38133821
3.	Procurement Plan http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38107888
4.	Environmental and Social Management Report (ESMR) http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38133663
Optional	
1.	Economic Analysis of the Program http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38136444
2.	Méthodologie d'assistance technique à l'ODVA – Rapport 2b Provisoire v-2 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38094096
3.	Etude de curage des drains critiques – SCP 2013 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38092249
4.	Evaluation des contreparties de l'ODVA dans le cadre du projet d'assistance technique en vue du transfert de gestion (Exploitation/Maintenance) des infrastructures hydrauliques de la Vallée de l'Artibonite, SCP, 2013 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38094218
5.	Finalisation de la trame hydraulique du secteur pilote – Rapport 1a i Provisoire, SCP 2013 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38094164
6.	TDR de l'assistance technique – Accompagnement de la DGSE de l'ODVA et des AI pour la mise en œuvre de la réforme du service de l'eau dans la Vallée de l'Artibonite - Rapport 2a Provisoire v2, SCP 2013 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38094139
7.	Implémentation d'un système de régulation des canaux primaires - rapport 1a ii Provisoire SCP 2013 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38094109
8.	Etudes d'instrumentation des barrages de Péligre et de Canneau - Besoin d'investissement - Coyne et Bellier, 2013 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38111468

ELECTRONIC LINKS

Optional

9. Development of a Binational Technical Cooperation Structure in the Artibonite Watershed, OXFAM-Québec, 2013
<http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38129348>
10. Etude Préliminaire Bassin Versant Artibonite par Alex Bellande – Sept 2013
<http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38082840>
11. Base de données Thomonde par Alex Bellande Sept 2013
<http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38082840>
12. Devis estimatif - Réhabilitation Berges gauche et droite en aval de Canneau, BETA, 2013
<http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38133483>
13. Projet de protection de la berge gauche du fleuve Artibonite et des canaux maitres rive gauche et rive droite en aval du barrage de Canneau - Rapport d'études - BETA
<http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38133702>
14. Estimation des bénéfices technico-économiques espérés du programme d'investissement et de maintenance (système irrigué de l'Artibonite), SCP, 2013
<http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38154933>
15. Réforme du schéma institutionnel de la gestion de l'eau et des infrastructures du périmètre irrigué de la vallée de l'Artibonite – Scénario, SCP, 2013
<http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38156741>
16. Réforme du schéma institutionnel de la gestion de l'eau et des infrastructures du périmètre irrigué de la vallée de l'Artibonite – Diagnostic, SCP, 2013
<http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=38156740>

ABBREVIATIONS

AOP	Annual Operation Plan
CIAT	Interministerial Land use Committee (<i>Comité Interministériel d'Aménagement du Territoire</i>)
EA	Executing Agency
EDH	Electricity of Haiti (<i>Electricité D'Haiti</i>)
GDP	Gross Domestic Product
GEF	Global Environment Fund
GoH	Government of Haiti
Ha	Hectare
IFAD	International Fund for Agricultural Development
MARNDR	Ministry of Agriculture, Natural Resources and Rural Development
M&E	Monitoring and Evaluation
MT	Metric Ton
O&M	Operation and Maintenance
PR	Progress Report
ODVA	Organism for the Development of the Artibonite Valley (<i>Organisme de Développement de la Vallée de l'Artibonite</i>)
SPCR	Strategic Program for Climate Resilience
SSF	Safeguard and Screening Form for Screening and Classification of Projects
UEP	Studies and Programming Unit (<i>Unité d'Etudes et de Programmation</i>)
UPDM	Procurement Unit (<i>Unité de Passation des Marchés</i>)
WUA	Water Users Association

PROJECT SUMMARY
HAITI
WATER MANAGEMENT PROGRAM IN THE ARTIBONITE BASIN
(HA-L1087)

Financial Terms and Conditions			
Beneficiary: Republic of Haiti Executing Agency: Ministry of Agriculture, Natural Resources and Rural Development (MARNDR)		Amortization period:	N/A
		Original WAL:	N/A
		Disbursement period:	60 months
		Grace period:	N/A
Source	Amount (US\$)	Supervision and inspection fee:	N/A
IDB (Grant Facility)	25,000,000	Interest rate	N/A
Local	2,500,000	Credit fee:	N/A
Total	27,500,000	Currency:	US Dollars
Project at a Glance			
<p>Project Objective: the general objectives of the program are to decrease crop, livestock and infrastructure losses due to floods, and to increase agricultural productivity in the Artibonite basin. The specific objectives are to improve water and sediment management in selected areas of the upper and lower watershed; to increase area suitable for agriculture; and to improve operation and maintenance of hydraulic infrastructures and equipment at Peligre dam and in the irrigation district. The project includes two components: (i) water and sediment management infrastructures; and (ii) institutional strengthening.</p>			
<p>Special conditions prior to first disbursement: (i) the entry into force of the transitional procurement procedures for the Procurement Unit (UPDM, for its French acronym) and the appointment of a procurement specialist financed by the program and assigned to the UPDM (¶3.6); (ii) the creation of the Program Steering Committee and its approval of the Program Operating Manual, including the Environmental and Social Management Plan (¶3.4, ¶3.9).</p>			
<p>Special conditions prior to execution: (i) prior to the adjudication of the first contract of services for technical assistance to the Organism for the Development of the Artibonite Valley (ODVA), this agency will provide evidence, satisfactory to the Bank, that it has increased its technical and financial management capacity with adequate staffing according to the Program Operating Manual, including two accountants hired by a competitive process (¶3.3); (ii) prior to the adjudication of the first contract associated with works or goods, entry into force of agreements satisfactory to the Bank between the MARDNR and the ODVA and Electricity of Haiti (EDH), defining the terms for the transfer and operation and maintenance (O&M) of works and goods acquired by the program (¶3.5); and (iii) prior to adjudication of the first contract of works, goods or services in the irrigation district, entry into force of an agreement between ODVA and each Water Users Association (WUA), recognizing the share of responsibilities in relation to the O&M of the irrigated district (¶3.5).</p>			
<p>Special disbursement: an initial disbursement for up to US\$100,000 will be made to the extent the Beneficiary submits a provisional budget to the Bank and fulfills to the Bank's satisfaction all the standard general conditions prior to disbursement set forth in grant agreements, except for the submission of the initial execution report (¶3.10).</p>			
<p>Exceptions to Bank policies: None</p>			
<p>Special Procurement Aspects: the Consortium CECI/SOCODEVI/Prodeva/Tecsalt may be hired directly pursuant to Bank procurement policies (see section V.1.e of Annex III).</p>			
Project qualifies for:	SEQ [X]	PTI [X]	Sector [X] Geographic <input type="checkbox"/> Headcount <input type="checkbox"/>

I. PROGRAM DESCRIPTION AND RESULTS MONITORING

A. Background, Problem Addressed and Justification

- 1.1 **The Artibonite basin, a strategic region.** With an area of 6,800 km² on the Haitian territory,¹ and representing 25% of the country, the Artibonite watershed is the largest hydrographic basin of Haiti. With a population of over 285,000, most of which live in conditions of extreme poverty, the Artibonite Valley is the principal rice growing region of Haiti (80% of total production), and more recently of high-value vegetables with an estimated value of US\$57.5 million. Its fertile soils and particularly the irrigation system established following the construction of the Peligre Dam in 1956 contributed to its comparative advantage.² The Artibonite Valley is today the largest irrigation district in Haiti with more than 30,000 hectares equipped with full or partial irrigation and drainage infrastructure.³
- 1.2 The development of the irrigation district in the Artibonite Valley has been supported by the Inter-American Development Bank (IDB) since the mid-1970s. A set of five investment operations totaling US\$37.75 million were approved between 1976 and 1991 with the objective of increasing rice production in the Valley by upgrading the irrigation system and helping farmers increase productivity. These operations were successful in terms of providing the necessary infrastructure; however, their broader economic and social development objectives were not fully attained as issues such as sustainability of operations and maintenance (O&M) of works, land tenure insecurity, crop diversification and agricultural intensification were never adequately addressed.
- 1.3 Learning from lessons of past interventions, the Government of Haiti (GoH) in 2003, with IDB support, launched the Agricultural Intensification Program (1490/SF-HA). Financed with a loan of US\$41.9 million and supplemented in 2007 by a US\$12.5 million grant (1917/GR-HA), this program aimed to increase the income of Haitian farmers in the Artibonite Valley through a process of agricultural intensification by increasing the efficiency and sustainability of water used for irrigation. The program was comprised of: (i) Subprogram A, focused on water user groups, land tenure verification, technical assistance for agricultural marketing and production improvements, and institutional strengthening of the Organism for the Development of the Artibonite Valley (ODVA for its French acronym); and (ii) Subprogram B, financing physical infrastructure to rehabilitate, protect and expand the network of irrigated perimeters and to improve the efficiency of the Artibonite irrigation and drainage system. Executed by the

¹ The upper part of the Artibonite basin (2,700 km²) is located in the Dominican Republic.

² Peligre dam has three functions: irrigation, flood management and electricity production.

³ Projet binational de réhabilitation du bassin versant du fleuve Artibonite, dans la zone frontalière entre Haïti et la République Dominicaine – Diagnostic, ACIDI/OXFAM Québec/CRC Sogema, 2007; HA-L1074 economic assessment, Agueda/IDB, 2012.

Ministry of Agriculture, Natural Resources and Rural Development (MARNDR) and closed in 2013, the program achieved the following main outcomes: (i) protected the right bank master canal to secure water for all 30,000 hectares of the irrigation district (target: 22,000); (ii) increased the irrigated and drained area in 7,000 new hectares in the dry season (5,000 in the wet season) (target: 7,000); (iii) assisted in the organization of 35,000 farmers into 12 Water User Associations (WUAs) (target: 31,000); (iv) improved access of 1,976 farmers to new technologies (target: 2,000); and (v) clarified land tenure on 17,300 hectares (target: 16,800) (see [Project Completion Report](#)). Although the program did not include a rigorous impact evaluation plan to measure changes in agricultural gross margins, positive results can be envisioned as yields in demonstration plots showed increases from an average 1.65 metric tons per hectare (MT/ha) to 4MT/ha, in the case of rice; and from 10MT/ha to 20MT/ha in the case of onion, tomatoes and green peppers.

- 1.4 In spite of the satisfactory outcomes and implementation of loans 1490/SF-HA and 1917/GR-HA, the Artibonite Valley still faces challenges to ensure that water flow for irrigation is secured in the long-run. The challenges along the irrigation district are of two types: (i) the inadequacy of the water and sediment management infrastructure; and (ii) the weakness of the current watershed governance framework.
- 1.5 **Inadequate water and sediment management infrastructure along the irrigation district.** Two problems reflect the inadequacy of current infrastructure for water and sediment management along the irrigation district. First, sediment flows from upstream economic activities are increasing the risks of disasters downstream. The upper Artibonite watershed suffers similar environmental challenges as the rest of the country. Close to 97% of the upstream area is under cultivation, with more than 50% being considered unsuitable for agriculture and 47% facing severe erosion risks.⁴ Resulting soil loss from hillside agricultural practices is estimated to be over 1,305MT/km²/year in the watershed. In the absence of infrastructures to retain water and sediment, most rain events produce large run-offs as a consequence of soil erosion, which concentrate in gullies, generating periodic flash floods. A particular case is the silting of the Péligre dam, whose sediment storage capacity has reduced from 600 million m³ to 300 million m³ in the last 60 years, making more difficult floods control as well as the provision of water for both irrigation and hydropower generation. In addition to sediment problems, during the dry season, water scarcity becomes a major constraint to agriculture and livestock breeding in the hillside areas.⁵ This overall situation is expected to be exacerbated as a result of climate change, with

⁴ The problem of unsustainable agricultural practices will be addressed by other operations, including “Smart subsidies” projects that promote the transfer of eco-friendly agricultural practices (e.g. loan 2187/GR-HA - Natural Disaster Mitigation Program).

⁵ ACDI, OXFAM Québec et CRC Sogema, 2007 (Ibid); Sedimentation Study Péligre Reservoir, IDB/GLM Engineering, 2008; Contrôle technique et instrumentation des barrages de Péligre et Canneau, LGL/COB, 2009

expected increased frequency and intensity of extreme weather events and downward trend in rainfall.⁶

Second, malfunctioning gates and automatic water control commands at the Canneau dam, source of water for the irrigation district downstream Péligre, are impeding the adequate management of water flows diverted to the irrigation master canals. Uncontrolled water flows tend to damage the Artibonite River banks, threatening the stability of these canals and the consequent delivery of water to the 30,000 Ha downstream. Downstream, the irrigation and drainage network is not complete, which precludes providing adequate waterflow for agriculture. In spite of recent GoH efforts, supported by the Bank, to build or rehabilitate approximately 40 km of canals and drains as well as to build eight protection walls to prevent the master canal from collapsing, additional secondary and tertiary irrigation canals, drains, bank protections walls and water flow regulating devices are needed to prevent any possibility of collapse of current infrastructure, to improve waterflows and to decrease waterlogging that hinders agriculture on approximately 15% of lands in the Valley.⁷

- 1.6 **Governance weaknesses along the Artibonite watershed exacerbate the inadequacy of current water and sediment management infrastructures.** For decades, GoH interventions to improve water resources management for agriculture have been done under an obsolete policy and legal framework, which do not call for effective mechanisms to ensure synergies among them and their sustainability. For instance, although the transfer of irrigation management services from GoH to WUAs has been promoted, these have not had legal status to enforce these new responsibilities, including the right to recover O&M costs and the assurance of an efficient water allocation among farmers. Currently, only five WUAs out of 70 collect tariffs countrywide. The impact of this governance framework is particularly clear in the Artibonite watershed, where lack of coordination and institutional capacity of relevant actors are jeopardizing the effectiveness and sustainability of the investments. The upstream Péligre dam, initially built to manage floods and to ensure irrigation downstream, became a source of electricity for Haiti in 1976 and thus its management under the public company Electricity of Haiti (EDH) focused exclusively on maximizing power generation. As a result, economic losses to crops and infrastructures downstream have occurred due to the lack of a decision support system within EDH to forecast the fluctuation of water level in the dam and control water releases in a proactive and balanced manner. On the contrary, unexpected water releases from Péligre dam have caused floods turning the Valley in Haiti's region with the highest irrigation vulnerability [index](#) (100/100) and with the second highest population

⁶ Mimura, N., et al, 2007: Small islands. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 687-716.

⁷ Evaluation de la vulnérabilité aux inondations des infrastructures hydro-agricoles dans la Vallée de l'Artibonite, BID/Body, 2009; and optional links 4, 6, 8 and 15.

- vulnerability index (38/100).⁸ Downstream, ODVA- created in 1949 to provide water to farmers in the Valley- in the last 20 years has become a very weak entity, unable to perform its mission. Consequently, irrigation infrastructure is poorly operated and maintained, and more than 80% of farmers in the Valley still lack access to an optimal water service.⁹
- 1.7 In 2012, the GoH initiated an institutional and legal reform to modernize the water resources governance framework in the country. With support from the Bank's Institutional Strengthening and Reform of the Agricultural Sector Programmatic Policy Based Grant (2731/GR-HA & 2945/GR-HA), the following has been achieved to date: (i) submission of a draft bill to the Prime Minister on the transfer of irrigation perimeters management to WUAs that addresses issues on WUAs legal status and their right to collect and enforce water user fees; (ii) restriction of ODVA responsibilities to manage the Canneau dam and primary canals only; (iii) approval of an Irrigation Policy by the MARNDR, which strategically guides the protection of watersheds upstream the perimeters, investments in irrigation infrastructures, definition of roles and responsibilities of WUAs and the value assessment of irrigated perimeters; and (iii) creation of an Inter-Ministerial Commission ("Peligre Commission"), steered by the Interministerial Land Use Committee (CIAT, for its French acronym), to ensure that EDH water management decisions at Péligre dam better integrate irrigation needs and flood mitigation to its electricity generation objective.¹⁰
- 1.8 In spite of these reforms, which are expected to conclude in 2015, major issues still exist. First, ODVA still suffers from severe management weaknesses and needs technical and financial support to be able to ensure a proper O&M of the infrastructures and equipment that remain under its responsibility.¹¹ Second, being relatively new, WUAs are still too weak to undertake the new function of collecting water tariffs to finance O&M of secondary and tertiary infrastructure canals without significant assistance in the short-term.¹² Third, the "Peligre Commission" requires strengthening to ensure its sustainability, including the improvement on EDH's technical capacity to forecast precipitation fluctuations

⁸ There is evidence that the operating rules of the Peligre dam during the hurricane season, particularly in case of flooding, are not respected. During Hurricanes George (1998) and Gustav (2008), 30 million m³ of water could have been retained rather than released, reducing damages downstream. See BID/Body, 2009 (Ibid) and COB-LGL, 2009 (Ibid). The value of agricultural damages due to floods in the Valley reaches US\$8.7 million/year. See Environmental vulnerability in Haiti, USAID, 2007; *Evaluation intégrée des alternatives de développement du bassin versant de l'Artibonite*, Artelia, 2013

⁹ See optional links 16 and 17.

¹⁰ Positive results on the field already demonstrate the importance of this Commission. For instance, works financed by operation 1917/GR-HA, which were delayed for two years because of excessive water releases from Péligre (with associated penalty costs of US\$0.5M), were achieved in 2013, after EDH and the MARNDR agreed on a water release schedule.

¹¹ Annual O&M cost for the Canneau dam and primary canals is estimated around US\$76/ha, a high cost compared with the current average gross margin of US\$328/ha in the Valley.

¹² Annual O&M cost of secondary and tertiary canals cost is approximately US\$10/ha in cash and US\$20/ha in kind [labor force], equivalent to 9% of gross margin/ha. Consequently, an increase of agricultural productivity in the Valley is a prerequisite needed to ensure cost recovery of investments in the long run. See optional links 16 and 17.

for making adequate decision on water releases. Fourth, since water impacting activity conducted in the Dominican Republic side of the basin has the potential to exacerbate problems – or bring solutions - downstream on the Haitian side, coordination between the two countries is required beyond the current efforts to create a Binational Technical Commission for the Artibonite Watershed Management.¹³

- 1.9 The accumulation of water management deficiencies from the upper watershed to the lowest part of the Valley makes it impossible to ensure an effective use, sustainable supply and equitable share of water in the irrigated district, where excess, waste or scarcity of water contributes to low agricultural productivity, with an average rice yield of 2.65 MT of paddy/Ha, to compare with the 4.61 MT/Ha observed in the Dominican Republic.¹⁴
- 1.10 Lessons learned. The program takes into account important lessons learned from Bank and other donor-financed operations in Haiti, as well as evidence from research undertaken in Haiti or abroad. The main lessons are included in the following table.

Table I-1. Lessons Learned

Lessons Learned	Reflected in the Program Design
Water management interventions must consider the upstream part and the irrigated area together in order to have impact and ensure sustainability.	The proposed program considers to financing infrastructures and institutional strengthening all along the watershed.
Participation of waters users in operating and maintaining irrigation infrastructures has a positive impact on agricultural productivity (see footnote 28).	Building WUAs' capacities for an effective O&M of infrastructures in the Valley, including the implementation of a cost recovery mechanism, is one of the main objectives of the proposed operation.
An adequate governance framework for water management is required to ensure a successful project execution.	Strengthening governance mechanisms and institutions such as ODVA, the "Peligre Commission" or the Binational Commission is an important objective of the proposed operation

- 1.11 **Conceptual overview.** In the following years, the Artibonite Valley will continue to be a key economic area in the country. In spite of previous efforts from the Government, challenges still remain and their solution will require a long-term process that needs to focus in the short-term in two critical aspects: (i) given previous results of activities in Haiti and empirical evidence in other countries,¹⁵

¹³ Development of a Binational Technical Cooperation Structure in the Artibonite Watershed, OXFAM-Québec, 2013.

¹⁴ SCP, 2013 (ibid); Agricultural Intensification Program final evaluation, AECOM, 2013; FAO-STAT.

¹⁵ A recent study concludes that a model of water and sediment infrastructure, recently developed in Haiti, can contribute to effectively contain water and sediment and, at the same time, transform gullies in fertile areas, allowing farmers to change their cropping patterns from an extensive and erosive grain-based system to a profitable and eco-friendly banana-grain-based system, with an increase of US\$1500 of gross margin/Ha (see *Evaluation économique a posteriori des micro-retenues construites par l'Organisation SOS ESF à Gros Morne*, Bayard/BID, 2013). For similar interventions in other countries with proven effective results see (i) Piyapit Khonkaen, Cheng, Jie-Dar. 2011. The Application of Check Dams Construction to Watershed Management: A case study in the North of

implement effective interventions at the sub-basin level, ensuring that economic impacts clearly exist; and (ii) prepare recently-formed WUAs to assume cost-recovery efforts for all infrastructure in the irrigation district. Building on the past experiences of operations 1490/SF-HA and 1917/GR-HA and with its design taking into consideration the institutional reforms for water management supported by operations 2731/GR-HA & 2945/GR-HA, this program represents a first step in this process. In the case of the expected interventions to tackle the challenge of inadequate water and sediment containment infrastructure, they will be located in the upstream Thomonde sub-watershed, an area of 15 Km² that was chosen for its contribution to Peligre dam sedimentation, its accessibility and its potential for agricultural intensification. By narrowing their geographical focus, it will be possible to demonstrate the environmental and economic benefits resulting from a complete system of water and sediment containment infrastructure properly built in an entire hydrographic unit through a rigorous impact evaluation, the first one in Haiti and thus relevant for future similar interventions in other sub-basins. Approximately 2,350 farmers will benefit from the intervention.

- 1.12 In terms of tackling governance weaknesses with emphasis on cost recovery capabilities in the Valley, the program seeks to demonstrate that WUAs can efficiently and sustainably operate and maintain second and third-levels canals to provide their farmers with an adequate and fair water service that can have a positive impact on agricultural productivity, as empirical evidence has shown for other countries.¹⁶ As major increases in productivity are needed to generate farm income surplus to recover O&M costs, interventions must occur as a first step and impact assessments need to follow. Thus, program investment in secondary and tertiary canals and water flow regulating equipment will be implemented in 3,300 Ha (10% of the irrigated district) irrigated by the Lower Benoît, Bidone and Laville primary canals. This area was chosen due to the existence of a relatively well-developed hydraulic network that can become operational with limited additional investments from the program. With respect to primary canals, proper O&M of large infrastructures will continue to depend on ODVA technical and budgetary capacity. In this regard, the program will: (i) secure resources through a specific budget line, with the contribution of national counterpart; (ii) ensure, correct technical and fiduciary management by hiring a managing firm to execute O&M in “assisted” force account (i.e. with the ODVA’s human resources and equipment) during the first years; and (iii) strengthen the ODVA technical and fiduciary management capacities, with the objective, and strong incentive for

Thailand. Journal of Soil and Water Conservation. National Chung-Hsing University, Taiwan, R.O.C.; (ii) Xu Xiang-zhou, Zhang Hong-wu, Zhang Ouyang. 2004. Development of check-dam systems in gullies on the Loess Plateau, China. Environmental Science and Policy. Tsinghua University, China.

¹⁶ Garcés-Restrepo, Muñoz y Vermillion, (2007); Urban y Wester (2003); Johnson III (1997); Arredondo Salas y Wilson (2004); Bandyopadhyay, Shyamsundar, Xie (2007) (See the Bank’s Sector Framework Document on Agriculture and Natural Resources Management (GN-2709-1) for detailed references). Additionally, evidences also demonstrate that management of investment by water users themselves have incremental positive impacts , including (i) improved maintenance of infrastructure; (ii) reduced cost of water; (iii) improved water access and availability ; and (vii) increased income.

ODVA, to have O&M executed in direct force account¹⁷ after three years, subject to positive opinion from external auditors regarding ODVA's financial statements.

- 1.13 **Consistency with Government sector strategy and donor's coordination.** The program is comprised within the 2011-2016 National Agriculture Investment Plan; the National Irrigation Program; the National Adaptation Action Plan; the National Management Plan for Risks and Disasters; and the "Centre Artibonite Loop" territorial development program. Executing arrangements are also consistent with the MARNDR's reform plan. The program was also prepared in close coordination with other Donors, through several coordination meetings and bilateral consultations with the World Bank, the United Nation Development Program, OXFAM-Québec, the Canadian International Development Agency, International Institute for Cooperation in Agriculture, OXFAM-America and Intermon.
- 1.14 **Consistency with the Country Strategy and GCI-9 goals.** The program is aligned with the Bank's Country Strategy with Haiti for 2011-2015 (GN-2646), which sets agriculture as a priority sector and the Artibonite region as a priority area of intervention. It is also included in the 2013 Country Program Document (GN-2696). The program contributes to the four lending program priority targets outlined in the Report on the Bank's Ninth General Increase in Resources (AB-2764) and its Results Framework: (i) small and vulnerable countries; (ii) poverty reduction and equity enhancement, as beneficiaries will be mainly small farmers; (iii) support climate change initiatives, renewable energy and environmental sustainability, by promoting efficiency and sustainability of water use at farm and watershed levels; and (iv) support regional cooperation and integration, as the Artibonite basin is a regional public good. The program is consistent with the strategic priority "Protect the environment, respond to climate change and enhance food security", and will contribute to its Regional Development Goal "Annual growth rate of agricultural GDP" and its output "Farmers given access to improved agricultural services and investments." The program is consistent with the Bank's Sector Framework Document on Agriculture and Natural Resources Management (GN-2709-2).

B. Objective, Components and Cost

- 1.15 The general objectives of the program are to decrease crop, livestock and infrastructure losses due to floods, and to increase agricultural productivity in the Artibonite basin. The specific objectives are to improve water and sediment management in selected areas of the upper and lower watershed; to increase area suitable for agriculture; and to improve operation and maintenance of hydraulic infrastructures

¹⁷ According to the Bank procurement policies, "Force account" is the construction by the use of the Borrower's own personnel and equipment (section 3.8 of GN-2349-9). In that case, it will be ODVA's personnel and equipment. "Assisted force account" means that the contract will be signed between the MARNDR and a specialized managing firm that will manage the contract on behalf of ODVA. "Direct force account" means that the contract would be signed between the MARNDR and the ODVA.

and equipment at Peligre dam and in the irrigation district. The program is structured in two components.

- 1.16 **Component 1. Water and sediment management infrastructures (US\$17.9 million).** The objective of this component is to improve water and sediment management in selected areas of the upper and lower watershed and increase the area suitable for agriculture. This component will finance: (i) the construction of approximately 950 small-size sediment and water containment infrastructures (such as check-dams, rainwater harvesting water-tanks, etc.) in the pilot area of Thomonde; (ii) the rehabilitation of electromechanical at the Canneau dam; (iii) the construction of 220 LM of walls to strengthen the left and right banks of the Artibonite river immediately downstream Canneau dam to avoid the collapse of the master canals that deliver water to 30,000 Ha downstream; (iv) the construction or rehabilitation of approximately 50 Km of secondary and tertiary irrigation canals and drains in the pilot area of the irrigation district; (v) the installation of 100 waterflow regulation and measuring equipment on master and primary irrigation canals of the Artibonite Valley and on the secondary irrigation canals of the pilot area; and (vi) the dredging of critical primary drains in the downstream area of the Valley.
- 1.17 **Component 2. Institutional strengthening (US\$5.7 million).** This component aims at improving O&M of hydraulic infrastructures and equipment at Peligre dam and in the irrigation district. This component will finance the following: (i) technical assistance to strengthen the “Péligre Commission;” (ii) implementation of a flood management system at both Peligre and Canneau dams to allow EDH to predict fluctuations of water level of the Peligre reservoir, make anticipated decisions on water flushing, and send the associated information to ODVA on a real-time basis; (iii) technical assistance, and some limited material support, to key stakeholders in charge of O&M in the irrigation district- the Social Water Management Directorate (DGSE, for its French acronym) of the ODVA, the Agricultural Infrastructures Coordination (CIA, for its French acronym) of the ODVA, the administrative, financial and accounting Directorate of the ODVA, and WUAs-; (iv) punctual technical assistance to the MANRDR to ensure the quality control and monitoring-evaluation of the implementation of the water management reform in the Artibonite Valley; and (v) technical assistance to support the creation of the Artibonite basin binational commission.

C. Key Results Indicators

- 1.18 The project is expected to: (i) improve water and sediment containment in selected gullies of the upper Artibonite watershed; (ii) improve water distribution in the Artibonite irrigation district; (iii) decrease hydromorphy in the Artibonite irrigation district; (iv) improve flood management at Peligre dam; (v) improve ODVA’s internal management; and (vi) improve operation and maintenance of hydraulic infrastructures and equipment in the Artibonite irrigation district. Table I-2 summarizes key indicators, measurement periods and selection rationale.

Table I-2. Key indicators, measurement periods and selection rationale

Key Indicators	Period	Selection rationale
Impact		
Value of annual agricultural damages caused by flooding	Year 5	Measures the farmers' reduction of losses due to flooding
Average annual gross margins of selected crops	Year 5	Measures farmers' wellbeing and economic impact of the project.
Component 1		
Volume of sediment contained by check-dams	Year 5	Measure the environmental benefit of infrastructures built in gullies (control of sedimentation and of run-off, respectively)
Volume of water stored by water-tanks	Year 5	
Market gardens created in gullies	Year 5	Measure the economic benefit of infrastructures built in gullies (new areas suitable for intensive agriculture)
Surface of the irrigation district with optimal waterflow	Year 5	Measure the efficiency of water distribution in the irrigation district
Surface cultivated in formerly hydromorphic lands	Year 5	Measure the effectiveness of dredging of critical drains
Component 2		
Days/year with level of water at Péligre dam > maximum limit for flood management	Years 2-5	Measure the level of compliance, by EDH, of flood management operating rules at Peligre dam
Days/year with waterflows released by Peligre dam > 400 m3/sec	Years 2-5	
ODVA's Financial statements issued by external auditors with a positive opinion		Measure ODVA's internal management as a key requisite for correct O&M of infrastructures
Secondary and tertiary canals and drains dredged (manually) by the 3 WUAs in the pilot area	Years 2-5	Measure the level of O&M of infrastructures by WUAs
Rate of cost recovery in the 3 WUAs of the pilot area	Years 2-5	Measure the capacity of WUAs to ensure O&M

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing Instruments

- 2.1 The project amount is US\$27,500,000 financed by the IDB Grant Facility up to the amount of US\$25,000,000 and the national counterpart up to the amount of US\$2,500,000. The disbursement period will be 60 months. Table II-1 below provides the cost summary by investment categories and components (see also the [detailed budget per output](#)). The budget includes costs associated with risk mitigation measures mentioned in paragraphs 2.4, 2.5, 2.6 and 2.7.

Table II-1. Estimated cost by component in million US\$

Investment Categories	IDB	Local	Total	%
I. Components				
1. Water and sediment management infrastructures	15.4	2.5	17.9	65.1
2. Institutional strengthening (operation and maintenance)	5.7	0	5.7	20.7
II. Monitoring-Evaluation, Audit, Administration, Contingencies				
Monitoring, Evaluation, Audits	1.0	0	1.0	3.8
Administration and Supervision	2.5	0	2.5	9.0
Contingencies	0.4	0	0.4	1.4
TOTAL	25.0	2.5	27.5	100

B. Economic Analysis

- 2.2 The economic viability of the program was assessed using a cost-benefit analysis. The analysis considered two types of annual incremental benefits from the program: (i) benefits from improved water management in the basin, estimated through a hydro-economic model of flood loss reduction; and (ii) the benefits pertaining to the pilot interventions, which were estimated based on agro-economic assessments. Annual overall costs of the program considered both investment and O&M. The analysis purposes a project horizon of 20 years and a 12% discount rate was used. The estimated Internal Rate of Return of the program is 25.8%, with a positive Net Present Value of US\$20,5 million. A sensitivity analysis confirmed the robustness of the results. It was also conducted for the most relevant variables affecting the program's viability, showing that the program is still viable under more pessimistic hypothesis such as 40% decrease in the expected benefits associated with improved water management, and a 34% increase in the overall cost of the program.
- 2.3 In addition to the overall economic assessment of the program, specific cost-benefit analysis of the interventions for upstream Thomonde sub-watershed and the in 3,300 Ha (10% of the irrigated district) irrigated by the Lower Benoît, Bidone and Laville primary canals- were assessed individually. Incremental benefits were calculated using parameters of increased agricultural productivity, through the construction of water and sediment retention structures in the upper part, in the case of the Thomonde sub-basin, and through the rehabilitation and improved maintenance practices of irrigation canals, in the case of the irrigated area by the Lower Benoît, Bidone and Laville primary canals. The estimated internal rate of return of each intervention exceeds 12%, demonstrating their economic viability.

C. Environmental and Social Safeguard Risks

- 2.4 Key impacts and risks identified in the irrigated district include: (i) water shortages during works on canals; (ii) land loss for the creation of tertiary canals; and (iii) potential conflicts over water rights. These will be mitigated through planning for appropriate timing in relation to crop needs; compensation of farmers for lost land; and strengthening of the WUAs. Key impacts and risks identified in relation to the construction of water and sediment containment infrastructures in gullies include temporary loss of land until the micro-dams are silted and provide additional arable surface for famers. No resettlement is foreseen, in accordance to OP-703. This operation is Category B, as expected negative impacts are likely to be mostly local and short term and can be mitigated through readily available measures. All the costs associated with mitigation measures have been included in the program budget.

D. Fiduciary Risk

- 2.5 Institutional capacity assessments of the Executing Agency in 2012 and 2013 indicated a medium financial management risk mainly due to the lack of

appropriate documentation of certain procedures. To mitigate those risks, the accounting manual of the program will be updated to include procedures for the monitoring of budget, the safeguard of financial information, and the management of potential conflicts of interest. In addition, due to high risk associated with the lack of appropriate financial management systems within ODVA, a specialized firm will be hired to manage the budget dedicated to finance O&M of primary infrastructures to be carried out by ODVA (See ¶1.12). All the costs associated with mitigation measures have been included in the program budget.

- 2.6 The general level of risk in terms of procurement is evaluated as being high. Key mitigation measures include: (i) the financing of human and material resources to the MARNDR's Procurement Unit (UPDM, for its French acronym), including a procurement specialist in charge of the program's procurement activities; (ii) technical assistance to finalize all necessary operating rules in the short term and to provide training and counseling to the UPDM team. All associated costs will be financed and shared between the proposed program and other operations (2393/GR-HA and HA-T1190). Procurement activities will be monitored as part of regular supervision activities. The supervision modality will initially be ex-ante but can evolve towards ex-post based on findings of the supervision missions.

E. Other Key Issues and Risks

- 2.7 Key risks include: (i) poor O&M of the infrastructures, equipment and information systems financed by the program, resulting from inadequate technical and financial capabilities; and (ii) difficulties to implement works in the irrigation district because of excessive water releases from Peligre dam. The associated mitigation actions are two-fold and part of the program's Component 2. First, to provide technical assistance to all key stakeholders responsible for the O&M and protection of the infrastructures and equipment. This assistance will be combined with financial resources for O&M and protection of infrastructures in the program budget. Second, to strengthen the "Péligre Commission" and to ensure active participation of MARNDR and ODVA in the Commission meetings. Other risks (and their associated mitigation measures, costs and source of financing) are detailed in the Risk Matrix. The general risk qualification of the program is high.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary Implementation Arrangements

- 3.1 The beneficiary of the program will be the Republic of Haiti and the Executing Agency (EA) will be the MARNDR. The EA will be responsible for the overall administration of the program, including: planning and reporting for technical and fiduciary aspects; execution of procurement activities; the supervision of technical assistance and construction firms; financial and accounting management, including the submission of disbursement requests; risks management; monitoring and evaluation; and complying with contractual conditions of grant agreement.

- 3.2 The MARNDR will execute the aforementioned tasks through its existing Project Executing Unit (BCP-ProGEBA). The BCP-ProGEBA has extensive experience in the management of Bank-financed operations, including 1490/SF-HA and 1917/GR-HA. This unit is headed by a Project Director, who reports directly to the MARNDR's General Director, and will be comprised of a technical team of two hydraulic engineers and one institutional expert. All program's team members will have the status of contractual civil servants. In the event that the MARNDR proposes to fill a position with a permanent civil servant that fulfills the established qualifications, the program will finance any difference between the existing employee salary and the salary level of the position.
- 3.3 The BCP-ProGEBA will receive support from the recently created MARNDR's Procurement Unit (UPDM, for its French acronym), to perform its procurement responsibilities, and the Unit for Studies and Programming (UEP, for its French acronym), for monitoring and evaluation. To ensure internal coordination within the decentralized governance of the MARNDR, expected program activities associated with infrastructure and technical assistance in the Valley will receive prior endorsement from the ODVA, while those associated with infrastructure in the upper watershed that endorsement from the MARNDR's Director for Central Department, respectively. ODVA will support the EA on the dredging of critical primary drains, under the management of a specialized managing firm, as well as the strengthening of WUAs. As a special condition prior to the execution of technical assistance activities to ODVA, this agency will provide evidence, satisfactory to the Bank, that it has increased its technical and financial management capacity with adequate staffing according to the Program Operating Manual, including two accountants hired by a competitive process.
- 3.4 A Program Steering Committee will be created to ensure strategic general guidance as well as the approval of the Program Operating Manual, initial Multi-Year Execution Plan, Annual Operation Plans and semiannual Progress Reports. This committee will be led by the Minister of the MARNDR, and composed of: (i) the MARNDR General Director; (ii) the ODVA General Director; (iii) the president of the Federation of WUAs; (iv) one representative of EDH; (v) the technical directors in charge of Infrastructures and of Natural Resources at the MARNDR; (vi) the coordinator of the Department Agricultural Directorates; and (vii) one representative of the technical secretary of the CIAT. It will meet at least three times per year. **The creation of the Program Steering Committee will be a special condition prior to first disbursement.**
- 3.5 Operation and maintenance of works and goods for ODVA (primary infrastructure and associated equipment) and EDH (flood management system at Peligre dam) will be under their respective responsibility. As a special condition prior to the execution of related activities, agreements satisfactory to the Bank between, respectively, the MARDNR and ODVA, and between the MARNDR and EDH (or the Ministry of Public Works, Transport and Communication on behalf of EDH), defining the terms for the transfer and O&M of works and goods acquired by the program must entry into force. As a condition prior to execution

of activities in the irrigation district, an agreement between ODVA and each WUA, recognizing the share of responsibilities in relation to the O&M of the irrigated district, must entry into force.

- 3.6 Procurement activities will be executed by the MARNDR's Procurement Unit (UPDM), as described in Annex III. **The entry into force of the transitional procurement procedures for the UPDM and the appointment of a procurement specialist financed by the program and assigned to the UPDM will be a special condition prior to first disbursement.** Procurement will be performed in accordance with Bank rules and procedures, with no exceptions to the application of the Policies for the Procurement of Goods and Works (GN-2349-9) and Policies for the Selection and Recruitment of Consulting Services (GN-2350-9). The program will be subject to the special provisions for procurement activities in Haiti (GN-2654). Section V.1.e of Annex III also provides the detailed justification in accordance with Bank rules and procedures for the contracting of works, goods and services for one direct contract¹⁸ of approximately US\$2.7M, all in conformity with section 3.10 (d) [only one firm is qualified or has experience of exceptional worth for the assignment] of GN-2350-9.
- 3.7 **Project financial management.** Advance of funds methodology will be used for the disbursement of project funds, with ex-post supervision for disbursements, and will be equivalent to a six-month funding needs.
- 3.8 **Audit requirements.** External auditors eligible to the Bank will be hired to perform one annual financial audit of the program including an annual review of procurement and disbursement processes and a final financial audit of the program, to be submitted within 120 days after the date of the last disbursement. For accounting and audit purposes, the Haitian fiscal year will be respected.
- 3.9 **Program's Operating Manual.** Program administration will be governed by an operations manual that will set out the procedures to be followed by the Executing Agency with regard to planning and reporting activities, financial management, audits, procurement and contracting, risks management, and monitoring and evaluation. This manual will include the program's administrative and accounting procedures manual, the chart of accounts and the Environmental and Social Management Plans. **The Program Steering Committee's approval of the program operating manual will be a condition prior to first disbursement.**
- 3.10 **Special disbursement.** An initial disbursement of up to US\$100,000 will be made to the extent the Beneficiary submits a provisional budget to the Bank and fulfills, to the Bank's satisfaction, all the standard general conditions prior to disbursement set forth in grant agreements, except for the submission of the initial execution report. The special disbursement will enable the EA to fulfill all the conditions prior to first disbursement, and will allow among others: the selection of a consultant responsible for elaborating the operation manual of the program;

¹⁸ With: Consortium CECI/SOCODEVI/Prodeva/Tecsult.

the selection of the project team; the updating of the EA's accounting manual and the elaboration of the program's chart of accounts and the purchase of office and information technology equipment.

B. Summary of Arrangements for Monitoring Results

- 3.11 **Planning and Monitoring.** During the grant disbursement period, the EA will submit Annual Operations Plans (AOPs) no later than 30 days before the end of the preceding calendar year; and semiannual Progress Reports (PR) no later than 30 days after the end of the calendar semester. The AOPs and PRs will be prepared following a template agreed upon with the Bank, and consistent with the Bank's "Project Monitoring Report". The AOPs will include targets indicators, an annual work plan for the calendar year, updated procurement and risk mitigation plans, a disbursement forecast, and a maintenance plan for the infrastructures and equipment financed by the program. The PR will indicate the level of fulfillment of the program's output and outcome indicators planned in the AOPs; will include details on the execution of procurement and risk mitigation activities; will analyze problems encountered; and indicate corrective measures. The PRs will also include a section related to the maintenance of infrastructures and equipment. At the end of the program, the Executing Unit will prepare a final report that will summarize all the PRs prepared during the project life. The Executing Unit will receive the support of the UEP to prepare AOP and PR and to provide feed-back to the independent evaluation reports. The program's budget includes provisions to finance one specialist in programming, monitoring and evaluation, who will provide support to the program, but will be assigned at the UEP.
- 3.12 **Evaluation.** The EA will submit to the Bank a midterm independent evaluation report within 90 days after the date on which 50% of the grant proceeds have been committed; and a final independent evaluation report within 90 days after the date on which 90% of the grant proceeds have been disbursed. The final evaluation report will include the results of the program's impact evaluation (see below).
- 3.13 **Impact Evaluation Plan.** Because of the pilot characteristics of the project described previously, and taking into account the impossibility to properly evaluate the impact of previous loans 1490/SF-HA and 1919/GR-HA, a focus will be given to effectively monitor and evaluate the economic and environmental benefits of the proposed operation. For this reason, an [impact evaluation plan](#) has been agreed upon with the GoH. This document presents the methodology, data collection plan, indicators to be measured, sample design, budget allocated to each activity, etc. The evaluation methodology to be applied is different for each component. For the first component, a rigorous impact evaluation using a randomized phase in methodology has been designed in order to identify a comparable counterfactual that allows for proper identification of the economic and environmental effects of the interventions in the upper watershed. For the second component, a reflexive comparison that evaluates the key indicator before and after the intervention will be applied.

Development Effectiveness Matrix			
Summary			
I. Strategic Alignment			
1. IDB Strategic Development Objectives	Aligned		
Lending Program	i) Small and vulnerable countries; ii) Poverty reduction and equity enhancement; iii) Climate change initiatives, renewable energy and environmental sustainability, and iv) Regional cooperation and integration.		
Regional Development Goals	Annual growth rate of agricultural GDP.		
Bank Output Contribution (as defined in Results Framework of IDB-9)	Farmers given access to improved agricultural services and investments.		
2. Country Strategy Development Objectives	Aligned		
Country Strategy Results Matrix	GN-2646	Protect the environment, respond to climate change, and enhance food security.	
Country Program Results Matrix	GN-2696	The project is included in 2013 Country Program Document.	
Relevance of this project to country development challenges (If not aligned to country strategy or country program)			
II. Development Outcomes - Evaluability	Highly Evaluable	Weight	Maximum Score
	9.8		10
3. Evidence-based Assessment & Solution	10.0	33.33%	10
4. Ex ante Economic Analysis	10.0	33.33%	10
5. Monitoring and Evaluation	9.3	33.33%	10
III. Risks & Mitigation Monitoring Matrix			
Overall risks rate = magnitude of risks*likelihood	High		
Identified risks have been rated for magnitude and likelihood	Yes		
Mitigation measures have been identified for major risks	Yes		
Mitigation measures have indicators for tracking their implementation	Yes		
Environmental & social risk classification	B		
IV. IDB's Role - Additionality			
The project relies on the use of country systems (VPC/PDP criteria)			
The project uses another country system different from the ones above for implementing the program			
The IDB's involvement promotes improvements of the intended beneficiaries and/or public sector entity in the following dimensions:			
Gender Equality			
Labor			
Environment	Yes	The project aims to promote efficiency and sustainability of water use at farm and watershed levels.	
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project	Yes	Operation HA-L1003 financed high level expertise to help the Executing Agency to implement reforms under Policy-Based Grants HA-L1074 and HA-L1082, including: (i) a package of policy, legal and institutional reforms for the modernisation of the water resources and hydraulic infrastructures management framework, and (ii) strengthening of the Studies and Programming Unit and creation and strengthening of the Procurement Unit of the MARNDR.	
The ex-post impact evaluation of the project will produce evidence to close knowledge gaps in the sector that were identified in the project document and/or in the evaluation plan	Yes	The impact evaluation will provide rigorous evidence on the effectiveness of interventions that aim at increasing productivity and reducing economic losses by improving water management and infrastructures.	

The overall objective of the program is to decrease crop, livestock and infrastructure losses due to floods, and to increase agricultural productivity in the Artibonite basin, through improved water and sediment management in selected areas of the upper and lower watershed; increased area suitable for agriculture, and improved operation and maintenance of hydraulic infrastructures and equipment at Peligre dam and in the irrigation district.

The intervention is aligned with the four dimensions of the lending program: (i) small and vulnerable countries; (ii) poverty reduction and equity enhancement, as beneficiaries will be mainly small farmers; (iii) support climate change initiatives, renewable energy and environmental sustainability, by promoting efficiency and sustainability of water use at farm and watershed levels, and (iv) support regional cooperation and integration, as the Artibonite basin is a regional public good. The intervention contributes to the regional development goal to protect the environment, respond to climate change and enhance food security. In particular, the Bank's product it contributes to farmers given access to improved agricultural services and investments. The intervention contributes to the country strategy with Haiti and is included in the country program.

The results matrix presents the impact indicators, outputs and outcomes associated with the program's objectives and components. The indicators presented in the results matrix are SMART. The program includes an economic analysis for the entire program and its components. The monitoring and evaluation plan is based on an impact evaluation based on an experimental method for the upper watershed and a non-experimental method focusing on a before and after comparison for irrigation district as a whole.

The main risks are identified as well as their mitigation measures.

RESULTS MATRIX

Objective: The general objective of the program is to decrease crop, livestock and infrastructure losses due to floods and to increase agricultural productivity in the Artibonite basin. The specific objectives are to improve water and sediment management and increase area suitable for agriculture, and improve operation and maintenance of hydraulic infrastructures and equipment at Peligre dam and in the irrigation district.

IMPACTS	Baseline 2013	Target / End of project	Observations
IMPACT 1: Decrease crop, livestock and infrastructure losses caused by flooding in the Artibonite watershed.			
Indicator: Value of annual agricultural damages caused by flooding in the Artibonite watershed (in USD thousands)	8,700	1,738	Source and year of baseline: Artelia surveys (2013). Means of Verification: Specific evaluation by the Ministry of Agriculture, using the same sample as Artelia.
IMPACT 2: Increase agricultural productivity in the Artibonite watershed.			
Indicator 1: In the irrigation district: average annual gross margins of rice for beneficiary farmers (in US\$/Ha)	1,176	1,515	The change represents an average 30% increase in productivity for rice with respect to the baseline. Source and year of baseline: Artelia and AECOM (2013). Means of Verification: Household surveys during the final evaluation (ex-post economic analysis), using the same sample as Artelia.
Indicator 2: In the upper watershed: difference in average annual gross margins in selected gullies between the group of beneficiaries and control (in US\$/Ha)	0	1,556	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. Source and year of baseline: The randomized phase-in of gullies in the upper watershed ensures that the initial difference between the group of beneficiaries and control is zero. The initial survey will be done in 2014. Means of Verification: Household surveys conducted by the firm contracted for impact evaluation.

COMPONENT I: WATER AND SEDIMENT MANAGEMENT INFRASTRUCTURES								
OUTCOMES	Base -line	Y1	Y2	Y3	Y4	Y5	End of project	Observations
OUTCOME 1: Improve water and sediment containment in selected gullies of the upper Artibonite watershed.								During rainfalls events, infrastructures (e.g. check-dams) built in the gullies will contain (i) Sediments: with time (going from a few weeks in highly eroded and steep ravines to a 2-3 years in less eroded and flatter ones), sediments will accumulate and create highly fertile areas where high-value crops can be grown (market gardens); (ii) Water: it will be contained on the upstream side of check-dams (decreased run-off, better infiltration) and will also be stored downstream in the water tanks (for domestic use, micro-irrigation, livestock breeding and masonry work).
Indicator 1.1: Total volume of sediment contained by check-dams (in m3)	0						66,500	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. Year of Baseline: 2013 Means of verification: day-to-day observations and measurements performed by field-based students affiliated to MARNDR's Studies and Programming Unit (UEP)
Indicator 1.2: Market gardens created in the gullies (in Ha)	0						620	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). Year of Baseline: 2013 Means of verification: day-to-day observations and measurements performed by field-based students affiliated to MARNDR's UEP
Indicator 1.3: Total annual volume of water stored by water retention tanks (in m3)	0						52,000	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 watertank stores 10 times its volume of water/year. Year of Baseline: 2013 Means of verification: day-to-day observations and measurements performed by field-based students affiliated to MARNDR's UEP
Indicator 1.4: Farmers who benefit from new cultivable area and better access to water (in Farmers).	0						2350	Each check-dam will benefit one farmer (and his family). Each water tank will benefit at least 10 additional farmers (and their family). This is an indicator of the Corporate Results Framework (Producers given access to improved agricultural services, rural infrastructure, or investments). Year of Baseline: 2013 Means of verification: household surveys performed by field-based students affiliated to MARNDR's UEP

OUTCOME 2: Improve water distribution in the Artibonite irrigation district								As per Bank's guidelines, outputs and outcomes are grouped together to facilitate monitoring of component performance. However, this outcome not only depends on the infrastructures and equipment that will be built/installed by the project (component 1), but also on the satisfactory management (operations and maintenance) of these infrastructures and equipment by the responsible institutions (component 2).
Indicator 2.1: Surface of the irrigation district that benefit optimal waterflows in the pilot area (in Ha)	0						3300	<p>"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> <p>Optimal water flows in the irrigation canals connected to master canals are the result of (i) the correct functioning of the gates at Canneau dam [currently damaged] and (ii) the correct functioning of the gates operated by ODVA on the canals [currently absent]; as well as of (iii) the correct dredging of canals.</p> <p>Year of baseline: 2013</p> <p>Means of verication: water flows will be measured at each of these gates (more than 100 devices installed by the program, including a tele-monitoring unit installed by the project at ODVA - see output 6).). To date, there are no gates, so no precise measurement of water flow. However, information collected on the field suggest that waterflows are never optimal. Each gate allow to provide water to define irrigated surface.</p>
Indicator 2.2: Farmers that benefit a better water distribution in the pilot area of the irrigation district (in Farmers)	0						6400	<p>Indicator of the Corporate Results Framework.</p> <p>Year of baseline: 2013</p> <p>Means of verication: WUA's registry of members.</p>
OUTCOME 3: Decrease waterlogging in the Artibonite irrigation district								As per Bank's guidelines, outputs and outcomes are grouped together to facilitate monitoring of component performance. However, this outcome not only depends on the infrastructures and equipment that will be built/installed by the project (component 1), but also on the effectiveness of flood management at Peligre and capacity of CIA-ODVA to maintain the infrastructure every year (component 2).
Indicator 3.1: Surface cultivated in formerly uncultivated and hydromorphic area (in Ha)	0						3000	<p>Year of baseline : 2013.</p> <p>Means of verification: Monitoring/activity report: Measures of areas with GPS during field visits.</p>
Indicator 3.2: Farmers cultivating in formerly uncultivated and hydromorphic area (in Farmers)	0						7500	<p>Indicator of the Corporate Results Framework</p> <p>Year of baseline: 2013</p> <p>Means of verication: WUA's registry of members.</p>

OUTPUTS								
Output 1: Water and sediment containment infrastructures built in gullies in the pilot area of the upper watershed (<i>Unit: infrastructures</i>)	0	15	232	247	231	225	950	<p>The first 15 infrastructures will be built as part of an on-the-job training in which the selected engineers/ construction firms will participate in order to ensure that they can perfectly master the specific technics necessary to build these infrastructures properly.</p> <p>Baseline year: 2013</p> <p>Means of verification: physical observation of infrastructures during Bank's inspection visit + reports by the supervision firm + Executing unit progress reports</p>
Output 2: Electromechanical system (gates and automatic control) at Canneau dam rehabilitated (<i>Unit: system</i>)	0	0	1	0	0	0	1	<p>Baseline year: 2013</p> <p>Means of verification: physical observation of equipment during Bank's inspection visit + Executing unit progress reports</p>
Output 3: Protection walls preventing the Left and Right Banks Master Canals from collapsing downstream Canneau dam: built (<i>Unit: wall</i>)	0	0	2	0	0	0	2	<p>Baseline year: 2013</p> <p>Means of verification: physical observation of infrastructures during Bank's inspection visit + Executing unit progress reports</p>
Output 4: Secondary and tertiary irrigation and drainage canals built or rehabilitated in the pilot area of the irrigation district (<i>Unit: Kilometers</i>)	86	0	22	28.4	0	0	136.4	<p>The existing network counts with 86Km of canals and drains; the project will built 50.4 additional Km</p> <p>Baseline year: 2013</p> <p>Means of verification: reports by the supervision firm + Executing unit progress reports</p>
Output 5: Primary irrigation and drainage canals dredged in the irrigation district (<i>Unit: Meters</i>)	0	2500 0	25000	25000	25000	25000	25000	<p>Target don't cumulate</p> <p>Baseline year: 2013</p> <p>Means of verification: reports by the supervision firm + Executing unit progress reports</p>
Output 6: Equipment to regulate and measure water flow built/installed on the main canals of the irrigation district (<i>Unit: Device</i>)	0	0	50	50	0	0	100	<p>The 100 units correspond to: 13 regulating equipment at the entrance of primary canals; 35 regulating equipment at the entrance of tertiary canals; 7 measuring equipment at the exit of primary canals (or entrance of drainage canals); 44 smaller devices installed in the pilot area; and 1 tele-monitoring device. As a reminder for monitoring costs/output: the cost of the devices installed in the pilot area represents 25% of the cost of the contract for the entire works planned in the pilot area.</p> <p>Source and year of baseline: SCP reports, 2013</p> <p>Means of verification: physical observation of equipment during Bank's inspection visit + Executing unit progress reports</p>

COMPONENT II: INSTITUTIONAL STRENGTHENING								
OUTCOMES								
OUTCOME 4: Improve flood management at Peligre dam								One of the main roles of the Péligre commission is to ensure that EDH complies with key operating rules at Peligre dam
Indicator 4.1: Days with water level at Péligre dam above the maximum limit for flood management (in days)	75	75	0	0	0	0	0	<p>Key operating rule #1: 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 and thus cannot mitigate flooding.</p> <p>Source and year of baseline: EDH operation report at Peligre dam, 2011</p> <p>Means of verification: EDH operation report at Peligre dam, flood management software (see output 8)</p>
Indicator 4.2: Days with water flows released by Péligre dam above 400 m3/sec (in days)	18	18	0	0	0	0	0	<p>Key operating rule #2: Flooding in the Valley is inevitable if Canneau dam receives water flows above 500 m3/sec, then if Peligre dam releases more than 400 M3/sec (flow at Canneau = flows from Peligre + flows for others tributaries).</p> <p>Source and year of baseline: EDH operation report at Peligre dam, 2011</p> <p>Means of verification: EDH operation report at Peligre dam, flood management software (see output 8)</p>
OUTCOME 5: Improve ODVA's internal management								
Indicator 5.1: Financial statements prepared by external auditors issued with a positive opinion (in audits)	0	0	0	0	1	1	1	<p>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> <p>Baseline year: 2013. No independent financial statement at ODVA since 1998. A recent diagnostic (2012) requested by the Bank concludes on the absence of management and control system.</p> <p>Means of verification: annual audits prepared by external auditors..</p>
OUTCOME 6: Improve operations and maintenance of hydraulic infrastructures and equipment in the irrigation district								

Indicator 6.1: Secondary and tertiary canals and drains dredged (manually) by the 3 WUAs in the pilot area (in meters).	86	86	86	108	136.4	136.4	136.4	<p>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> <p>Source and year of baseline: DGSE, 2012</p> <p>Means of verification: WUAs annual reports on operations, maintenance and collection of water tariffs</p>
Indicator 6.2: Rate of cost recovery in the 3 WUAs of the pilot area (in %)	0	0	50	75	75	75	75	<p>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> <p>Source and year of baseline: DGSE, 2012</p> <p>Means of verification: WUAs annual reports on operations, maintenance and collection of water tariffs</p>
OUTPUTS								
Output 7: Meetings of the Péligre Commission taking place (<i>Unit: Meetings</i>)	6	6	6	6	6	6	30	<p>Baseline year: 2013</p> <p>Means of verification: minutes of the meetings</p>
Output 8: Flood management system operating at the Péligre and Canneau dams (<i>Unit: System</i>)	0	0	1	0	0	0	1	<p>Baseline year: 2013</p> <p>Means of verification: data registry automatically generated by the flood management system</p>
Output 9: Artibonite Watershed Binational Commission created (<i>Unit: Commission</i>)	0	0	0	0	0	1	1	<p>Baseline year: 2013</p> <p>Means of verification: official document creating the Commission</p>
Output 10: ODVA's procedures manual for operation and maintenance of infrastructure and equipment prepared (<i>Unit = manual</i>)	0	1	0	0	0	0	1	<p>This output represents approximately 20% of the technical assistance effort so it is considered that it represents 20% of the cost of the technical assistance package.</p> <p>Baseline year: 2013</p> <p>Means of verification: manual</p>
Output 11: CIA-ODVA's staff trained (<i>Unit = staff</i>)	0	20	20	20	0	0	20	<p>Targets do not cumulate (same staff benefiting from several trainings). This output represents approximately 40% of the technical assistance effort so it is considered that it represents 40% of the cost of the technical assistance package.</p> <p>Baseline year: 2013</p> <p>Means of verification: training reports and list of participants</p>
Output 12: Annual technical and financial plan and report of operation and maintenance of primary infrastructures under ODVA's responsibility prepared	0	2	2	2	2	2	10	<p>This output represents approximately 40% of the technical assistance effort so it is considered that it represents 40% of the cost of the technical assistance package.</p> <p>Baseline year: 2013</p>

<i>(Unit = reports/plans)</i>								Means of verification: plans and reports
Output 13: CIA-ODVA equipped with a package of operating equipment (<i>Unit = package of equipment</i>)	0	1	0	0	0	0	1	The package includes: vehicle, computer, hydraulic calculation software, and furniture Baseline year: 2013 Means of verification: physical observation of equipment during Bank's inspection visit
Output 14: ODVA's administrative and financial staff trained (<i>Unit = Staff</i>)	0	10	10	10	0	0	10	Targets do not cumulate (same staff benefiting from several trainings). Baseline year: 2013 Means of verification: training reports and list of participants
Output 15: Accounting software installed at the ODVA's administrative and financial service (<i>Unit = accounting software</i>)	0	1	0	0	0	0	1	Baseline year: 2013 Means of verification: physical observation of the software during Bank's inspection visit
Output 16: ODVA's administrative and financial service equipped with a package of operating equipment (<i>Unit = package of equipment</i>)	0	1	0	0	0	0	1	The package includes: computer, furniture and archiving equipment Baseline year: 2013 Means of verification: physical observation of equipment during Bank's inspection visit
Output 17: DGSE-ODVA equipped with a package of operating equipment (<i>Unit = package of equipment</i>)	0	1	0	0	0	0	1	The package includes: vehicle, computer, mapping software, furniture and communication equipment Baseline year: 2013 Means of verification: physical observation of equipment during Bank's inspection visit
Output 18: WUAs equipped with office, IT equipment and motorcycles (<i>Unit: WUAs</i>)	0	3	0	9	4	0	16	All WUAs considered (whole irrigation district) Baseline year: 2013 Means of verification: physical observation of equipment during Bank's inspection visit
Output 19: DGSE and WUA staff trained (<i>Unit = Staff</i>)	0	40	40	130	130	170	170	Targets do not cumulate (same staff benefiting from several trainings). This output represents approximately 50% of the technical assistance effort so it is considered that it represents 50% of the cost of the technical assistance package. Baseline year: 2013 Means of verification: training reports and list of participants
Output 20: Annual technical and financial plan and report of operation and maintenance of infrastructures under WUAs' responsibility: prepared (<i>Unit = reports/plans</i>)	0	0	6	6	6	6	24	Only 3 WUAs considered (pilot area). This output represents approximately 50% of the technical assistance effort so it is considered that it represents 50% of the cost of the technical assistance package. Baseline year: 2013 Means of verification: plans and reports

FIDUCIARY ARRANGEMENTS

COUNTRY: Republic of Haiti
PROJECT N°: HA-L1087
NAME: Water Management Program in the Artibonite Basin
EXECUTING AGENCY: The Ministry of Agriculture, Natural Resources and rural Development (MARNDR) through its Project Executing Unit (formerly named “BCP-PIA” renamed “BCP-ProGEBA”)
FIDUCIARY TEAM: Marise E. Salnave (FMP/CHA) and Emilie Chapuis (FMP/CHA)

I. Executive Summary

- 1.1 The Executing Agency of the program will ensure the financial management of program resources including counterpart funds. No financial resources of the program will be transferred to participating institutions and stakeholders, with the exception of a limited budget during the first two years for support to Water Users Association (WUA) via a technical assistance to be provided by an experienced international firm in the operation and maintenance of complex irrigation systems to be financed under Component II.
- 1.2 The latest evaluation of the public financial management systems of the Republic of Haiti is contained in the PEFA assessment report conducted in 2011 and published in February 2012. Country financial management systems and external control mechanism, as evidenced by the recent diagnostic, would require further improvements prior to conform to levels consistent with their utilization for the fiduciary management of Bank’s funded projects. As a result, no country systems will be used for the financial management of project. The latest assessment of the procurement system in Haiti was undertaken in the context of the 2007 PEMFAR. An evaluation of the National Procurement System is ongoing and the results are expected before year-end. However, it is not expected that the findings will drive to a change in the way business is conducted for Bank financed project execution. Therefore to mitigate these risks the Bank will continue in the foreseeable future to: (i) rely on special project execution units for the execution of all projects; and (ii) to implement special fiduciary arrangements for the implementation of its projects and to conduct close operation supervision of project execution units. External control will be performed for all Bank operations by independent audit firms acceptable to the Bank in accordance with the Bank’s financial reporting and audit guide.

II. Executing Agencies Fiduciary Context

- 2.1 The Ministry of Agriculture, Natural Resources and Rural Development (MARNDR) through its Project Executing Unit (PEU) formerly named “BCP-PIA” renamed “BCP-ProGEBA” will be the Executing Agency for the program. The Executing Unit, which has extensive experience in executing Bank financed projects and has successfully executed HA0016 and HA-L1021 in the Artibonite Valley, will be responsible for the overall execution of the project as well as the financial management and reporting. The former Coordinator of the BCP-PIA will be the Project Director for the proposed operation and will

report to General Director of the MARNDR. The Executing Agency will be responsible for the overall administration, procurement related activities, financial reporting and supervision of the program.

- 2.2 All procurement related activities will be conducted by the newly formed Procurement Unit for the MARNDR (“*Unité de Passation des Marchés*”). This unit was recently created by a Ministerial Decree “M-AIDG/(C-17)09-13:1659 (bis)” of September 17, 2013, as a result of numerous efforts to implement a general reform in the procurement administration of the multiple projects financed by the International Donors and Cooperation, including IDB projects. The general objective of this reform is to: (i) rationalize the management of procurement related activities; (ii) increase efficiency and economy by centralizing the procurement activity under one sole entity that will be providing services to all projects in execution, except those financed by national treasury funds. To date, the MARNDR executes four IDB financed projects, totaling US\$115M. The MARNDR counts with on one PIU per project, meaning that to date there are four PIUs and as many procurement units. The expected results of this reform are, among others: (i) an increased specialization and knowledge of the staff discharging procurement duties under Bank financed operations; (ii) a better knowledge of the existing market at both national and international level thereby increasing the general planning and execution capacity for all procurement processes and related activities; (iii) a more efficient use of funds; (iv) an increased quality of service to the good execution of the operations. In the framework of the Policy Based Grant HA-L1082 approved on June 2013, the MARNDR and the IDB, as well as other participating donors, have reached an agreement of principle on Transitional Functioning Measures for the Procurement Unit. Once officially adopted, they will be in force for a period of six months during which the MARNDR and the Procurement Unit will benefit from a high-level technical expertise of a consultant who will be responsible for driving the Unit to its definitive form and functioning mode (an international expert has currently been working with the Unit to prepare the Final Functioning Measures; additional support will be further provided for training and counseling). A highly experienced procurement specialist (especially under Bank financing) was named to head this entity that will promptly integrate all of the procurement specialists currently on duty in the PIUs.
- 2.3 In an effort to ease the transition and ensure business continuity and sustainability without jeopardizing operation’s eligibility or execution, the Head of the Procurement Unit will rely on a designated procurement specialist who will initially be in charge of all procurement related activities for HA-L1087, at least until the Unit is formed into its definitive structure. The to-be-appointed specialist also has experience under IDB financing.

III. Fiduciary risk evaluation and mitigation actions

- 3.1 The latest assessment of the Executing Agency institutional capacity performed in March 2012 by the firm Joseph & Associates was reviewed in September 2013 and which confirms financial management risk rating to be medium due to the lack of appropriate documentation of certain mechanism in place. To mitigate those risks the accounting manual of the program will be updated to included mechanism followed for the monitoring of budget, the safeguarding of financial information, and the management of fixed assets. Manuel will also include process to be followed for the management of potential conflicts of interest. In addition, due to high risk associated with the lack of appropriate financial management systems within ODVA, a

specialized firm will be hired to manage the budget dedicated to finance O&M of primary infrastructures to be carried out by ODVA to be financed under component I of program.

- 3.2 All procurement related activities of Bank financed operations will be executed by the Procurement Unit of the MARNDR. The Unit will appoint a procurement specialist who will be specifically in charge of executing procurement activities for HA-L1087, at least until the Procurement Unit reaches its definitive configuration. Consequently and because the structure is new, the general level of risk in terms of procurement under operation HA-L1087 is evaluated as being high.

IV. Aspects to be considered in the Special Conditions of Contract

Special conditions precedent to first disbursement:

- 4.1 Special Accounts: BCP-PRoGEBA will open two separate bank accounts (in dollars and in local currency) for the management of grant resources and one account in local currency to be funded by local counterpart.
- 4.2 Accounting manual will be updated to include recommendation stated in point 3.1 above including program's chart of accounts to be used for the reporting of transactions.
- 4.3 Entry into force of the transitional procurement procedures for the Procurement Unit and appointment of a procurement specialist who will be specifically in charge of discharging procurement duties for operation HA-L1087 until the Procurement Unit is formed into its definitive configuration.
- 4.4 **Audit special requirements:** (i) Audit of project: External auditors eligible to the Bank will be hired to perform the audit of the program as follows: one annual financial audit of the program including an annual review of procurement and disbursement processes to be submitted within 120 days following the end of each fiscal year and a final financial audit of the program to be submitted within 120 days after the date of the last disbursement. (ii) Audit of ODVA: In order to assess progress in the strengthening of ODVA's financial management and internal control processes financed under Component 2, annual financial audits of ODVA will also be required, and submitted to the Bank and to the ODVA's Board of Directors within 120 days following the end of each fiscal year. For accounting and audit purposes, the Haitian fiscal year will be respected. The same audit firm will be hired to perform both audits.
- 4.5 **Special disbursement.** An initial disbursement for up to US\$100,000 will be made to the extent the Beneficiary submits a provisional budget to the Bank and fulfills to the Bank's satisfaction all the standard general conditions prior to disbursement set forth in grant agreements, except for the submission of the initial execution report. The special disbursement will enable the Executing Agency to fulfill all the conditions prior to first disbursement, and will allow among others: (i) the selection of a consultant responsible for elaborating the operation manual of the program; (ii) the selection of the project team as specified in section 2.2 above; (iii) the updating of the Executing Agency's accounting manual and the elaboration of the program's chart of accounts and (iv) the purchase of office and IT equipment.

V. Fiduciary Arrangements for Procurement Execution

The procurement fiduciary arrangements establish the conditions applicable to all procurement execution activities in the project.

1. Procurement Execution - All project related procurement activities will be performed by the MARNDR Procurement Unit following Bank's Procurement Policies: Policies for the Procurement of Goods and Works financed by the Inter-American Development Bank (GN-2349-9) and Policies for the Selection and Contracting of Consultants financed by the Inter-American Development Bank (GN-2350-9) and the *Special Procurement Provisions for Haiti* (GN-2654).

- a. **Procurement of Works, Goods and Non-Consulting Services:** The contracts for Works, Goods, and Non-Consulting Services¹ generated under the project and subject to International Competitive Bidding will be executed through the use of the Standard Bidding Documents (SBDs) issued by the Bank. The processes subject to National Competitive Bidding (NCB) will be executed through the use of National Bidding Documents agreed to by the Bank. The technical specifications review during the preparation of the selection process, is the responsibility of the project sector specialist.
- b. **Selection and Contracting of Consultants:** The consulting services contracts generated under this project will be executed through the use of the Standard Request for Proposals (SRFPs) issued or agreed to by the Bank. The terms of reference review for the selection of consulting services is the responsibility of the project sector specialist.
- c. **Selection of Individual Consultants:** The selection will be made in accordance with Bank's Procurement rules and procedures and will consist in evaluating the capacity of at least three candidates against set and agreed Terms of References.
- d. **Retroactive financing:** There is no retroactive financing expected at this point.
- e. **Direct contracting:** One specific direct contract is foreseen under this operation. It is nonetheless commonly agreed that it will be conditioned to validation by both the Executing Agency and the Bank's prior no-objection at the time of submitting all related support documentation:

Consortium CECI/SOCODEVI/Prodeva/Tecsult: This consortium was selected in 2005 through an International Competitive Bidding to structure the Irrigant Associations in the Artibonite Valley. The consortium's work lasted until 2011 and the results were received to satisfaction. The experience acquired by this Consortium provided them with extensive knowledge of the project's area of influence, especially in terms of social engineering, which is essential for the implementation of the reform on water and hydraulic infrastructures management in the Valley. This direct contract for an estimated amount of US\$2,681,611 would therefore be in conformity with article 3.10 (d) of the GN-2350-9.

¹ Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank (GN-2349-9) paragraph 1.1: The services different to consulting services have a similar process as procurement of Goods.

2. Thresholds (miles US\$)

Works			Goods ²			Consulting Services	
International Competitive Bidding	National Competitive Bidding	Shopping	International Competitive Bidding	National Competitive Bidding	Shopping	International Advertising	100% National Short List
= / >1,000	100-1,000	<100	= / >100	25 -100	<25	>200	<100

However, the thresholds applied procurement activities under this operation will follow the ones established in the Special Procurement Provisions for Haiti such as detailed in GN-2654 as detailed in the following table:

HAITI – Thresholds in force since 1 January 2012 (In thousands of US\$)				
Works		Goods		Consulting Services
International Competitive Bidding	National Competitive bidding / Price Comparison	International Competitive Bidding	National Competitive bidding / Price Comparison	Short list of national firms only
≥1.000	<1.000	≥100	<100	<100

3. Main Procurement Activities³

Activity	Procurement Method	Estimated Date	Estimated Amount US\$
Goods			
Vehicles	ICB	Nov. 2013	315,000
Flood management system at Peligre and Canneau dam	ICB	Nov. 2013	338,725
Electromechanical rehabilitation of waterflow regulating devices at Canneau dam	ICB	Nov. 2013	521,143
Works			
Small infrastructures in gullies (several contracts)	PC/ multiple	Feb. 2014	4,500,000
Strengthening of banks of the Artibonite river downstream Canneau dam	ICB	Nov. 2013	2,491,654
Finalization of hydraulic network in the pilot area of the irrigated district	ICB	Nov. 2013	4,020,100
Firms			
Supervision of the works in the pilot area of the irrigated district	SBQC / ICB	Jan. 2014	321,608
Annual audit of the program and of ODVA	SBCQ / ICB	Jan. 2014	415,000
Individual consultants			
Supervision of the construction of infrastructures in gullies	ICS	Mar. 2014	350,000

*To access the 18 month procurement plane, click [here](#)

4. Procurement Supervision

For all the reasons listed in paragraph 3.2 of the present Annex III, it is recommended that procurement activities be placed under ex-ante supervision. The level of risk will be reassessed during the regular supervision activities that will be conducted during operation's execution. Based on the findings, the Bank and the MARNDR may agree to review the supervision modality for this operation.

² Including different services other than consulting.

³ Among the main procurement activities, there are six (6) direct contracts that are foreseen under the project, as listed above. This table will not make reference to these six processes.

5. Records and Files

The Executing Agencies will be required to keep files and track records of all procurement related activities financed by the Bank in their office in accordance with the Bank's Procurement Rules and Procedures and to the Project's Operational Rules in such a way that it be available for supervision visit by the fiduciary team. It is also recommended, and yet not mandatory, that the Executing Agencies developed electronic filing so as to avoid losing all paper files should a natural disaster such as an earthquake occur. It is important however to note that the national legislation in Haiti does not recognize electronic documents as being originals, which means that creating an electronic filing system should not be considered mandatory. As mentioned in paragraph 4.6 of the present Annex III and to avoid jeopardizing operation's eligibility, filing being a key element in procurement related activities, it is requested that the filing mechanism be developed as a condition prior to execution.

VI. Financial Management

A. Programming and Budget

6.1 Programming and budget execution and monitoring at the program level will rely on IDB's project financial management formats and procedures. BCP-ProGEBA will prepare annually, an operation plan (AOP) a procurement plan and a twelve-month detailed financial plan. The financial plans will coincide with the Haitian fiscal year and will respect the budget lines defined in the grant agreement (investment categories). The execution of the program's financial plans will be evaluated every six months.

B. Accounting and Information Systems

6.2 Financial Management systems used by BCP-ProGEBA will be applied for the financial management of the program. The system generates financial reports of income and expenses by project and funding source, however financial information is exported to Excel for the preparation of financial statements required by bank.

C. Disbursements and Funds Flows

6.3 Advance of funds methodology will be used for the disbursement of project funds. BCP-ProGEBA will open separate bank accounts for the management of grant and counterpart resources. Disbursement Supervision will be ex-post. As specified in section 4.5 above, an initial disbursement for up to US\$100,000 will be made by IDB Grant to fulfill conditions prior to first disbursements. No financial resources of the program will be transferred to participating institutions and stakeholders, with the exception of a limited budget during the first two years of the program for support to Water Users Association (WUA) via a technical assistance to be provided by an experienced international firm in the operation and maintenance of complex irrigation systems to be financed under component II of program. Local national counterpart will be used to finance operation and maintenance (O&M) cost associated with the construction of infrastructures to be carried out by ODVA with the support of a specialized firm as per stated in 3.1 above. Exchange rate valid at the day before the date of transaction will be used to record all expenses made in local currency. The Central Bank exchange rate will be used at the reference rate.

D. Internal Control and Audit

6.4 The Executing Agency does not have an internal audit function; the internal auditor of MARNDR fulfills this function. The internal control environment will be improved with the update of the program's accounting manual to include recommendations referred to in section 3.1

E. External Control and Reporting

6.5 Audits will be performed in accordance with Bank's Guidelines for Financial Reports and External Audits as described in Section IV. Financial audit cost will be financed by IDB grant and estimated at US\$415,000. The program financial statements will correspond to the fiscal year. The audit firm will carry out audit on the basis of specific terms of reference to be agreed between BPC-ProGEBA and the Bank.

F. Financial Supervision Plan

6.6 Audit terms of reference will include an annual review of procurement and disbursement processes. In addition Fiduciary staff will review the execution of financial plan on a semi-annual basis. Annual inspection visit will be performed by financial management specialist.

G. Execution Mechanism

6.7 BCP-ProGEBA will maintain proper financial management systems and will prepare an annual operation plan (AOP) and procurement plan and a twelve-month detailed financial plan indicating cash flow needs for the execution of program's activities stemming from AOP and procurement plans. The twelve-month financial plan will serve as the basis for advance of funds disbursements. Disbursement of advances of funds will be for the equivalent of funding needs required for six months of program execution.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/13

Haiti. Nonreimbursable Financing ____/GR-HA to the Republic of Haiti
Water Management Program in the Artibonite Basin

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, as Administrator of the IDB Grant Facility (hereinafter referred to as the “Account”), to enter into such contract or contracts as may be necessary with the Republic of Haiti, as Beneficiary, for the purpose of granting it a nonreimbursable financing to cooperate in the execution of a water management program in the Artibonite Basin. Such nonreimbursable financing will be for an amount of up to US\$25,000,000, which form part of the Account, and will be subject to the Terms and Financial Conditions and the Special Contractual Conditions in the Project Summary of the Grant Proposal.

(Adopted on ____ 2013)